Marine Stewardship Council (MSC) Public Certification Report

Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery

On Behalf of

Liancheng Overseas Fishery (FSM) Co. Ltd.
Caroline Fisheries Corporation
Da Yang Seafood

Prepared by

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Role	Signature	Date
Originator:	C. Sieben	2nd August 2021
Reviewer:	B O'Kane	2nd August 2021
Approver:	H Jones	3rd August 2021

Glossary

Acronym	Definition
B_0	equilibrium unexploited total biomass
$B_{Fcurrent}$	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
CFC	Caroline Fisheries Corporation
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
CU	Control Union UK Ltd.
DEA	Department of External Affairs (FSM)
DYS	Da Yang Seafood
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
eNGO	Environmental Non-Governmental Organisation
EMS	Electronic Monitoring System
ERA	Ecological Risk Assessment
ETP	Endangered, threatened or protected species
FAD	Fish Aggregating Device
dFAD	Drifting FAD
FAME	SPC Division of Fisheries, Aquaculture and Marine Ecosystems
FAO	Food and Agricultural Organization
FCP	Fisheries Certification Process
FFA	Pacific Islands Forum Fisheries Agency
FFC	Forum Fisheries Committee
FIP	Fishery Improvement Project
F_{MSY}	Fishing mortality at age resulting in MSY
FSC	Free-swimming school
FSM	Federated States of Micronesia
FZLC	Liancheng Overseas Fishery (FSM) Co. Ltd.

Acronym	Definition
HCR	Harvest Control Rule
iFIMS	integrated Fisheries Information Management Systems
IGO	Intergovernmental Organisation
IMS	Information Management System
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)
LRP	Limit Reference Point
MCS	Monitoring, Control and Surveillance
MEY	Maximum Economic Yield
MERIP	Marine Environment Research Institute of Pohnpei
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSY	Maximum Sustainable Yield
MSY, Y_{FMSY}	Equilibrium yield at F_{MSY}
Nm	Nautical mile
NFOP	National Fisheries Observer Programme (FSM)
NORMA	National Oceanic Resource Management Authority
NPOA	National Plan of Action
NTADS	Non-target and dependent species
OFP	Oceanic Fisheries Programme (OFP) within the SPC Division of Fisheries, Aquaculture and Marine Ecosystems
ONPA	Office of the National Public Auditor (FSM)
PROP	Pacific Islands Regional Oceanscape Program
PAE	Party Allowable Effort
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
RFMO	Regional Fisheries Management Organization
SB_0	Equilibrium unexploited spawning potential
$SB_{Fcurrent}$	Average current spawning potential in the absence of fishing

Acronym	Definition
SB_{init}	Initial spawning potential at the start of the stock assessment model (for the albacore assessment, SB_{1960})
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
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TCC	Technical Compliance Committee of the WCPFC
TMP	Management Plan on Tuna Fisheries for the Federated States of Micronesia
TRP	Target Reference Point
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
UoC	Unit of Certification
VDS	Vessel Day Scheme
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WWF	World Wildlife Fund
$Y_{Fcurrent}$	Equilibrium yield at $F_{current}$

1 Executive Summary

This report covers the MSC full assessment of the Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery. The assessment team consisted of Chrissie Sieben (Team Leader, Principle 2), Carlos Alvarez (Principle 1) and Peter Watt (Principle 3). The site visit took place during the week following the 3rd November 2020. Due to Covid-19 and the associated global travel restrictions in recent months, the MSC instated a derogation to ensure that site visits planned between the 27th March to 27th September 2020, could be held remotely. Because of this, and there being strict travel restrictions in place in FSM (whereby only limited and controlled entry was permitted), it was therefore considered more appropriate that the audit be held remotely. 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 needed.

The fishery under assessment is represented by three separate companies: Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC), Caroline Fisheries Corporation (CFC) and Da Yang Seafood (DYS). FZLC currently has no vessels active in the fishery. For CFC and DYS, the purse seine fishery is prosecuted by twelve Federated States of Micronesia (FSM) flagged vessels which make up the Unit of Certification. No support (or supply) vessels are used in this fishery. Certificate sharing is in place for those companies that own and manage tuna purse seine vessels that are licensed to fish in the FSM EEZ and are authorized to fish on the high seas of the WCPFC Convention Area; employ fishing practices, gear designs and traceability procedures commensurate with those of the vessels covered by the certificate; and conform to the target species and stocks, geographical range of the fishery and harvest method as described by the Units of Assessment.

The Principle 1 target species in this fishery are Western Central Pacific skipjack, yellowfin and bigeye. The fishery, as defined by the UoA, operates in the Exclusive Economic Zone of FSM as well as the High Seas. The vessels may also fish in other PNA waters, which are not covered by this assessment. The purse seines in this fishery are either set on free-swimming schools of fish not associated with any floating object (free schools – UoAs 1, 3, 5), or around floating objects (UoAs 2, 4, 6). The number of drifting FADs (dFADs) deployed per year varies by company; however, for both companies combined approximately 1,400 FADs were deployed in 2020 based on buoy data. All dFADs deployed in this fishery adhere to lower-entanglement risk design requirements.

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. The core regional management measure is WCPFC CMM 2018-01 (now superseded by CMM 2020-01), 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.

Key data sources on interactions with other species in this fishery are logbooks and observer reports. Other than the Principle 1 species, no other main primary species were identified. No main secondary species were identified either. Endangered, Threatened or Protected (ETP) species include elasmobranchs (sharks and rays), as well as cetaceans, sea turtles and seabirds (in the case of associated sets only). Although none of the observed mortality is thought to lead to unacceptable impacts on ETP species for any of the set types, quantitative data on unobserved mortality of ETP species as a result of entanglement in dFADs are lacking. A condition was raised accordingly for the ETP species information performance indicator. Regarding habitats, the purse seine gear in this fishery is strictly pelagic, and therefore the fishing operation itself does not impact on benthic habitats. However, with dFAD sets being an important component of this fishery, impacts may result from the

FADs themselves when they become abandoned, lost or are discarded. Impacts include benthic habitat impacts as the FADs become stranded (particularly on coral reefs which are considered Vulnerable Marline Ecosystems (VME)s in this assessment), and localized marine pollution or litter when beached FADs are made of synthetic materials. Although FADs impact coral reefs on a localized basis, the team did not consider that at the scale of the UoA, the fishery is likely to cause irreversible impacts on coral reef habitats in the WCPO. However, important gaps were identified in how these habitat impacts are monitored and managed, and conditions were therefore raised across all Habitat performance indicators. At a wider ecosystem level, the team considered the effect of removals by the UoA and the effects associated with the use of dFADs, neither of which were thought to be highly likely to lead to irreversible ecosystem impacts at the scale of the UoA.

In relation to Principle 3, 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. At the sub-regional level, there are three key organisations relevant to this fishery – the Parties to Nauru Agreement (PNA) (which includes the Federated States of Micronesia (FSM)), the Pacific Community (SPC) and the Forum Fisheries Agency (FFA). At the national level, FSM is responsible for the management of the fisheries where the UoA fishery operates in its Exclusive Economic Zone (EEZ). The FSM federal government is based in Pohnpei with control over waters beyond 12 miles to the outer boundary of the EEZ, with NORMA being responsible for the development and management of the marine resources within FSM. NORMA operates under Title 24. (Marine Resources) of the FSM Code, together with the Management Plan on Tuna Fisheries for FSM (2015). The Monitoring Control and Surveillance Section, under NORMA's Statistics, Compliance and Technical Projects Division, is responsible for the collection and entry of fishing vessel logsheet data, catch validation, transhipment reports, zone notifications and vessel control reports. Much of the compliance work within NORMA is done in tandem with the Maritime Police and the Maritime Surveillance Wing under the Department of Justice which is given power to penalize parties in breach of compliance to regulations stipulated in Title 24. FSM has implemented measures to restrict port entry and access to port services of vessels included in Illegal, Unregulated and Unreported (IUU) lists and worked with other nations to strengthen enforcement and data programs aimed at curtailing IUU fishing. FSM with other CCMs adopted the WCPFC Conservation and Management Measure on Minimum Standards for Port State Measures (CMM 2017-02) to establish processes and procedures for port inspections of fishing vessels suspected of engaging in IUU fishing or fishing related activities in support of IUU fishing. Where, following a port inspection, a flag CCM receives an inspection report, indicating that there are clear grounds to believe that its flagged vessel has engaged in IUU fishing or fishing related activities in support of IUU fishing, it is required to immediately investigate the matter in accordance with Article 25 of the Convention. Overall, there is a robust management and regulatory framework with clearly defined roles and responsibilities at national and regional level. The team, however, did identify a need for better data provision on fleet compliance and sanctioning, and a condition was therefore raised in relation to the compliance and enforcement performance indicator.

The team's final determination is that the fishery meets the criteria for MSC certification. At this Public Certification Report stage, the team's final determination is that the fishery meets the criteria for MSC certification. Eleven conditions have been raised, along with two recommendations. All Principles achieve an overall aggregate score of 80. Aggregate scores for each Principle are as shown in the following table:

Table 1. Principle level scores

Principle	SKJ		YFT		BET	
	Unassociated	Associated	Unassociated	Associated	Unassociated	Associated
Principle 1 – Target Species	85.8		84.2		81.7	
Principle 2 – Ecosystem Impacts	87.7	81.7	87.7	81.7	87.7	81.7
Principle 3 – Management System	84					

Eleven conditions were raised, in relation to all Principles:

Condition number	Condition	Performance Indicator
1	By the end of Year 1, WCPO skipjack needs a harvest strategy that is responsive to the state of the stock, with and the elements of the harvest strategy (monitoring, stock assessment, harvest control rules and management actions) working together to achieve stock management objectives. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.1
2	By the end of Year 1, WCPO skipjack needs a harvest control rule that ensures that the exploitation rate is reduced as the PRI is approached and is expected to keep the stock fluctuating around the target level and is robust to the main uncertainties. The tools used to implement the HCR should be effective in achieving the required exploitation levels. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.2
3	By the end of Year 1, 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. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.1
4	By the end of Year 1, a well-defined regional-level harvest control rule should be put in place for WCPO yellowfin, 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	1.2.2

Condition number	Condition	Performance Indicator
	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). (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	
5	By the end of Year 1, 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. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.1
6	By the end of Year 1, 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). (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.2
7	By the end of year 4, some quantitative, independently verified information on unobserved mortality of ETP species through entanglement in dFADs should be available 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
8	Within 4 years, the client fishery needs to demonstrate that the risk of reducing structure and function of VMEs (in particular coral reef habitats) to a point where there would be serious or irreversible harm, associated with lost and/or abandoned UoA FAD beaching events, is sufficiently low for SG80 to be met.	2.4.1
9	By the end of Year 3, there should be an objective basis for confidence that the partial strategy in place for managing UoA impacts on VME habitats (in particular coral reefs), associated with lost and/or abandoned UoA FAD beaching events, will work based on information directly about the UoA and/or habitats involved, and some quantitative evidence should be presented that it is being implemented successfully.	2.4.2

Condition number	Condition	Performance Indicator
10	By the end of Year 3, information availability is adequate to allow for identification of the main impacts of the UoA on VMEs (in particular coral reef habitats), associated with the beaching of lost and/or abandoned UoA FADs, and provides reliable information on the spatial and temporal extent of UoA FAD beaching events.	2.4.3
11	By the end of year 4, the national monitoring, control and surveillance system implemented in the fishery should have demonstrated an ability to enforce relevant management measures, strategies and/or rules in both the FSM EEZ and High Seas areas. In addition, evidence should be provided that there is no systematic non-compliance in the fishery. Where there is non-compliance, evidence should be provided that sanctions are consistently applied and thought to provide effective deterrence.	3.2.3

The following non-binding recommendations have been given:

Recommendation 1: Logbook catch data are estimated during brailing and as the fish enter the wells onboard the vessels, and therefore inevitably carry a bias. Although sorting at the canneries allows for a more accurate assessment of landed catch, these data are not shared with any third parties such as SPC and WCPFC: comprehensive cannery receipts data from more than twenty processors (receiving WCPFC purse seine catch) have been provided on a voluntary basis to the WCPFC over the past 7–8 years as part of an initiative of the ISSF and their participating processing companies. Although there is clear potential for using cannery receipts data to validate/compare species and size composition breakdowns by fleet determined from observer-derived estimates, this is not straightforward (the catch from a given trip is sold to multiple processors and if some of them are not ISSF participating companies then the data sent to SPC are partial) (Williams, 2020). Cannery data are therefore not yet part of any formal reporting mechanisms. According to Williams (2020), *there has not been any increase in coverage of cannery data over recent years; despite the continued excellent cooperation of the ISSF-affiliated companies in submitting data, there remain gaps in processor/unloadings data from other sources (acknowledging there is no requirement for the provision of purse seine cannery receipt/unloading data at this stage*). The team therefore recommends that the client fishery explores whether unloadings data or cannery receipt data showing size composition breakdown by species is being/can be provided to SPC, either by the client group itself or by the processing companies that it supplies its catch to.

Recommendation 2: The overall observed encounter rates with marine mammals in the fishery were not thought to lead to unacceptable impacts for any of the species concerned (see scoring under 2.3.1b). High mortality rates upon release were, however, recorded for the common dolphin, rough-toothed dolphin and spinner dolphin for both unassociated and associated set types. The team therefore recommends that the client fishery investigates whether more can be done to reduce the mortality-upon-release for marine mammals encountered by the fishery (with particular attention to these species) and/or reduce marine mammal encounters altogether.

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 development. She was the MSC fisheries scheme manager at ME Certification Ltd (which later became 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 ten 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. Chrissie has no conflict of interest for this assessment. Chrissie completed her ISO19011 training and certification.

Dr. Carlos Alvarez (Principle 1)

Dr. Carlos Alvarez-Flores was born in Mexico City and obtained his Bachelor of Science and Master of Science degrees at the National University of Mexico. He later moved to Seattle, USA to obtain a Doctor of Philosophy degree at the School of Fisheries of the University of Washington. His research interests are focused on the management and conservation of wildlife and fisheries. This includes abundance estimation; assessment of population status; estimation of population parameters; the effect of human intervention; direct harvest; bycatch and associated environmental effects; projections based on biological potential; population viability; risk assessment; design of alternative management strategies. His training was related to large, pelagic, data rich fisheries, and some of his investigations involved the bycatch of dolphins in the pelagic purse seine tuna fisheries of the Eastern Tropical Pacific, the hunt of beluga whales in West Greenland, the hunt of bowhead whales in Canada, and the bycatch of albatrosses in pelagic fisheries of the central Pacific. In contrast, his current assignments are related to small-scale, coastal fisheries that are very data poor. Therefore, his present challenges are to combine ideas, techniques, knowledge and experience to improve the performance of these problematic fisheries in developing countries. Most of his experience has been focused on practical investigations applied to population and fishery assessment and management as a consultant for governments, NGOs and the private sector of different countries.

Dr. Alvarez has acquired over 6 years of experience conducting MSC assessments, from various types of fisheries in different countries, including full assessments and surveillance assessments, such as a Principle 1 assessor for The Northeastern Tropical Pacific Purse Seine Yellowfin & Skipjack Tuna Fishery. Carlos has completed the required MSC online training for Fisheries (FCP v2.1 and the Fisheries Standard training). Carlos does not have any conflict of interest for this fishery.

Peter Watt (Principle 3)

Peter Watt has over 20 years' fisheries management and development work experience with national governments, regional organisations and private consultancy companies in Samoa, Papua New Guinea, Solomon Islands, Palau, Tokelau, Tonga, New Caledonia, Vanuatu, Kiribati, Federated States

of Micronesia, Commonwealth of the Mariana Islands, Marshall Islands, Fiji, New Zealand, Canada, and United States. Peter has authored or co-authored over 30 publications in his field and worked on more than 50 projects and assignments in technical research, marine management and development, technical training and project administration. He developed and established community-based fisheries management arrangements for the Coastal Fisheries Development and Management Project in Papua New Guinea, establishing over twenty fisheries management plans and developing legislation to empower communities to manage their fisheries resources. Prior to this he was the Commercial Fisheries Advisor in Samoa for four years, providing management advice and expertise for the development and management of the tuna longline and other fisheries. This included working with the government and stakeholders to develop and implement a tuna management plan, with related legislation and policies. Other experience also includes rapid resource assessments in the Philippines, Papua New Guinea and Samoa, and conducting stock assessments for the tuna longline fishery and outer reef slope assessments for the deep water snapper fishery. Peter has completed the v2.0 online training, meeting the competency requirements in Table PC2, as well as the following team competency criteria in Table PC3: Fishery management and operations and Current knowledge of the country, language and local fishery context (the local language spoken in Pohnpei is English). Peter has no conflict of interest for this assessment.

Note: Dr. Jo Gascoigne was part of the assessment team prior to the CPRDR stage. She 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. Dr. Alvarez replaced Dr. Gascoigne as P1 assessor on the team on the 22nd February 2021 – see the following link for the stakeholder notification.

Peer Reviewers:

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

- Giuseppe Scarcella
- Jiangfeng Zhu
- Jim Andrews
- Johan Groeneveld
- Shelley Clarke

A summary of their experience and qualifications is available via this link: https://fisheries.msc.org/en/fisheries/micronesia-skipjack-yellowfin-and-bigeye-tuna-purse-seine-fishery/@@assessments.

2.2 Version details

Table 2. 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 1.2

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;
- UoAs 2, 4 and 6 of the fishery constitute an enhanced fishery as per the MSC FCP 7.4.6 (see Section 3.3);
- The fishery is not an introduced species-based fishery as per the MSC FCP 7.4.7 and
- None of the entities in the Client Group have been convicted for a shark finning violation in the last 2 years.

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.

The Units of Assessment (UoA) are given in Table 3.

Table 3. Units of Assessment

Species and stock	UoAs 1, 2: Western Central Pacific skipjack UoAs 3, 4: Western Central Pacific yellowfin UoAs 5, 6: Western Central Pacific bigeye
Geographical range of fishery	FAO Area 71/77: Exclusive Economic Zone of the Federated States of Micronesia (FSM) and WCPFC High Seas
Harvest method / gear	UoAs 1, 3, 5: Purse seine unassociated sets (also referred to as sets on free-swimming schools – FSC) UoAs 2, 4, 6: Purse seine sets associated with drifting floating objects, including natural floating objects and drifting fish aggregating devices
Client group	Vessels owned and/or managed by Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC), Caroline Fisheries Corporation (CFC) and Da Yang Seafood (DYS), fishing for Western Central Pacific skipjack, yellowfin and bigeye with purse seine (on free-school and FAD sets) in the FSM EEZ and WCPFC High Seas.
Other eligible fishers	The client group is willing to share the MSC fisheries certificate with other eligible companies. To be eligible, a company must own and manage tuna purse seine vessels that are licensed to fish in the FSM EEZ and are authorized to fish on the high seas of the WCPFC Convention Area; employ fishing

	practices, gear designs and traceability procedures commensurate with those of the vessels covered by the certificate; and conform to the target species and stocks, geographical range of the fishery and harvest method as described by the Units of Assessment

3.2 Unit(s) of Certification (UoC)

The Unit of Certification is the following:

Species and stock	UoAs 1, 2: Western Central Pacific skipjack UoAs 3, 4: Western Central Pacific yellowfin UoAs 5, 6: Western Central Pacific bigeye
Geographical range of fishery	FAO Area 71/77: Exclusive Economic Zone of the Federated States of Micronesia (FSM) and WCPFC High Seas
Harvest method / gear	UoAs 1, 3, 5: Purse seine unassociated sets (also referred to as sets on free-swimming schools – FSC) UoAs 2, 4, 6: Purse seine sets associated with drifting floating objects, including natural floating objects and drifting fish aggregating devices
Client group	Vessels owned and/or managed by Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC), Caroline Fisheries Corporation (CFC) and Da Yang Seafood (DYS), fishing for Western Central Pacific skipjack, yellowfin and bigeye with purse seine (on free-school and FAD sets) in the FSM EEZ and WCPFC High Seas.

3.3 Scope of assessment in relation to enhanced fisheries

The UoAs that involve FAD set types in this fishery (UoAs 2, 4 and 6) are considered enhanced. The criteria for determining whether the fishery is enhanced are shown in Table 4. Note: An enhanced fishery shall only be eligible for assessment if it conforms to all of the scope criteria.

Table 4. MSC scope criteria for enhanced fisheries. Red text indicates whether these are met by the UoA (specifically the FAD set-types)

A	Linkages to and maintenance of a wild stock
i	At some point in the production process, the system relies upon the capture of fish from the wild environment. Such fish may be taken at any stage of the life cycle including eggs, larvae, juveniles or adults. The 'wild environment' in this context includes marine, freshwater and any other aquatic ecosystems. Met
ii	The species are native to the geographic region of the fishery and the natural production areas from which the fishery's catch originates unless MSC has accepted a variation request to include introduced species for the pilot phase. Met
iii	There are natural reproductive components of the stock from which the fishery's catch originates that maintain themselves without having to be restocked every year. Met
iv	Where fish stocking is used in hatch-and-catch (HAC) systems, such stocking does not form a major part of a current rebuilding plan for depleted stocks. Note: This requirement shall apply to the "current" status of the fishery. Wild stocks shall be managed by other conventional means. If rebuilding has been done by stocking in the past, it shall not result in an out-of-scope determination as long as other measures are now in place. - Not relevant

B	Feeding and Husbandry
i	The production system operates without substantial augmentation of food supply. In HAC systems, any feeding is used only to grow the animals to a small size prior to release (not more than 10% of the average adult maximum weight), such that most of the total growth (not less than 90%) is achieved during the wild phase. In catch-and-grow (CAG) systems, feeding during the captive phase is only by natural means (e.g., filter feeding in mussels), or at a level and duration that provide only for the maintenance of condition (e.g., crustacean in holding tanks) rather than to achieve growth. - Met
ii	In CAG systems, production during the captive phase does not routinely require disease prevention involving chemicals or compounds with medicinal prophylactic properties. - Met
C	**Habitat and ecosystem impacts**
i	Any modifications to the habitat of the stock are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure and function. Note: Habitat modifications that are not reversible, are already in place and are not created specifically for the fishery shall be in scope. This includes: • Large-scale artificial reefs. • Structures associated with enhancement activities that do not cause irreversible harm to the natural FADs enhance fishing operations by aggregating fish to more efficiently capture them. These aggregating effects disappear when the FADs are removed. The UoAs therefore meet this scope requirement.

If the scope of the fishery contains an enhanced fishery that is not covered in Annexes SB (bivalves) and SC (salmon), the CAB is required to review and if necessary, modify the default tree taking into account the performance indicators (PIs) required to assess the enhancements. The team determined that no modifications to the default assessment tree were required. This conclusion was reached based on the following:

- There is no unequivocal empirical evidence that FADs represent an 'ecological trap' that inherently disrupts tuna biology (see rationale presented under performance indicator 2.5.1);
- The potential for lost, abandoned or discarded FADs causing habitat damage is sufficiently addressed in the scoring of the Habitats Component (2.4).

The likely stock-level and ecosystem impacts caused by the enhanced fishery components of the fishery under assessment are therefore sufficiently captured by the default assessment tree for Principles 1 and 2. No modifications to the default assessment tree were made.

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 remained a recommendation pending the completion of the formal objections process and the final certification decision by the Control Union UK Ltd. official decision-making entity.

The final Control Union UK Ltd. Certification Decision was made on the 3rd August 2021 with the Certification Decision Maker approving the decision to certify the fishery.

4.2 Principle level scores

Table 5. Principle level scores

Principle	SKJ		YFT		BET	
	Unassociated	Associated	Unassociated	Associated	Unassociated	Associated
Principle 1 – Target Species	85.8		84.2		81.7	
Principle 2 – Ecosystem Impacts	87.7	81.7	87.7	81.7	87.7	81.7
Principle 3 – Management System	84					

4.3 Summary of conditions

Table 6. Summary of conditions (see Appendix 5 for detail)

Condition number	Condition	Performance Indicator
1	By the end of Year 1, WCPO skipjack needs a harvest strategy that is responsive to the state of the stock, with and the elements of the harvest strategy (monitoring, stock assessment, harvest control rules and management actions) working together to achieve stock management objectives. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.1
2	By the end of Year 1, WCPO skipjack needs a harvest control rule that ensures that the exploitation rate is reduced as the PRI is approached and is expected to keep the stock fluctuating around the target level and is robust to the main uncertainties. The tools used to implement the HCR should be effective in achieving the required exploitation levels. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.2

Condition number	Condition	Performance Indicator
3	By the end of Year 1, 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. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.1
4	By the end of Year 1, a well-defined regional-level harvest control rule should be put in place for WCPO yellowfin, 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). (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.2
5	By the end of Year 1, 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. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions. (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	1.2.1
6	By the end of Year 1, 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). (Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all	1.2.2

Condition number	Condition	Performance Indicator
	existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023).	
7	By the end of year 4, some quantitative, independently verified information on unobserved mortality of ETP species through entanglement in dFADs should be available 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
8	Within 4 years, the client fishery needs to demonstrate that the risk of reducing structure and function of VMEs (in particular coral reef habitats) to a point where there would be serious or irreversible harm, associated with lost and/or abandoned UoA FAD beaching events, is sufficiently low for SG80 to be met.	2.4.1
9	By the end of Year 3, there should be an objective basis for confidence that the partial strategy in place for managing UoA impacts on VME habitats (in particular coral reefs), associated with lost and/or abandoned UoA FAD beaching events, will work based on information directly about the UoA and/or habitats involved, and some quantitative evidence should be presented that it is being implemented successfully.	2.4.2
10	By the end of Year 3, information availability is adequate to allow for identification of the main impacts of the UoA on VMEs (in particular coral reef habitats), associated with the beaching of lost and/or abandoned UoA FADs, and provides reliable information on the spatial and temporal extent of UoA FAD beaching events.	2.4.3
11	By the end of year 4, the national monitoring, control and surveillance system implemented in the fishery should have demonstrated an ability to enforce relevant management measures, strategies and/or rules in both the FSM EEZ and High Seas areas. In addition, evidence should be provided that there is no systematic non-compliance in the fishery. Where there is non-compliance, evidence should be provided that sanctions are consistently applied and thought to provide effective deterrence.	3.2.3

4.4 Recommendations

The following non-binding recommendations have been given:

Recommendation 1: Logbook catch data are estimated during brailing and as the fish enter the wells onboard the vessels, and therefore inevitably carry a bias. Although sorting at the canneries allows for a more accurate assessment of landed catch, these data are not shared with any third parties such as SPC and WCPFC: comprehensive cannery receipts data from more than twenty processors (receiving WCPFC purse seine catch) have been provided on a voluntary basis to the WCPFC over the past 7–8 years as part of an initiative of the ISSF and their participating processing companies. Although there is clear potential for using cannery receipts data to validate/compare species and size composition breakdowns by fleet determined from observer-derived estimates, this is not straightforward (the catch from a given trip is sold to multiple processors and if some of them are not ISSF participating companies then the data sent to SPC are partial) (Williams, 2020). Cannery data are therefore not yet part of any formal reporting mechanisms. According to Williams (2020), *there has not been any increase in coverage of cannery data over recent years; despite the continued excellent cooperation of the ISSF-affiliated companies in submitting data, there remain gaps in processor/unloadings data from*

other sources (acknowledging there is no requirement for the provision of purse seine cannery receipt/unloading data at this stage). The team therefore recommends that the client fishery explores whether unloadings data or cannery receipt data showing size composition breakdown by species is being/can be provided to SPC, either by the client group itself or by the processing companies that it supplies its catch to.

Recommendation 2: The overall observed encounter rates with marine mammals in the fishery were not thought to lead to unacceptable impacts for any of the species concerned (see scoring under 2.3.1b). High mortality rates upon release were, however, recorded for the common dolphin, rough-toothed dolphin and spinner dolphin for both unassociated and associated set types. The team therefore recommends that the client fishery investigates whether more can be done to reduce the mortality-upon-release for marine mammals encountered by the fishery (with particular attention to these species) and/or reduce marine mammal encounters altogether.

5 Traceability and eligibility

5.1 Eligibility date

The eligibility date is the date of certification.

5.2 Traceability within the fishery

All vessels in the Unit of Certification (UoC) complete electronic fishing logs indicating the following:

- Name of the vessel, country of registration, registration number, and international radio call sign;
- Trip information: Port or place of departure, date of departure, port or place of unloading, date of arrival in port;
- Activity: To be reported for each set and for days on which no sets were made, from the start of the trip to the end of the trip. Activities should include “a set”; “a day searched, but no sets made”; “no fishing — in transit”; “no fishing — gear breakdown”; “no fishing — bad weather”; and “no fishing — in port”;
- Date of start of set, time of start of set and time of end of set;
- Position of set;
- School association;
- Weight of fish caught per set by species.

All logbooks are electronic and are communicated on a regular basis to the flag state, in this case FSM, within 15 days of the end of each trip (CMM 2013-05) and all the UoA vessels are equipped with a Vessel Monitoring System (VMS). Although the UoCs are limited to the FSM EEZ and High Seas, the vessels may fish in other PNA waters, which are outside the UoC area.

After completion of each set, the fish are brailed onto the vessel, after which they go directly through the conveyor belt into the fish well tanks with cold brine water for immediate cooling and freezing. For each set, the well numbers are recorded on the vessel’s SPC/FFA regional purse seine logsheet, together with the quantities and species stored. There is no on-board processing. Once placed in the hold, species are stored together and no handling of the fish takes place until after landing, during offloading or at the canneries. For certain trips, both Da Yang and CFC adhere to the traceability requirements laid out by PNA as part of the MSC certified PNA Western and Central Pacific skipjack and yellowfin, unassociated / non FAD set, tuna purse seine fishery. However, these traceability requirements and associated procedures do not apply outside the scope of the PNA MSC certificate. In the context of this assessment, a single fishwell / tank may contain fish from different set types (associated or unassociated), or fishing areas (including those outside the UoC) which are the main traceability risks identified. This is further discussed in the table below.

At the end of each trip, the catch may be offloaded in ports throughout the Western Central Pacific region, including:

- Pohnpei, Kosrae (FSM)
- Majuro (Republic of the Marshall Islands)
- General Santos (Philippines)

- Honiara, Noro (Solomon Islands)
- Funafuti (Tuvalu)
- Christmas Island (Australia)
- Apia (Samoa)
- Pago Pago (American Samoa)

Offloading consists of in-port transhipment where the catch is transferred from the fishing vessel onto a container vessel for onward transport. As members of WCPFC these countries have adopted CMM 2017-02 which requires each CCM to designate ports for the purposes of inspection through the provision of a list of its designated ports to WCPFC, ensure that fisheries inspections are undertaken by Government authorized inspectors, carry out inspections on any foreign longline, purse seine or carrier vessel that enters their designated ports and when a CCM has reasonable grounds to believe that a vessel has engaged in IUU fishing or fishing related activities in support of IUU fishing and is seeking entry into or is in the designated port of another CCM, it may request that CCM to inspect the vessel or take other measures consistent with the CCM's port state measures.

Offloading records and logsheets ensure that product can be traced back to the vessel and trip, although not necessarily to set type or geographical area of capture (i.e. the two main traceability risks identified, as discussed in the table below). After landing, the product is loaded into containers aboard a reefer bound for canneries in *inter alia* China, Vietnam, Ecuador, and Thailand. Ownership changes when the reefer reaches its destination. Although a single vessel usually tranships to its own designated containers, this is not always the case. Therefore, some containers may contain product from multiple vessels. In those cases, the separation systems in place are audited by a third party, SGS, as part of an MSC CoC certificate; however this is not explored in further detail here.

Conclusion for product eligibility to be sold as MSC certified: Product caught by the vessels registered in Table 9 are strictly controlled, as detailed in the above paragraphs. The catch location in MSC certified areas is verifiable through VMS and logbook data. The conclusion of the team is that the product conforming to the UoAs by the vessels listed in Table 9 should be eligible to carry the MSC ecolabel.

Table 7. Traceability within the fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? 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.	No, only purse seine gear is used aboard the UoC vessels. All set types are covered by the UoC. Minimal risk. Note: a variation request (VR) was approved by MSC on the 8th March 2021, against the following FCP v2.1 clauses: • 7.9.1.1 The CAB shall confirm that systems allow the fishery client to trace back to the UoC any fish or fish products sold as MSC certified; • 7.9.1.2 The CAB shall confirm that the fishery client maintains appropriate records to demonstrate the traceability back to their UoCs of certified fish or fish products. The VR requested that for the Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery, the systems allow the fishery client to trace product back to the certified fishery, rather than individual UoCs. The VR was approved subject to the following conditions: • This variation is only in effect as long as the Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery holds a valid MSC fishery certificate for all currently certified UoCs; • The fishery client assumes the risks to product eligibility in the event that one or more of the UoCs no longer holds a valid certificate; • This variation shall only be valid for the duration of the duration of the certificate (i.e. 5 years); • This variation shall not be taken as a precedent for similar situations in the future. • The MSC reserves the right to revoke or amend this variation at any time with 14 days' notice provided in writing.
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, please describe: If this may occur on the same trip; How any risks are mitigated.	Yes, although the UoCs (in this case, the 'certified fishery' as per the MSC variation request above) are limited to the FSM EEZ and High Seas, the vessels may fish in other PNA waters which are outside the UoC (or certified fishery) area. There are no on-board systems in place which segregate fish by fishing area, as a single well may contain fish from different geographical areas, including those not covered by the UoCs (or certified fishery). There are two scenarios that mitigate this risk: 1) CoC starts at the point of landing; however, any trips that also include sets outside the FSM EEZ or High Seas shall be classed as non-MSC.

Factor	Description
	2) CoC starts at the point of catch, at vessel level.
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. Transport Storage Processing Landing Auction If Yes, please describe how any risks are mitigated.	Although the species are stored together in the fish wells on-board the vessels, sorting happens after landing at the transhipment ports, either initially during offloading or when the product arrives at the canneries, prior to processing taking place. Bigeye, yellowfin and skipjack are morphologically distinct species and are unlikely to be substituted with each other or with other species after landing. This risk is considered minimal. In-port transhipment occurs where the catch is offloaded onto a cargo vessel (reefer). For the purpose of this assessment, this is considered the point of landing. This process may take place in Pohnpei, Kosrae (FSM), Majuro (Republic of the Marshall Islands), General Santos (Philippines), Honiara, Noro (Solomon Islands), Funafuti (Tuvalu), Christmas Island (Australia), Apia (Samoa) and Pago Pago (American Samoa). As members of WCPFC these countries have adopted CMM 2017-02 which requires each CCM to designate ports for the purposes of inspection through the provision of a list of its designated ports to WCPFC, ensure that fisheries inspections are undertaken by Government authorized inspectors, carry out inspections on any foreign purse seine or carrier vessel that enters their designated ports and when a CCM has reasonable grounds to believe that a vessel has engaged in IUU fishing or fishing related activities in support of IUU fishing and is seeking entry into or is in the designated port of another CCM, it may request that CCM to inspect the vessel or take other measures consistent with the CCM's port state measures. 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 determine whether the trip was carried out inside the UoC area. Although a single vessel usually tranships to its own designated containers, this is not always the case. Therefore, some containers may contain product from multiple vessels. In those cases, the separation systems in place are audited by a third party, SGS, as part of an MSC CoC certificate; however this is not explored in further detail here.
Does transhipment occur within the fishery? 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;	There is no at-sea transhipment. The risk of mixing during in-port transhipment is discussed above.

Factor	Description
How any risks are mitigated.	
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	Western Central Pacific skipjack, yellowfin and bigeye are fished by many fleets many of which are not MSC certified. The certificate is being published with a schedule of the UoC vessels.

5.3 Eligibility to enter further chains of custody

As explained in the previous section, a variation request has been approved for this fishery which means that the traceability systems can allow the fishery client to trace product back to the certified fishery, rather than individual UoCs. The risk of substitution between catches from within and outside the UoC (or certified fishery) areas remains non-negligible, however. 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 FSM EEZ or High Seas shall be classed as non-MSC.

The team considered that the procedures described above, in conjunction with the 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 UoC (or certified fishery) areas, traceability back to the fishery can be demonstrated up to the point of landing (i.e. offloading of the fishing vessels onto reefer vessels). In this scenario, Western Central Pacific skipjack, yellowfin and bigeye caught by the vessels listed in Table 9 within the FSM EEZ and High Seas 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 point in the supply chain.**

2) CoC starts at the point of catch, at vessel level, where trips also include sets outside the UoC (or certified fishery) areas. Western Central Pacific skipjack, yellowfin and bigeye caught by the vessels listed in Table 9 within the FSM EEZ and High Seas 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.**

The certificate will be published along with information on which vessels are CoC certified, together with the relevant CoC numbering. At the time of drafting, the client had indicated that CoC certification would be pursued for its entire fleet. Regarding a potential conflict between this fishery and any supply to the certified PNA fishery, if the companies were to make use of the PNA CoC certificate, they will need to declare that trip to PNA (prior to the trip taking place) in order to get a unique PNA identifier. It should therefore be possible to trace catch back to either fishery, with the vessels in both having separate MSC CoC.

5.4 Non-eligible product

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.

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

There are no IPI catches in this fishery. Not applicable.

6 Scoring

6.1 Summary of PI Level Scores

Table 8. Performance Indicator scores. UoAs 1, 3, 5: unassociated sets; UoAs 2, 4, 6: associated sets (see Table 3 for detail)

Principle	Component	Wt	Performance Indicator (PI)		Wt	Skipjack		Yellowfin		Bigeye	
						UoA 1	UoA 2	UoA 3	UoA 4	UoA 5	UoA 6
One	Outcome	0.33	1.1.1	Stock status	0.5	100	100	100	100	90	90
			1.1.2	Stock rebuilding	0.5	N/a	N/a	N/a	N/a	N/a	N/a
	Management	0.67	1.2.1	Harvest strategy	0.25	70	70	70	70	70	70
			1.2.2	Harvest control rules & tools	0.25	60	60	60	60	60	60
			1.2.3	Information & monitoring	0.25	90	90	80	80	90	90
			1.2.4	Assessment of stock status	0.25	95	95	95	95	90	90
Two	Primary species	0.2	2.1.1	Outcome	0.33	100	100	100	100	100	100
			2.1.2	Management strategy	0.33	85	85	85	85	85	85
			2.1.3	Information/Monitoring	0.33	95	95	95	95	95	95
	Secondary species	0.2	2.2.1	Outcome	0.33	80	80	80	80	80	80
			2.2.2	Management strategy	0.33	80	80	80	80	80	80
			2.2.3	Information/Monitoring	0.33	85	85	85	85	85	85
	ETP species	0.2	2.3.1	Outcome	0.33	85	80	85	80	85	80

Principle	Component	Wt	Performance Indicator (PI)		Wt	Skipjack		Yellowfin		Bigeye	
						UoA 1	UoA 2	UoA 3	UoA 4	UoA 5	UoA 6
			2.3.2	Management strategy	0.33	85	80	85	80	85	80
			2.3.3	Information strategy	0.33	90	70	90	70	90	70
	Habitats	0.2	2.4.1	Outcome	0.33	80	70	80	70	80	70
			2.4.2	Management strategy	0.33	90	70	95	70	95	70
			2.4.3	Information	0.33	95	75	80	75	80	75
	Ecosystem	0.2	2.5.1	Outcome	0.33	100	80	100	80	100	80
			2.5.2	Management	0.33	80	80	80	80	80	80
			2.5.3	Information	0.33	95	95	95	95	95	95
Three	Governance and policy	0.5	3.1.1	Legal &/or customary framework	0.33	85	85	85	85	85	85
			3.1.2	Consultation, roles & responsibilities	0.33	85	85	85	85	85	85
			3.1.3	Long term objectives	0.33	90	90	90	90	90	90
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.25	90	90	90	90	90	90
			3.2.2	Decision making processes	0.25	80	80	80	80	80	80
			3.2.3	Compliance & enforcement	0.25	65	65	65	65	65	65
			3.2.4	Monitoring & management performance evaluation	0.25	90	90	90	90	90	90

6.2 Fishery overview

6.2.1 The client fishery

The fishery under assessment is represented by three separate companies: Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC) is a significant contributor to the FSM economy, employing between 100 to 200 staff in Pohnpei and Kosrae in various secondary processing and ancillary activities. Note, however, that FZLC currently has no vessels active in the fishery. Caroline Fisheries Corporation (CFC) operates fully out of Pohnpei, Federated States of Micronesia. The company was founded in 1990 as a three-way joint venture between the State of Pohnpei, the FSM National Fisheries Corporation, and an Australian fishing company to purchase and manage three small purse seiners. CFC is now privately-owned with a fleet of six vessels. The company aims to operate as much as possible within FSM waters although vessels will also fish in the adjacent High Seas and other PNA EEZs. CFC also own port facilities and warehouses in Pohnpei, some of which in partnership with Pohnpei state government. The company employs approximately 100 employees in FSM. Da Yang Seafood (DYS) are a younger company, established in 2015. As of 2019, its vessels transferred their flag from Papua New Guinea (PNG) to FSM. Although not all vessels in the UoA are owned by DYS, all vessels listed operate under Standard Operating Procedures laid out by DYS. DYS are based in Oregon, USA but have local FSM-based staff as well as a long-term lease at the port of Kosrae (FSM) where they plan to build cold storage and processing facilities[1]. As for CFC, the vessels fish in the FSM EEZ, High Seas and other PNA EEZs not covered by this assessment.

For CFC and DYS, the purse seine fishery in FSM and WCPFC High Seas is prosecuted by the FSM-flagged vessels as shown in Table 9. There are twelve vessels in the Unit of Certification (considered representative of the Unit of Assessment). No support (or supply) vessels are used in this fishery.

Table 9. List of vessels in the UoA as verified on the WCPFC register of vessels. All are listed as fully compliant with ISSF best practice as shown on the ISSF Proactive Vessel Register (https://iss-foundation.org/knowledge-tools/databases/proactive-vessel-register/). *Da Yang Seafood Limited is the trader & license holder for these vessels.

F/V name	Registration number	LOA (m)	Owner
Melissa	VR0114	68.83	Caroline Fisheries Corporation
Nanmadol	VR0144	62.4	Caroline Fisheries Corporation
Marielle	VR0165	61	Caroline Fisheries Corporation
Caroline I	VR0145	77.16	Caroline Fisheries Corporation
Queen Mary	VR0060	46.02	Caroline Fisheries Corporation
Trinidad III	VR0061	46.02	Caroline Fisheries Corporation
Pacific Journey No.8	VR0164	70.8	Kosrea Best Fishery Limited*
Pacific Journey No.101	VR0166	70.8	Great Ocean Seafood FSM Limited*
Pacific Pursuit 107	Under construction		LS FSM Fishery Limited*
Pacific Pursuit 777	Under construction		Pacific Journey Development Limited*
Cromwell 101	VR0171	73	Ascension Fishery Incorporated Company*

[1] http://www.dayangseafoods.com/we-believe-in-kosrae.html

Cromwell 1	VR0172	70.8	Ascension Fishery Incorporated Company*

The Principle 1 target species in this fishery are Western Central Pacific skipjack, yellowfin and bigeye. A detailed overview of the fishery's catch profile is given in Section 6.2.4. The fishery, as defined by the UoA, operates in the Exclusive Economic Zone of the Federated States of Micronesia (FSM) as well as the High Seas. The vessels may also fish in other PNA waters, which are not covered by this assessment (as shown in Figure 1 for the entire FSM purse seine fleet). Note that commercial purse seining for tuna is not permitted in waters up to 24nm from any FSM islands – these waters are instead reserved for domestic resource exploitation.

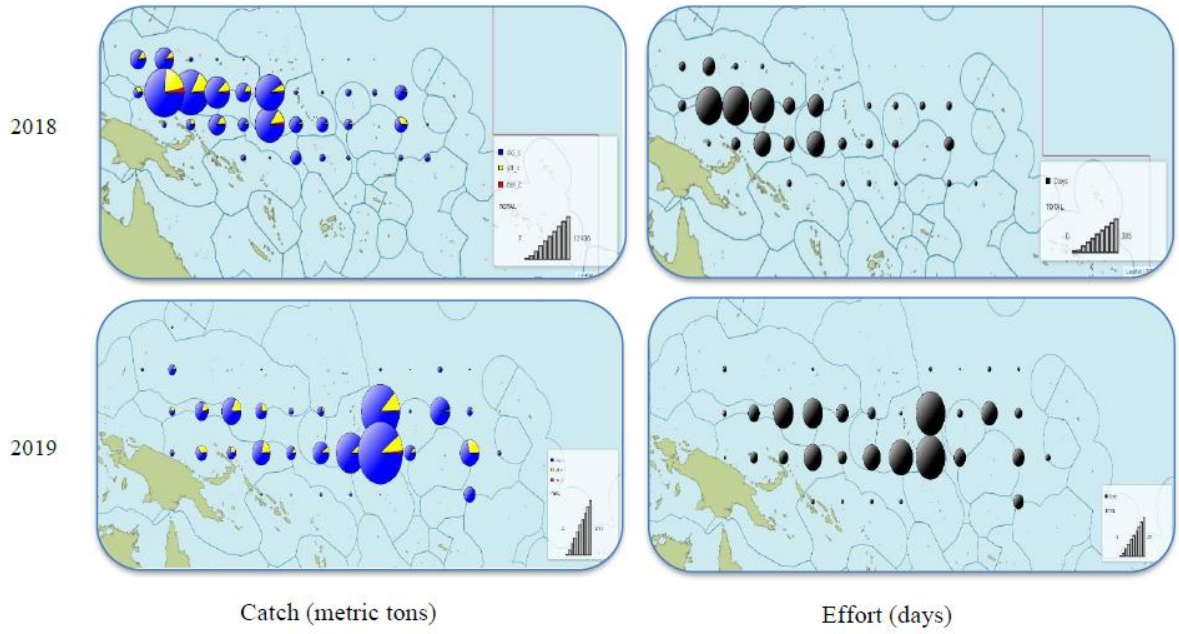


Figure 1. Annual distribution of FSM purse seines in the WCPFC convention area in 2018 and 2019 by catch (metric tonnes; blue – skipjack, yellow – yellowfin, red - bigeye) and effort (days). Note that the figures depict catch and effort for all FSM flagged purse seines, not just the UoA. From NORMA (2020)**.**

The fishery either sets on free-swimming schools of fish not associated with any floating object (free schools – UoAs 1, 3, 5), or around floating objects (UoAs 2, 4, 6), nowadays predominantly artificial, satellite-tracked buoys known as fish aggregating devices (FADs) although these can also be natural objects such as logs, whales or whale sharks (although setting on the latter two is prohibited in the UoA – see Section 6.7.3). Approximately 15 to 30 sets are carried out per trip, with a trip generally lasting 20 to 30 days. A single trip may include both free-school and associated sets and there is no company policy that prioritises one set type over another; fishing strategies are instead determined on an *ad hoc* basis by factors such as fish aggregating behaviour, the fishing grounds and management (e.g. whether a FAD closure is in place). However, in general, captains prefer to target free schools, which lead to more homogenous catch composition in terms of species and sizes. The purse seines are equipped with floats along the top line and a weighted lead line. A purse cable on the bottom of the gear allows the pursing of the net around shoaling tuna. Free schools are identified through a combination of oceanographic data, radar showing seabird distribution, activity on the sea surface and sonar, while FAD buoys transmit data via satellite to the vessel, including echosounder data; note that these may also be attached to naturally occurring drifting floating objects such as logs. In general, 15-20 minutes separate net deployment from pursing. When the net volume has been sufficiently reduced, the tuna are brought onboard by a brailer, placed on the upper deck for initial sorting (this is when the large specimens of sharks and other unwanted catch are removed) and dropped down

into a chute which goes straight to the designated wells with cold brine water for immediate cooling and freezing. On-board storage of the catch is discussed further in the Traceability Section (Section 5). All drifting FADs used in this fishery (this may include natural floating objects) are equipped with satellite buoys to enable real-time tracking of their position. The FADs typically reach up to 50 – 100m depth. In accordance with WCPFC requirements (CMM 2020-01), lower-entanglement risk/lesser entangling FADs are used which have a subsurface structure that consists of sausage nets or small-mesh curtain nets (Figure 2). These designs were introduced to prevent accidental entanglements of turtles and sharks, although entanglements may still occur when the sausage nets unravel as the FADs degrade over time (ISSF, 2019). FAD design is monitored by observers and recorded in the Gen-5 form (under FAD materials and attachments), and as all UoA vessels are listed on the ISSF Proactive Vessel Register, this is also subject to periodic audits by an independent, third-party auditor pursuant to the current ISSF PVR Audit Protocols[2]. Finally, photographic evidence was provided to the audit team to further demonstrate compliance with this measure. Within the client group, CFC have been testing biodegradable FADs. The company is currently involved in a joint project with ISSF conducting BIO-FAD tests with 2 different FAD type designs, both of which are non-entangling. One consists of steps of canvas and the other is a box made of bamboo and canvas that is hoisted to about 40-60 meters in depth. Trials thus far have identified some issues[3] as the materials used are not sufficiently durable; however, CFC are planning on deploying 27 more biodegradable FADs with new specifications in the first half of 2021.

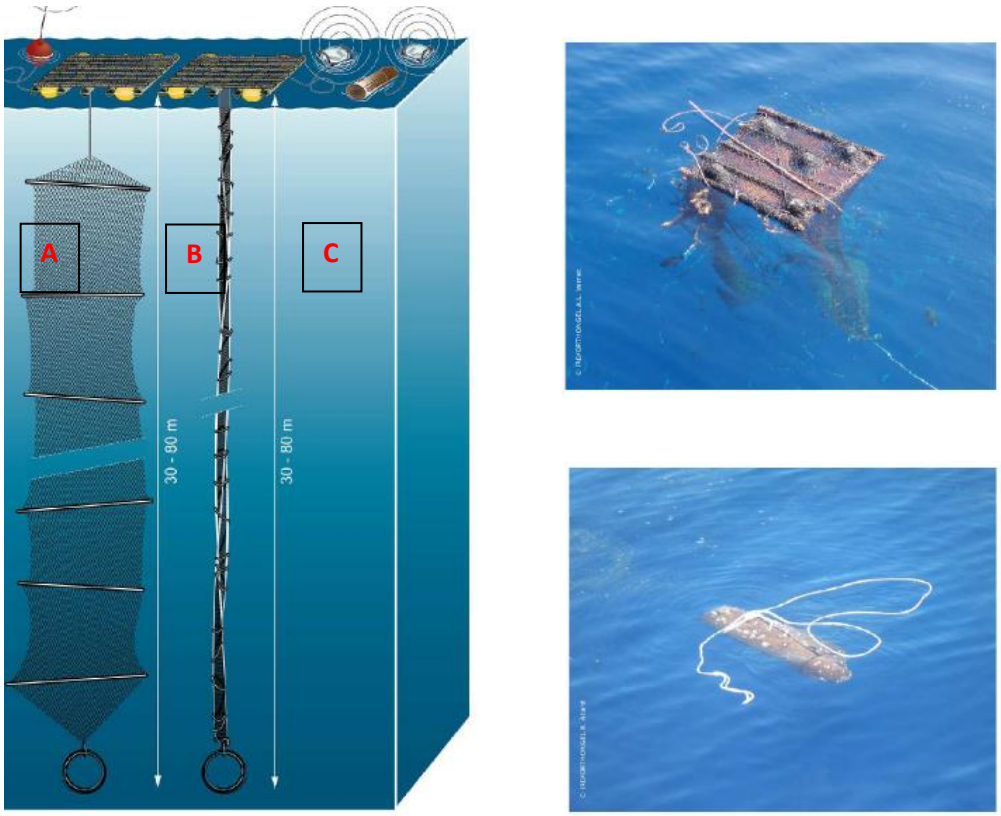


Figure 2. Description of the structure and design (in the water column) of fish aggregating devices (FADs) used in purse seine fisheries including artificial rafts with a sea anchor made of 'curtain' nets (left A) or 'sausage' nets (left B and top right) and natural logs (left C and bottom right). From Imzilen et al. (2019)**.**

[2] https://iss-foundation.org/pvr-terms-and-conditions/

[3] ISSF comment (dated June 2021) : From a point of view of developing more sustainable fishing technology, the initial trials were very successful as they allowed for the identification of critical changes that needed to be implemented. These changes will be trialed in a second phase that is starting now.

The number of FADs deployed per year varies by company; however, for both companies combined approximately 1,400 FADs were deployed in 2020 based on buoy data. The number of FAD buoy and FAD deployments is currently not being reported to the management authorities, although through the PNA FAD tracking trial programme (which relies on voluntary submission of FAD buoy data to the PNAO by the client group – see Section 6.7.4), an estimate of FAD satellite buoys deployed in the FSM EEZ for both companies during 2019 could be obtained (Figure 3). It is important to note that these data represent when a new buoy (as indicated by its unique buoy ID number) enters the fishery in the FSM EEZ. If buoys are moved between multiple FADs (deployed or not by the client fishery – noting that it is prevalent practice for the purse seine industry to exchange control over dFADs by exchanging the attached satellite buoy (FAO, 2018)), this will not be accounted for in the data. Furthermore, the data cover the FSM EEZ only; high seas deployments are not included. These data are difficult to reconcile with the 2020 buoy data provided by the client to the team, and this is discussed further in the Principle 2 section of this report.

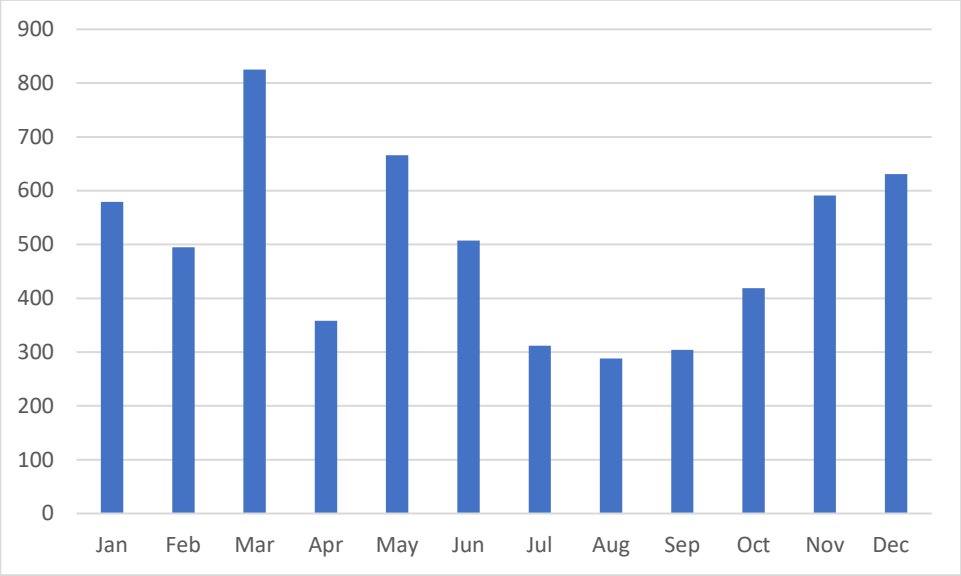


Figure 3. Total number of DYS/CFC FAD buoys deployed per month during 2019 in the FSM EEZ according to the PNA FAD tracking programme. Data based on transmitted locations and time stamps from buoys attached to drifting FADs in the FSM EEZ. Buoy redeployments (where a buoy is transferred onto another FAD) are not accounted for. Data provided by the PNAO.

6.2.2 Fishery Improvement Project (FIP)

Within the client group, Da Yang participates in the Western and Central Pacific Ocean tuna - purse seine (Thai Union) FIP. The comprehensive FIP was launched in August 2019 and is made up of a fleet of 33 tuna purse seine vessels, flagged either to USA, Republic of Korea, Taiwan, Papua New Guinea, Kiribati, Nauru or the Federated States of Micronesia. The vessels fish in the WCPO for the three tropical tuna species (with most of the catch being made up of skipjack). They deploy FADs, and fish on FADs and other floating objects, as well as setting on free schools. The FIP has the following objectives (FisheryProgress, 2020):

- Achieve sustainable stock status for tuna that is consistent with the Maximum Sustainable Yield (MSY) and management systems strengthened to achieve this;
- To improve the availability of accurate data on catches, retained and especially bycatch by strengthening information systems and training;

- To collaborate with other institutions working on tuna fisheries issues in the country, including working together to improve the management and policy towards sustainable fisheries for example Harvest Control Rules;
- Strengthen ETP and retained species management strategies;
- To promote traceability to ensure that the origins and status of Tuna products purchased are well-known and all coming from legal fisheries by engaging the supply chains that support improvement through the implementation of e-monitoring;
- Improve governance and decision making process and
- Achieve MSC certification and the objectives above by 2024.

The FIP remains ongoing.

6.2.3 Management framework

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.

At the sub-regional level, there are three key organisations relevant to this fishery – the Parties to Nauru Agreement (PNA) (which includes the Federated States of Micronesia (FSM)), the Pacific Community (SPC) and the Forum Fisheries Agency (FFA).

At the national level, FSM is responsible for the management of the fisheries where the UoA fishery operates in its Exclusive Economic Zone (EEZ).

High Seas areas of the WCPO are managed by the Distant Water Fisheries Development Act (DWFDA). In order to fish in the High Seas, a permit must be obtained for each vessel which is valid for five years. Article 13 of the DWFDA outlines the rules for vessels engaged in distant water fisheries to observe and includes complying with "regulations made by international fisheries organisations for the conservation and management of resources and international standards regarding fisheries in high seas." Therefore, tuna fishing vessels must adhere to relevant WCPFC conservation management measures (depending on the High Seas area where fishing vessel activities occur), which apply equally inside the EEZs and on the High Seas.

Within FSM, the National Oceanic Resource Management Authority (NORMA) is responsible for the development and management of the marine resources within FSM. Title 18 of the FSM Code establishes the jurisdiction of NORMA as the territorial sea from 12nm from the island baselines within its EEZ while the Marine Resources Department in each state, Pohnpei, Kosrae, Chuuk and Yap, has jurisdiction over the territorial sea from the high-water mark to 12nm.

To manage the tuna resources within the EEZ, NORMA operates under Title 24. Marine Resources of the FSM Code, a comprehensive framework for fisheries management, which stipulates the rights and authority regarding fishery resources. Additionally, the Management Plan on Tuna Fisheries for FSM (2015) acts as a guide to NORMA to ensure the sustainable development, conservation and use of tuna resources in FSM's EEZ. NORMA is responsible for administering the Vessel Day Scheme (VDS) implemented by PNA to limit purse seine fishing effort within FSM's EEZ and those of the other eight PNA member countries. FSM has agreed to a range of binding and non-binding international treaties, concerning fisheries, which influence the domestic management framework. These include the binding UNCLOS, FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas and the signed but not ratified FAO

Agreement of Port State Measures. Other non-binding treaties include the FAO Code of Conduct for Responsible Fisheries and International Plans of Action. Operations of NORMA are carried out by the Management and Development, Research and Statistics, Compliance and Technical Projects Divisions.

The national management system's decision-making body is the Board of Directors of NORMA comprised of representatives from each state and one-at large member appointed by the President. The Board is responsible for adopting fisheries regulations, concluding domestic and foreign fishing agreements and issuing fishing permits. Management measures by the Board are based on the best scientific information available and from relevant information gathered from various sources including WCPFC, SPC, FFA and PNA. Consultations with State representatives, NGOs, industry and other stakeholders when developing and implementing management measures are conducted through the Fisheries Management Surveillance Working Group meetings, annual Fisheries Symposium workshops and informal meetings.

The MCS Section, under NORMA's Statistics, Compliance and Technical Projects Division, is responsible for the collection and entry of fishing vessel logsheet data, catch validation, transhipment reports, zone notifications and vessel control reports. Much of the compliance work within NORMA is done in tandem with the Maritime Police and the Maritime Surveillance Wing under the Department of Justice which is given power to penalize parties in breach of compliance to regulations stipulated in Title 24. The responsibilities of the Maritime Police and the Maritime Surveillance Wing include maritime surveillance of FSM's EEZ and enforcement of fisheries and maritime laws. Regular dockside inspections are conducted on commercial fishing vessels entering into ports to determine whether the vessels are compliant with the regulations.

Periodic internal and external evaluations and reviews have been conducted for key parts of the management system. Many of the provisions of Title 24 have been repealed and re-enacted since it was published in 1982, the National Tuna Management Plan has been reviewed and revised since it was implemented in 2000, the Office of the National Public Auditor has conducted audits of NORMA's management systems and the World Bank has assessed effectiveness of the fisheries enforcement and seafood safety systems.

6.2.4 Catch profiles and data availability

6.2.4.1 Logbook data

For each licensed vessel, electronic logbooks are the standard form through which data are collected. The logbooks detail purse seine set type, set timing and coordinates, and estimated weight of fish caught per set per species (mainly retained but some discards are also recorded). All logbooks are communicated on a regular basis to the flag state, in this case FSM, within 15 days of the end of each trip (CMM 2013-05). All data are entered into the SPC Tuna Fisheries Database Management System (TUFMAN 2), which enables comparison and reconciliation of the different types of data in the system (including port sampling, unloadings, observer data, packing lists, vessel activity reports and vessel position data)[4]. Note that logbook catch data are estimated during brailing and as the fish enter the wells onboard the vessels, and therefore inevitably carry a bias. Although sorting at the canneries allows for a more accurate assessment of landed catch, these data are not shared with any third parties such as SPC and WCPFC: comprehensive cannery receipts data from more than twenty processors (receiving WCPFC purse seine catch) have been provided on a voluntary basis to the WCPFC over the past 7–8 years as part of an initiative of the ISSF and their participating processing companies.

[4] https://oceanfish.spc.int/en/ofpsection/data-management/spc-members/dd/502-tufman2

Although there is clear potential for using cannery receipts data to validate/compare species and size composition breakdowns by fleet determined from observer-derived estimates, this is not straightforward (the catch from a given trip is sold to multiple processors and if some of them are not ISSF participating companies then the data sent to SPC are partial) (Williams, 2020). Cannery data are therefore not yet part of any formal reporting mechanisms. According to Williams (2020), *there has not been any increase in coverage of cannery data over recent years; despite the continued excellent cooperation of the ISSF-affiliated companies in submitting data, there remain gaps in processor/unloadings data from other sources (acknowledging there is no requirement for the provision of purse seine cannery receipt/unloading data at this stage*). The team have therefore made a recommendation regarding the submission of UoA cannery data to SPC. This is further detailed in Section 4.4.

Logbook data were provided by SPC for each UoA vessel by set type between the period 2015 – 2019. The aggregated data are summarized in Table 10 and Table 11. Note, however, that the observer data (see following section) are considered the most reliable dataset to determine fishery catch composition in the context of this assessment.

Table 10. Summary of 2015-19 SPC logbook data (in tonnes and as % of total recorded catch) for unassociated, free-school sets (UoAs 1, 3, 5) for all companies combined. The designation of species under P2 is also shown. Main species are shown in bold.

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Katsuwonus pelamis	**Skipjack tuna**	**6,587**	**2,858**	**2,845**	**1,407**	**9,228**	**89.71**	**82.26**	**88.46**	**93.68**	**85.08**	**Primary**
Thunnus albacares	**Yellowfin tuna**	**679**	**523**	**366**	**95**	**1,601**	**9.25**	**15.05**	**11.38**	**6.32**	**14.76**	**Primary**
Thunnus obesus	Bigeye tuna	76.40	93.50	5.00	0.00	17.00	1.04	2.69	0.16	0.00	0.16	Primary
Makaira nigricans	Blue marlin	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	<0.01	Secondary
Makaira indica	Black marlin	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	<0.01	Secondary
Grand Total		7,343	3,475	3,216	1,502	10,846	100.00	100.00	100.00	100.00	100.00	

Table 11. Summary of 2015-19 SPC logbook data (in tonnes and as % of total recorded catch) for associated sets (UoAs 2, 4, 6) for all companies combined. The designation of species under P2 is also shown. Main species are shown in bold.

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Katsuwonus pelamis	**Skipjack tuna**	**7,186**	**13,392**	**9,997**	**17,059**	**11,605**	**82.55**	**85.90**	**90.18**	**92.58**	**87.18**	**Primary**
Thunnus albacares	**Yellowfin tuna**	**972**	**1,278**	**804**	**1,107**	**1,356**	**11.17**	**8.20**	**7.25**	**6.01**	**10.19**	**Primary**
Thunnus obesus	**Bigeye tuna**	**545**	**914**	**283**	**259**	**347**	**6.26**	**5.86**	**2.55**	**1.41**	**2.61**	**Primary**
Elagatis bipinnulata	Rainbow runner	0.74	2.82	0.11	0.02	1.23	0.01	0.02	<0.01	<0.01	0.01	Secondary
Decapterus macarellus	Mackerel scad	0.00	2.64	0.85	0.08	0.73	0.00	0.02	0.01	<0.01	0.01	Secondary
Carcharhinus falciformis	Silky shark	0.07	0.52	0.50	0.25	0.00	<0.01	<0.01	<0.01	<0.01	0.00	ETP
Coryphaena hippurus	Common dolphinfish	0.10	0.48	0.00	0.00	0.30	<0.01	<0.01	0.00	0.00	<0.01	Secondary

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Delphinidae	Dolphins nei	0.00	0.50	0.00	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	ETP
Scombridae	Mackerels nei	0.30	0.02	0.00	0.00	0.00	<0.01	<0.01	0.00	0.00	0.00	Secondary
Unspecified shark		0.30	0.00	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	0.00	ETP
Balistidae	Triggerfishes, durgons nei	0.00	0.01	0.00	0.26	0.00	0.00	<0.01	0.00	<0.01	0.00	Secondary
Unspecified		0.00	0.10	0.00	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	N/a
Makaira indica	Black marlin	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	<0.01	Secondary
Acanthocybium solandri	Wahoo	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	<0.01	Secondary
Makaira nigricans	Blue marlin	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	<0.01	Secondary
Caranx sexfasciatus	Bigeye trevally	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Secondary
Sphyraena barracuda	Great barracuda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Secondary
Other		0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	<0.01	N/a
Canthidermis maculata	Rough triggerfish	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	0.00	0.00	Secondary
Grand Total		8,705	15,591	11,085	18,425	13,311	100.00	100.00	100.00	100.00	100.00	

6.2.4.2 Observer data

As a WCPFC CCM, FSM 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 (now superseded by CMM 2018-05) entered into force on 15 February 2008 and provided the basis of the rules and development of the WCPFC ROP. All purse seine vessels operating in the High Seas and national EEZs between 20°S and 20°N are required to carry observers. The requirements for this are set out in paragraphs 34 and 35 of CMM 2018-01 (now superseded by CMM 2020-01). Comparison between the logbook reported catch (Table 10, Table 11) and observed catch (Table 14, Table 15) for the three main target species provides evidence of high observer coverage levels, exceeding 50% for all years based on target species catch (Table 12). In some years, the coverage appears to exceed 100% which is likely due to the biases in the logbook data.

Table 12. Approximation of observer coverage (%) based on comparison of logbook and observed catch for target species skipjack, yellowfin and bigeye. Analysis based on UoA SPC data presented in this report.

	2015	2016	2017	2018	2019
Observed as % of logbook catch – Unassociated sets	97%	96%	60%	153%	117%
Observed as % of logbook catch – Associated sets	113%	68%	50%	84%	109%

A summary of the observer data for the unassociated, free-school sets (UoAs 1, 3, 5) and associated sets including FADs (UoAs 2, 4, 6) is presented in Table 14 and Table 15.

Note: In response to the Covid-19 pandemic, the requirements for observer coverage on purse seine vessels were suspended from April 2020 until 15 February 2021 (https://www.wcpfc.int/doc/circ-2020-125/commission-decision-extend-decisions-response-covid-19-until-15-february-2021). The implications of the reduced observer coverage cannot not yet be assessed at the time of assessment as in many cases, observer coverage will have reduced gradually, rather than immediately following the derogation, with observers completing trips during the derogation period or staying in rotation. Any scoring implications will therefore be considered as and when observer data for this period becomes available – this will likely be at the next available opportunity (e.g. surveillance), pending the successful outcome of this assessment.

6.2.4.3 Set types

According to the UoA observer data, most observed sets made between 2015 and 2019 were on associated schools, with unassociated, free-school sets representing between 14 and 47% of the observed skipjack catch. The majority of observed associated sets were made on drifting FADs followed to much lesser extent by log sets (on natural floating objects) (Table 13). Although the dataset includes sets on whales and whale sharks, these are rare events when the whale or whale shark was spotted during, not prior to the set. In all cases, the animal will have been released as per WCFPC requirements (CMMs 2011-03 and 2019-04) and ISSF best practice. The impact of the UoA on these species is discussed under Principle 2 (Section 6.7).

Table 13. Proportion of observed skipjack catch (%) by set type according to 2015 – 2019 SPC observer data for UoA fleet (all UoAs combined).

Year	Unassociated	Drifting FAD	Log	Other	Whale	Whale shark
2015	47	48	2	<0.1	3	<0.1

Year	Unassociated	Drifting FAD	Log	Other	Whale	Whale shark
2016	24	68	7	1	1	0
2017	27	59	11	3	0	0
2018	14	81	4	1	0	<0.1
2019	46	48	4	1	1	<0.1

Table 14. Summary of SPC observer data (in tonnes and as % of total observed catch) for unassociated, free-school sets (UoAs 1, 3, 5). The designation of species under P2 is also shown. Main species are shown in bold. ETP species encounters (in numbers) are shown in Table 28. Note: these data cover observed sets in all areas fished by the client fleet, not just the UoA area (table differs from that presented in the ACDR due to a previous error in the vessel list). No data signifies no observed catch.

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Skipjack tuna	***Katsuwonus pelamis***	**6,713**	**2,692**	**1,698**	**2,057**	**10,239**	**93.65**	**80.13**	**87.13**	**87.46**	**80.39**	**Primary**
Yellowfin tuna	***Thunnus albacares***	**419**	**614**	**238**	**220**	**2,382**	**5.84**	**18.27**	**12.23**	**9.35**	**18.71**	**Primary**
Bigeye tuna	*Thunnus obesus*	24.07	28.49	0.23	23.04	47.91	0.34	0.85	0.01	0.98	0.38	Primary
Silky shark	*Carcharhinus falciformis*	0.66	24.47	9.66	4.59	45.35	0.01	0.73	0.50	0.19	0.36	ETP
Bryde's whale	*Balaenoptera edeni*				43.00		0.00	0.00	0.00	1.83	0.00	ETP
Blue marlin	*Makaira nigricans*	3.60	0.62	0.30	0.51	3.69	0.05	0.02	0.02	0.02	0.03	Secondary
Whale shark	*Rhincodon typus*	0.72	0.25		0.15	5.63	0.01	0.01	0.00	0.01	0.04	ETP
False killer whale	*Pseudorca crassidens*	0.32			3.00	1.98	0.00	0.00	0.00	0.13	0.02	ETP
Blue whale	*Balaenoptera musculus*					5.00	0.00	0.00	0.00	0.00	0.04	ETP
Black marlin	*Makaira indica*	1.24		2.25	0.21	0.87	0.02	0.00	0.12	0.01	0.01	Secondary
Mobula nei	*Mobula* spp.	1.85			0.19	0.37	0.03	0.00	0.00	0.01	<0.01	ETP
Giant manta	*Manta birostris*	0.26	0.04		0.11	0.89	0.00	<0.01	0.00	0.00	0.01	ETP
Striped marlin	*Tetrapturus audax*	1.11			0.18	0.50	0.02	0.00	0.00	0.01	<0.01	Primary
Short-finned pilot whale	*Globicephala macrorhynchus*	1.66					0.02	0.00	0.00	0.00	0.00	ETP
Mantas, devil rays nei	Mobulidae					0.74	0.00	0.00	0.00	0.00	0.01	ETP
Common dolphin	*Delphinus delphis*					0.55	0.00	0.00	0.00	0.00	<0.01	ETP
Oceanic whitetip shark	*Carcharhinus longimanus*	0.21		0.11	0.01	0.16	<0.01	0.00	0.01	<0.01	<0.01	ETP

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Copper shark	*Carcharhinus brachyurus*					0.47	0.00	0.00	0.00	0.00	<0.01	ETP
Slender sunfish	*Ranzania laevis*	0.46					0.01	0.00	0.00	0.00	0.00	Secondary
Rough-toothed dolphin	*Steno bredanensis*					0.45	0.00	0.00	0.00	0.00	<0.01	ETP
Rainbow runner	*Elagatis bipinnulata*	0.20		0.00		0.03	<0.01	0.00	<0.01	0.00	<0.01	Secondary
Albacore	*Thunnus alalunga*	0.06			0.04	0.11	<0.01	0.00	0.00	<0.01	<0.01	Primary
Great hammerhead	*Sphyrna mokarran*	0.15					<0.01	0.00	0.00	0.00	0.00	ETP
Mackerel scad	*Decapterus macarellus*	0.05					<0.01	0.00	0.00	0.00	0.00	Secondary
Swordfish	*Xiphias gladius*				0.06		0.00	0.00	0.00	<0.01	0.00	Secondary
Wahoo	*Acanthocybium solandri*	0.02					<0.01	0.00	0.00	0.00	0.00	Secondary
Sharptail mola	*Masturus lanceolatus*					0.03	0.00	0.00	0.00	0.00	<0.01	Secondary
Green turtle	*Chelonia mydas*	0.01			0.02		<0.01	0.00	0.00	<0.01	0.00	ETP
Great barracuda	*Sphyraena barracuda*					0.01	0.00	0.00	0.00	0.00	<0.01	Secondary
Triggerfishes, durgons nei	Balistidae	0.02					<0.01	0.00	0.00	0.00	0.00	Secondary
Indo-Pacific sailfish	*Istiophorus platypterus*					0.02	0.00	0.00	0.00	0.00	<0.01	Secondary
Shortbill spearfish	*Tetrapturus angustirostris*	0.02					<0.01	0.00	0.00	0.00	0.00	Secondary
Common dolphinfish	*Coryphaena hippurus*	0.01					<0.01	0.00	0.00	0.00	0.00	Secondary
Pelagic stingray	*Dasyatis violacea*	0.01					<0.01	0.00	0.00	0.00	0.00	ETP
Frigate tuna	*Auxis thazard*			0.01			0.00	0.00	<0.01	0.00	0.00	Secondary
Unicorn leatherjacket filefish	*Aluterus monoceros*					0.00	0.00	0.00	0.00	0.00	<0.01	Secondary

Species	Tonnes					%					P2 designation
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Grand Total	7,168	3,360	1,949	2,352	12,736	100.00	100.00	100.00	100.00	100.00	

Table 15. Summary of SPC observer data (in tonnes and as % of total observed catch) for associated sets (UoAs 2, 4, 6). The designation of species under P2 is also shown. Main species are shown in bold. ETP species encounters (in numbers) are shown in Table 29. Note: these data cover observed sets in all areas fished by the client fleet, not just the UoA area (table differs from that presented in the ACDR due to a previous error in the vessel list). No data signifies no observed catch.

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Skipjack tuna	***Katsuwonus pelamis***	**7,642**	**8,521**	**4,567**	**12,943**	**12,234**	**76.96**	**79.86**	**80.64**	**83.53**	**82.07**	**Primary**
Yellowfin tuna	***Thunnus albacares***	**1,474**	**1,176**	**649**	**2,019**	**1,844**	**14.84**	**11.02**	**11.46**	**13.03**	**12.37**	**Primary**
Bigeye tuna	***Thunnus obesus***	**692**	**837**	**335**	**457**	**457**	**6.97**	**7.84**	**5.91**	**2.95**	**3.07**	**Primary**
Sei whale	*Balaenoptera borealis*					255	0.00	0.00	0.00	0.00	1.71	ETP
Rainbow runner	*Elagatis bipinnulata*	41.12	41.29	35.78	22.65	28.10	0.41	0.39	0.63	0.15	0.19	Secondary
Mackerel scad	*Decapterus macarellus*	27.89	30.75	20.72	12.78	24.44	0.28	0.29	0.37	0.08	0.16	Secondary
Silky shark	*Carcharhinus falciformis*	14.46	28.18	23.84	18.02	26.26	0.15	0.26	0.42	0.12	0.18	ETP
Rough triggerfish	*Canthidermis maculata*	6.08	15.28	12.09	4.66	3.80	0.06	0.14	0.21	0.03	0.03	Secondary
Whale shark	*Rhincodon typus*	10.05		0.20	0.50	15.67	0.10	0.00	<0.01	<0.01	0.11	ETP
False killer whale	*Pseudorca crassidens*	6.80	6.03	8.60	5.30		0.07	0.06	0.15	0.03	0.00	ETP
Common dolphinfish	*Coryphaena hippurus*	3.23	2.55	1.86	1.78	1.40	0.03	0.02	0.03	0.01	0.01	Secondary
Blue marlin	*Makaira nigricans*	1.01	2.25	1.61	1.72	2.47	0.01	0.02	0.03	0.01	0.02	Secondary
Black marlin	*Makaira indica*	1.35	1.00	0.30	0.60	1.85	0.01	0.01	0.01	<0.01	0.01	Secondary
Melon-headed whale	*Peponocephala electra*					5.00	0.00	0.00	0.00	0.00	0.03	ETP
Wahoo	*Acanthocybium solandri*	0.37	0.93	0.41	2.04	0.67	<0.01	0.01	0.01	0.01	<0.01	Secondary
Blue sea chub	*Kyphosus cinerascens*	1.20	1.99	0.78	0.24	0.18	0.01	0.02	0.01	<0.01	<0.01	Secondary
Triggerfishes, durgons nei	Balistidae	0.18	2.78	0.14	0.81	0.01	<0.01	0.03	<0.01	0.01	<0.01	Secondary

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Bryde's whale	*Balaenoptera edeni*	0.92				3.00	0.01	0.00	0.00	0.00	0.02	ETP
Rough-toothed dolphin	*Steno bredanensis*	1.87		1.00	0.75		0.02	0.00	0.02	<0.01	0.00	ETP
Indo-Pacif. bottlenose dolphin	*Tursiops aduncus*			0.05		1.70	0.00	0.00	<0.01	0.00	0.01	ETP
Mobula nei	*Mobula* spp.	0.83	0.22	0.58	0.62	0.21	0.01	<0.01	0.01	<0.01	<0.01	ETP
Giant manta	*Manta birostris*	0.05	0.08	0.02	1.18	0.81	<0.01	<0.01	<0.01	0.01	0.01	ETP
Golden trevally	*Gnathanodon speciosus*	0.15	0.01	1.15	0.66	0.04	<0.01	<0.01	0.02	<0.01	<0.01	Secondary
Black triggerfish	*Melichthys niger*			1.63			0.00	0.00	0.03	0.00	0.00	Secondary
Bigeye scad	*Selar crumenophthalmus*	0.01	1.41	0.01	0.02		<0.01	0.01	<0.01	<0.01	0.00	Secondary
Oceanic whitetip shark	*Carcharhinus longimanus*	0.28	0.06	0.11	0.63	0.22	<0.01	<0.01	<0.01	<0.01	<0.01	ETP
Bigeye trevally	*Caranx sexfasciatus*	0.53	0.12	0.38	0.07	0.19	0.01	<0.01	0.01	<0.01	<0.01	Secondary
Bottlenose dolphin	*Tursiops truncatus*				0.15		0.00	0.00	0.00	<0.01	0.00	ETP
Kawakawa	*Euthynnus affinis*	1.04		0.02	0.07		0.01	0.00	<0.01	<0.01	0.00	Secondary
Striped marlin	*Tetrapturus audax*	0.26	0.53		0.32		<0.01	<0.01	0.00	<0.01	0.00	Primary
Spinner dolphin	*Stenella longirostris*			1.00	0.10		0.00	0.00	0.02	<0.01	0.00	ETP
Great barracuda	*Sphyraena barracuda*	0.11	0.32	0.27	0.17	0.19	<0.01	<0.01	<0.01	<0.01	<0.01	Secondary
Frigate tuna	*Auxis thazard*	0.37	0.01	0.03	0.12		<0.01	<0.01	<0.01	<0.01	0.00	Secondary
Unicorn leatherjacket filefish	*Aluterus monoceros*	0.42		0.03	0.06	0.00	<0.01	0.00	<0.01	<0.01	<0.01	Secondary
Mantas, devil rays nei	Mobulidae	0.20	0.07	0.22		0.05	<0.01	<0.01	<0.01	0.00	<0.01	ETP
Copper shark	*Carcharhinus brachyurus*					0.40	0.00	0.00	0.00	0.00	<0.01	ETP

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Longfin batfish	*Platax teira*	0.17	0.00	0.04	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	Secondary
Greater amberjack	*Seriola dumerili*	0.25	0.02			0.05	<0.01	<0.01	0.00	0.00	<0.01	Secondary
Short-finned pilot whale	*Globicephala macrorhynchus*				0.30		0.00	0.00	0.00	<0.01	0.00	ETP
Slender sunfish	*Ranzania laevis*	0.30					<0.01	0.00	0.00	0.00	0.00	Secondary
Yellowtail amberjack	*Seriola lalandi*		0.21				0.00	<0.01	0.00	0.00	0.00	Secondary
Jacks, crevalles nei	*Caranx* spp.	0.06	0.01	0.10			<0.01	<0.01	<0.01	0.00	0.00	Secondary
Indo-Pacific sailfish	*Istiophorus platypterus*		0.08			0.03	0.00	<0.01	0.00	0.00	<0.01	Secondary
Sandbar shark	*Carcharhinus plumbeus*						0.00	0.00	0.00	0.00	0.00	ETP
Batfishes	*Platax* spp.		0.03	0.11			0.00	<0.01	<0.01	0.00	0.00	Secondary
Ocean sunfish	*Mola mola*					0.11	0.00	0.00	0.00	0.00	<0.01	Secondary
Minke whale	*Balaenoptera acutorostrata*	0.10					<0.01	0.00	0.00	0.00	0.00	ETP
Baleen whales nei	Mysticeti	0.10					<0.01	0.00	0.00	0.00	0.00	ETP
Cuvier's beaked whale	*Ziphius cavirostris*	0.10					<0.01	0.00	0.00	0.00	0.00	ETP
Green turtle	*Chelonia mydas*	0.00			0.02	0.06	<0.01	0.00	0.00	<0.01	<0.01	ETP
Albacore	*Thunnus alalunga*	0.01	0.02	0.03	0.02		<0.01	<0.01	<0.01	<0.01	0.00	Primary
Pelagic stingray	*Dasyatis violacea*		0.05		0.00		0.00	<0.01	0.00	<0.01	0.00	ETP
Tripletail	*Lobotes surinamensis*	0.01	0.02	0.00	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Secondary
Loggerhead turtle	*Caretta caretta*	0.01	0.03				<0.01	<0.01	0.00	0.00	0.00	ETP
Bullet tuna	*Auxis rochei*		0.04				0.00	<0.01	0.00	0.00	0.00	Secondary

Species		Tonnes					%					P2 designation
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Cottonmouth jack	*Uraspis secunda*				0.01	0.00	0.00	0.00	0.00	<0.01	<0.01	Secondary
Olive ridley turtle	*Lepidochelys olivacea*			0.02	0.02		0.00	0.00	<0.01	<0.01	0.00	ETP
Pilotfish	*Naucrates ductor*		0.02				0.00	<0.01	0.00	0.00	0.00	Secondary
Hawksbill turtle	*Eretmochelys imbricata*	0.02					<0.01	0.00	0.00	0.00	0.00	ETP
Swordfish	*Xiphias gladius*				0.02		0.00	0.00	0.00	<0.01	0.00	Secondary
Leatherback turtle	*Dermochelys coriacea*				0.01		0.00	0.00	0.00	<0.01	0.00	ETP
Scomber mackerels nei	*Scomber* spp.	0.01					<0.01	0.00	0.00	0.00	0.00	Secondary
Pacific saury	*Cololabis saira*		0.01				0.00	<0.01	0.00	0.00	0.00	Secondary
Bigeye thresher	*Alopias superciliosus*	0.01					<0.01	0.00	0.00	0.00	0.00	ETP
Sickle pomfret	*Taractichthys steindachneri*				0.00		0.00	0.00	0.00	<0.01	0.00	Secondary
Pomfrets nei	*Brama* spp.		0.00				0.00	<0.01	0.00	0.00	0.00	Secondary
Black-footed albatross	*Phoebastria nigripes*	0.00					<0.01	0.00	0.00	0.00	0.00	ETP
Antarctic giant petrel	*Macronectes giganteus*		0.00				0.00	<0.01	0.00	0.00	0.00	ETP
Beaked whales nei	*Mesoplodon* spp.						0.00	0.00	0.00	0.00	0.00	ETP
Grand Total		9,930	10,670	5,664	15,496	14,907	100.00	100.00	100.00	100.00	100.00	

6.3 Principle 1: Management and cross-cutting issues

6.3.1 Key LTL stocks

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 does 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. They are not one of the species types listed in Box SA1, nor do they feed predominantly on plankton.

6.3.2 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 stocks:

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

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 the next three sections.

6.3.3 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 16).

Table 16. Summary of various tropical tuna measures in force at WCPFC since 2014

CMM	Summary	Years in force	Perception of stock status when CMM agreed		
			Skipjack	Yellowfin	Bigeye
2013-01	First year of 4-year measure aimed in particular at reducing fishing mortality (F) on bigeye; additional measures are phased in each year	2014	Good	Good	Overfishing, may be overfished
2014-01	Second year of 4-year measure	2015	Good	Good	Overfished and overfishing
2015-01	Third year of 4-year measure	2016	Good	Good	Overfished and overfishing
2016-01	Fourth year of 4-year measure	2017	Good	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	Good (uncertain)

CMM	Summary	Years in force	Perception of stock status when CMM agreed		
			Skipjack	Yellowfin	Bigeye
2018-01	Further bridging measure. Essentially the same as 2017-01 as regards tropical tuna stock management.	Current	Good	Good	Good (less uncertain)
2020-01	Roll-over of 2018-01 for one year, due to the Covid-19 pandemic.	2021	Good	Good	Good but some signs of concern

6.3.4 Tropical tunas: Harvest strategy – current situation

A limit reference point (LRP) has been agreed for WCPO tropical tuna stocks of 20%$SB_{F=0}$, where 'current' is defined as the most recent 10-year period for which data are available for the stock assessment. For skipjack, an interim target reference point (TRP) is defined as 50%$SB_{F=0}$ on the same basis (CMM 2015-06); this is currently under review (WCPFC, 2020a). For yellowfin and bigeye, a target reference point was due to be agreed at WCPFC16 in December 2019, but the decision has been postponed until 2021.

The objective of the harvest strategy for skipjack is the TRP (CMM 2020-01, paragraph 13): *The spawning biomass of skipjack tuna is to be maintained on average at a 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.*

The objective of the harvest strategy for yellowfin and bigeye is set out in CMM 2020-01 (bigeye: paragraph 12; yellowfin: paragraph 14): *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*.

CMM 2020-01 comes into force in February 2021 when CMM 2018-01 expires. The two measures are identical, 2018-01 having been rolled over for an additional year by WCPFC17 without revision, to avoid WCPFC being without a tropical tuna management measure. CMMs 2018-01 and 2020-10 provide for a series of management measures aimed at constraining effort on tropical tunas, focusing particularly on the purse seine fishery which accounts for >80% of the catch of skipjack, ~60% of the catch of yellowfin and ~40% of the catch of bigeye (yellowfin and bigeye: 2014-16 - WCPFC (2019a); skipjack: 2018 - Vincent et al. (2019)). Also, the purse seine fishery has an added impact on SB/SB_{MSY} because it mainly takes juvenile fish.

Measures for the purse seine fishery are as follows:

- A three-month ban on deploying, maintaining or setting on Fish Aggregating Devices (FAD)s 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 Table 17; remaining countries were given until the end of 2018 to set limits);

- Non-Small Island Developing States (SIDs) (except Philippines) to set high-seas effort limits for their flag vessels for the area 20°N-20°S (see Table 18 and Table 17). 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 2020-01 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. This may also be relevant for yellowfin in as much as it restricts longline effort in general (Table 18). The CMM was evaluated by SPC in 2020 as to its likely impact on skipjack, yellowfin and bigeye stocks under various scenarios (SPC-OFP, 2020).

The vessels in the UoA are flagged to FSM and hence fish against limits for FSM. The bigeye catch limits, however, do not apply to FSM, since SIDS have an exemption (under paragraph 5 of the CMM); i.e. no bigeye catch limits apply to this UoA.

Table 17. Purse seine EEZ effort or catch limits under CMM 2020-01 (Table 1 in CMM 2020-01). Note: PNA and Tokelau manage their effort together through the VDS. (FSM is a member of PNA.)

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 (FP)	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 18. High seas purse seine effort limits and longline catch limits for relevant fishing nations under CMM 2020-01 (Table 2 and Table 3 in CMM 2020-01)

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 *

* provisional

Other measures in CMM 2020-01 are as follows:

- Paragraph 19: A requirement to use only lesser entangling FADs (introduced in CMM 2018-01 for the first time).
- Paragraph 45: Capacity of freezer purse seiners >24m operating between 20°N and 20°S is limited to the level set out in 2013-01 (and subsequent iterations), except SIDS and Indonesia; likewise freezer longliners and freshfish longliners targeting bigeye (with additional exemption for countries with a domestic quota system).
- Paragraph 46: Any replacement of purse seine vessels should not increase overall capacity.
- Paragraph 51: 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.

6.3.5 Tropical tunas: Analysis of management options

In 2017, the four-year tropical tuna measure (CMMs 2013-01 - 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 bigeye P1 Section 6.6 further on).

Since work was ongoing towards a formal harvest strategy for the tropical tuna stocks (Section 6.3.4), CCMs agreed 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, 2017). SPC repeated this analysis in 2019, based on CMM 2018-01, concluding that there are no substantive differences between 2017-01 and 2018-01 as regards the probability of the measure achieving stated objectives for the tropical stocks. The evaluation was repeated in 2020 with updated information on recent exploitation levels and new stock assessments for both yellowfin and bigeye.

For yellowfin, the new stock assessment suggests that the stock is more abundant than previously thought, and all scenarios resulted in a negligible risk of biomass falling below the LRP and F rising above F_{MSY}. For skipjack, the biomass likewise remained above the LRP in all scenarios, but scenarios

of increasing purse seine effort (both 'optimistic' and 'pessimistic') resulted in a risk of $F>F_{MSY}$ in 2048 to the order of 16-18%. For bigeye, assuming the continuation of recent relatively high rates of recruitment, biomass remained above the LRP, but under the pessimistic scenario there was a 32% probability of $F>F_{MSY}$. If long-term (lower) recruitment was assumed, at the end of a 30-year projection the risk of B<LRP ranged from 5-19% and the risk of $F>F_{MSY}$ from 37-58%, depending on the fishing scenario (SPC-OFP, 2020).

6.3.6 Tropical tunas: PNA VDS

FSM is a member of PNA and is signed up to the 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[5] for 2017-18 is 45,590, and for 2019-20 and 2020-21 is 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, 2016); see also CMM 2020-01.

A vessel day varies according to the size of the vessel. For vessels <50m 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).

6.3.7 Progress by WCPFC towards a formal harvest strategy

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 workplan was extensively discussed and revised at WCPFC16 (December 2019) and deadlines for all stocks were pushed back (WCPFC (2020b); Attachment H); this workplan was retained by WCPFC17 (WCPFC, 2020a) despite limited discussion of the issue by SC16 and WCPFC17, since SPC had reportedly made substantial progress on technical analyses. The deadline for adopting a formal HCR (now termed 'management procedure') for skipjack has been moved from 2020 back to 2022, allowing for a review of the interim TRP in 2020. For yellowfin and bigeye, the deadline for agreeing a TRP has been pushed back to 2021, with the management procedure to be finalised sometime after 2022 (the workplan ends without this being included).

6.3.8 Information gathered by FSM

Under normal circumstances, catch data from this fishery would come from four sources: logbooks, observers, monitoring of unloading / transhipment and the processing plants. Logbook and observer data are provided to the flag state (FSM) and from there to the WCPFC science provider (SPC). All offloading and transhipping in FSM would be monitored by NORMA using protocols based on the CMM

[5] RMI, FSM, Kiribati, Nauru, Palau, Papua New Guinea, Solomon Islands, Tuvalu, Tokelau

for Port State Measures (2017-02). However, during 2020 this did not happen because of the Covid-19 pandemic. A problem is that during offloading it is often not possible in the absence of sampling by inspectors to distinguish easily between juvenile yellowfin and bigeye, but reportedly this information can be obtained from the processors.

6.3.9 Total Allowable Catch (TAC) and Catch Data

There are no TACs for any of the Principle 1 stocks. UoA and regional landings data for the three stocks are shown in Table 19.

Table 19. Landings data . Total catch from WCPFC Tuna Fishery Yearbook (WCPFC, 2019a)**. 2020 data from** **https://www.wcpfc.int/doc/annual-catch-estimates-excel-files**

Year	UoA catch (t)			Total WCPO catch (t)		
	Skipjack	Yellowfin	Bigeye	Skipjack	Yellowfin	Bigeye
2016	16,250	1,801	1,007	1,797,108	640,246	149,364
2017	12,842	1,170	288	1,627,901	695,107	129,744
2018	18,466	1,202	259	1,842,147	690,207	147,985
2019	20,833	2,957	364	2,045,130	690,291	130,363

6.4 Principle 1: Skipjack

6.4.1 Skipjack biology and stock definition

Except where otherwise noted, this section is taken from McKechnie et al. (2016), Vincent et al. (2019) and references therein.

Growth and reproduction: Skipjack (*Katsuwonus pelamis*) are the smallest and fastest growing of the main commercial tuna species, generally not exceeding 20kg. The longest period at liberty for a tagged skipjack is *ca*. 4.5 years. Maturity is reached at 40-50cm (which may be aged approx. 1 year, depending on the area). Spawning seems to be related to food supplies rather than to a particular season. In the Pacific, it appears that growth varies spatially, being quicker close to the equator than in peripheral areas, although the stock assessment assumes a single Von Bertalanffy (VB) growth curve across all regions.

Distribution and movement: Skipjack are found in tropical and subtropical waters in all oceans. In the Pacific, warm currents extend skipjack distribution seasonally to about 40°N and S off the coasts of Japan and Australia, but greatest abundance remains in equatorial waters, roughly corresponding to surface waters >20°C. Skipjack movement can be inferred from tagging, and seems to be highly variable, most likely driven by oceanographic conditions and processes. In some years since 2012 there appears to have been a significant eastward shift in the centre of biomass towards the eastern equatorial region, perhaps due to strong El Niño Southern Oscillation (ENSO) conditions. According to Aoki et al. (2017), skipjack are likely to spawn in tropical areas, with a proportion of juveniles migrating through subtropical regions to the temperate extremes of the distribution in search of good feeding areas.

Stock: Skipjack in the WCPO are considered to comprise a single stock for assessment and management purposes. A recent review of both genetic and non-genetic data on skipjack stock structure (Moore et al., 2018) suggests some evidence for stock structuring at finer scales than this, although the details remain opaque. There is not good evidence for multiple distinct populations (e.g. if there were spawning site fidelity) but the authors suggest isolation by distance at a smaller scale than the entire ocean basis, or alternatively a metapopulation structure. These hypotheses are not sufficiently concrete to provide a means of redesigning the stock assessment structure, but at least the existing regional structure of the stock assessment allows for some differences in dynamics within the WCPO.

6.4.2 Skipjack stock status

The most recent stock assessment was conducted in 2019 (Vincent et al., 2019). It concludes that the stock biomass has declined since the mid-2000s, while fishing mortality has increased on both juveniles and adults. The model was run with two different regional structures (8 regions vs 5 regions) and the 8 region structure was found to provide a more optimistic picture of stock status; however, both model structures estimated that the stock biomass was above the Limit Reference Point (LRP) and fishing mortality below F_{MSY} with high probability. SC15 agreed to use to 8-region model for management advice since they considered that it represents skipjack spatial dynamics better. Biomass depletion was estimated at 44% of $B_{F=0}$ (median, 8 regions), suggesting that the biomass is below the agreed interim Target Reference Point (TRP) of 50%$B_{F=0}$ with approximately 85% probability (considering only variance within the model) (WCPFC, 2019b). However, the spawning biomass producing MSY was estimated to be at 17.6% of the unexploited population, therefore, the ratio SB_{latest}/ SB_{MSY} was estimated at 2.382 (see Table 20; (WCPFC, 2019b)).

Based on the 8-region model, stock status is described in a 54-model uncertainty grid Table 20, reflecting the substantive sensitivity runs undertaken in the stock assessment (see Section 6.4.5 further on). The Majuro plot for the 8-region model is shown in Figure 4.

Table 20. Skipjack: Summary of stock status in relation to reference points across the structural uncertainty grid for the 8-region model; F_{recent} = average fishing mortality 2014-17; SB_{recent} = average spawner potential 2015-18; SB_{latest} = spawner potential 2018 (Source: Table SKJ-02 in SC15 report; (WCPFC, 2019b)**)**

Ratio	Median estimate	10%ile	90%ile
F_{recent}/F_{MSY}	0.447	0.343	0.600
$SB_{recent}/SB_{F=0}$	0.440	0.372	0.530
SB_{recent}/ SB_{MSY}	2.579	1.892	3.613
$SB_{latest}/SB_{F=0}$	0.415	0.360	0.487
SB_{latest}/ SB_{MSY}	2.382	1.779	3.356
$SB_{MSY}/SB_{F=0}$	0.176	0.131	0.225

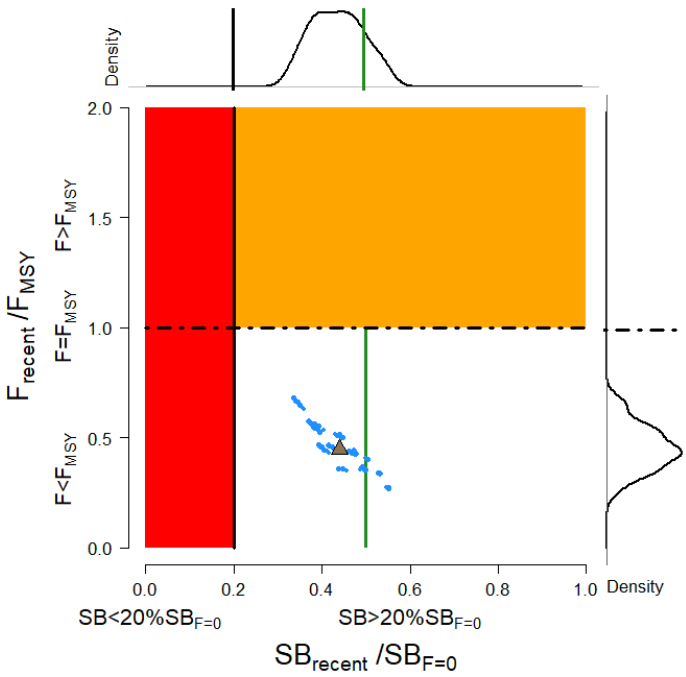


Figure 4. Majuro plot for recent skipjack spawning potential (2015-18) for each of the models in the structural uncertainty grid. Blue dots show the results of each model run and the triangle shows the median of all runs. Red area is below the LRP; green line shows the interim TRP, orange area is F above F_{MSY}. The distribution of model results in terms of F and SB are shown at the top and right-hand side (Source: Figure SKJ-09 in SC15 report; (WCPFC, 2019b)**).**

6.4.3 Skipjack stock status projections

Vincent et al. (2019) provide projections for spawner depletion for skipjack to 2050, based on 2016-2018 average fishing levels. The projections suggest that biomass will stabilise well above the LRP – and therefore above the MSY level since SB_{MSY} is estimated to be below the LRP (see Table 20 above; SB_{MSY} estimated at 17.6% of $SB_{F=0}$ (median) while LRP is 20%$SB_{F=0}$), but cannot regain the TRP biomass at this level of fishing effort (Figure 5).

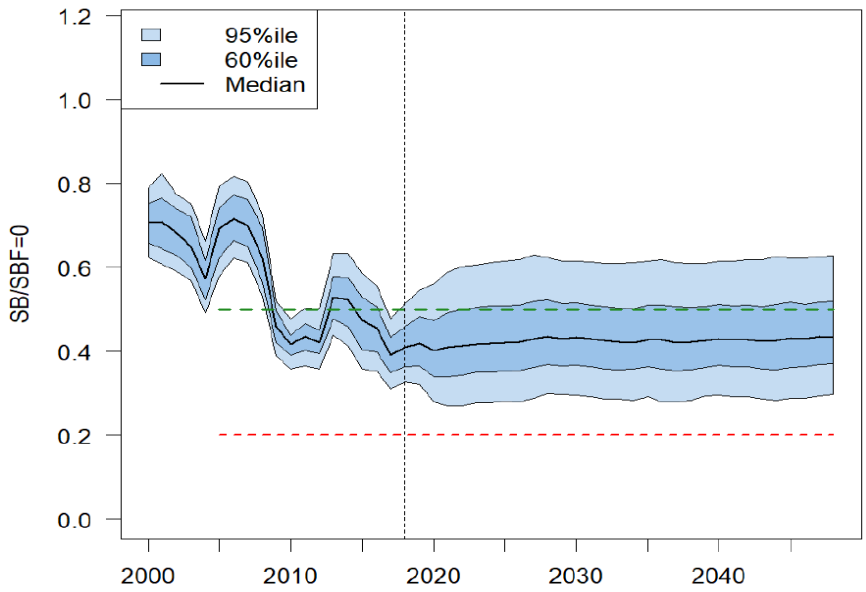


Figure 5. Skipjack: Projections of spawner biomass relative to SBF=0 to 2050, assuming average fishing levels 2016-18. Green dashed line = TRP, red dashed line = LRP (Source: Figure A9 in Vincent et al. (2019)**).**

6.4.4 Skipjack information available for stock assessment

The stock assessment report (Vincent et al., 2019) provides a full description of the data sources used, from which the summary in this section is taken unless otherwise indicated.

It is clear that there will be an information gap for the fishery in 2020 due to covid, with few observer deployments and limited port sampling Pacific-wide. However, the stock assessment runs to the end of 2018, so this information gap is not yet felt in stock assessment and management advice.

Fisheries: The stock assessment defines 36 'fisheries' according to fishing gear and method (purse seine (associated vs. unassociated), pole-and-line, longline and various miscellaneous small-scale fisheries in Indonesia and the Philippines), as well as by region and by nationality for Philippines, Indonesia, Vietnam and 'distant water'.

The information provided from each fishery is summarised in the graphic below (Figure 6; from Vincent et al. (2019)). Recent and historical catch data are available from nearly all the fisheries. Standardised Catch per Unit Effort (CPUE) is mainly evaluated from pole-and-line fisheries, which is a concern for the assessment since the proportion of catch taken by these fisheries is shrinking and their catch may no longer be large enough for robust statistical standardisation in some areas. Size data are available generally as weight for the longline fisheries and length (from port sampling) for the other gear types.

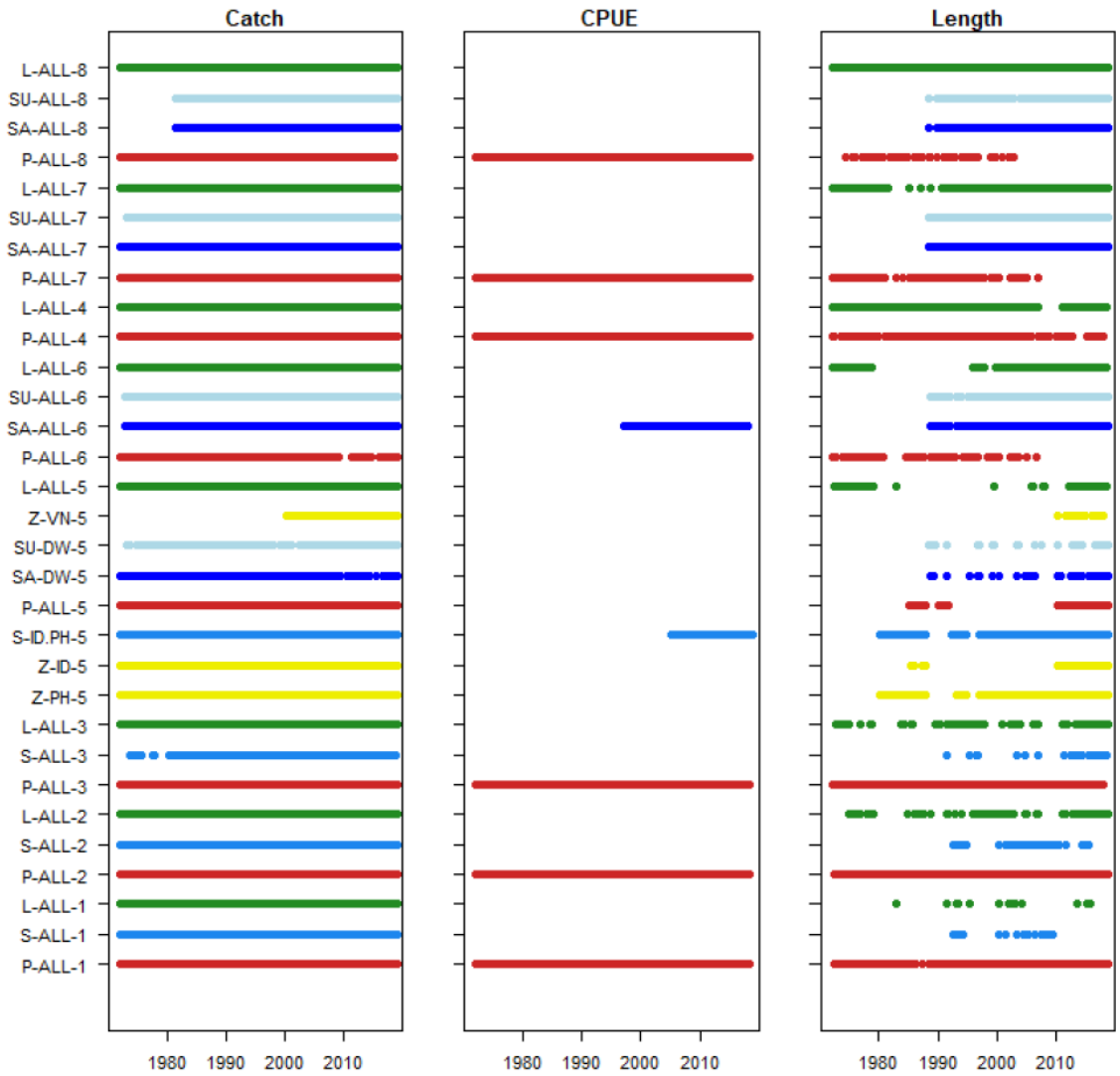


Figure 6. Skipjack: Catch, standardised CPUE and length-frequency data availability by fishery (as per definitions in stock assessment) and year, 1970-date; red=pole-and-line, blue=purse seine, green=longline, yellow=misc (Source: Figure 5 in Vincent et al. (2019)**).**

Catch: Data were compiled by quarter for each of the fisheries. Catch was by weight, except for longline catches (minor) which were by number of fish. Discards were assumed to be minimal and not included in the stock assessment. Purse seine catch was divided by species according to proportions estimated from observer data, except for Japanese purse seine logsheets, for which reporting of catch by species was considered to be reliable.

Effort and CPUE: The main change with regards to effort data in this assessment was to switch from reporting purse seine effort by fishing day, to number of sets. This avoids problems of effort creep arising from vessels spending fewer days searching due to improvements in technology (e.g. acoustic FADs). The key data sets for the assessment were standardised CPUE time series from Japanese pole-and-line fisheries. Where pole-and-line effort was not sufficient for standardisation (regions 5 and 6), purse seine catch/effort was standardised instead. (It is questionable the extent to which conventional purse seine catch/effort data is representative of stock biomass trends, but progress is being made elsewhere in using data from acoustic FADs to provide a standardised biomass index.)

Size data: Purse seine size data are derived mainly from a time series of port sampling in Pago Pago (Samoa), and are corrected for sampling bias using a standard procedure (used in all SPC tuna stock assessments).

Longline catch is small, but the fishery tends to take the largest size class which otherwise do not appear in the data (and hence the model does not know about). They are included based on data collected by Japanese research vessels. Pole-and-line size data come mainly from observers, and mainly from Japanese vessels.

Other fisheries: Data, including size sampling, from domestic fisheries in Indonesia, Philippines and Vietnam have improved significantly in recent years as a result of several collaborative projects. This allowed the three fisheries to be treated separately in terms of their selectivity for the first time, instead of amalgamated (see fisheries labelled PH, ID and VN in Figure 6 above).

Tagging data: Tagging data were available from three Pacific-wide tagging projects (1977-80, 1989-92 and 2006-ongoing), as well as regular Japanese research cruises starting in 1989. These programmes provided a total of 329,811 useable releases and 56,092 useable returns. These data are used to inform model spatial structure, spatial size distribution and elements of skipjack biology (natural mortality and growth by sex).

6.4.5 Skipjack stock assessment

The most recent stock assessment for WCPO skipjack is described in Vincent et al. (2019), from which the summary here is taken.

The assessment uses data from 1972 to 2018, in quarterly timesteps. As with the assessments for all the main WCPFC stocks, the assessment model is run in Multifan-CL (MFCL), which provides a Bayesian framework. 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 above. For each fishery, the assessment uses catch data, effort data (in the form of standardised CPUE time series; see above). The model also uses tagging data.

The 2019 stock assessment (Vincent et al., 2019) introduced a number of changes from the 2016 assessment (McKechnie et al., 2016), including three additional years of data, additional Japanese tagging data from the 1990s, technical changes to the analysis of tagging data, a review of the growth model and maturity schedule, down-weighting of size-composition data and the new 8-region spatial structure.

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 2019 assessment provided two separate grids, for the 8-region model (new) and the 5-region model (old), from which the SC selected the 8-region model. The structural uncertainty grid for this model was constructed from 4 axes: steepness (3 settings), growth functions (3 setting), length composition weighting (three settings) and tag mixing periods (two settings), resulting in a grid of 54 models.

6.4.6 Principle 1 Performance Indicator scores and rationales: Skipjack

Scoring table 1. PI 1.1.1 – Stock status: skipjack

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 point of recruitment impairment (PRI) for this stock is not known. Blim is set by WCPFC at 20%$SB_{F=0}$. SB_{MSY} (see 1.1.1b below) is analytically determined in the stock assessment to be below B_{lim} (17.6%$SB_{F=0}$).

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 this guidance, scoring of 1.1.1a should be based on 75% B_{MSY} as a proxy for the PRI - unless 'additional precaution is sought'. Skipjack is known to be a highly productive stock so there is no particular reason for extra precaution. SIa is therefore scored based on 75%B_{MSY}=13.2%B_0, as a proxy for the PRI.

The stock assessment estimates the probability that the stock is above B_{lim} level (20%$SB_{F=0}$) at 100%. This is true for both uncertainty grids – i.e. the 8-region structure adopted by the Scientific Committee, and the previous 5-region structure. Since B_{lim} is higher than the above-estimated proxy for the PRI, this must also be true for the PRI. This means that there is a high degree of certainty (defined quantitatively as 95% or greater) than the stock is above the PRI; **SG60, SG80 and SG100 are 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	Yes

Rationale

An interim TRP was agreed for WCPO skipjack of 50%$SB_{F=0}$, although it is now under review. The stock is estimated to be below this level with ~85% probability. However, MSC requires teams to score this SI relative to 'a level consistent with MSY' (i.e. B_{MSY} in this case), rather than relative to an agreed TRP. B_{MSY} is estimated in the stock assessment at 17.6%$B_{F=0}$. As noted above, the stock assessment estimates that the stock is above this level with ~100% probability. We can also consider F relative to F_{MSY} (see GSA2.2.4). F is also below F_{MSY} with high probability (~100% according to the stock assessment; median estimate of F/F_{MSY}=0.45). F is estimated to have been below F_{MSY} throughout the time series (Figure 5). According to MSC guidance (GSA2.2.4): *A 100 score is justified if F is highly likely to have been below F_{MSY} for at least two generation times (or for at least four years, if greater*; therefore**, SG80 and 100 are met.**

In responding to peer review comments, we also checked for more recent information. SPC (Hare et al., 2020) conducted short term stochastic projections in 2020, for stock status in 2021, based on actual catch for 2019 and assuming the same for 2020. These projections conclude that the risk of $B<B_{MSY}$ is ~0%, supporting the conclusion that **SG100 continues to be met**.

References

Vincent et al. (2019) and WCPFC (2019b)

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)	MSY	75%SB_{MSY} = 13.2%$SB_{F=0}$	$SB_{recent}/SB0$ = 0.44; SB_{recent}/SB_{msy} = 2.6 (median)
Reference point used in scoring stock relative to MSY (SIb)	MSY	SB_{MSY} = 17.6%$SB_{F=0}$	

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: skipjack

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: skipjack

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

Definitions: 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).

WCPFC harvest strategy: The stated objective of the WCPFC harvest strategy as defined in CMM 2020-01 is to maintain biomass at the level of the interim TRP (50%$B_{F=0}$). This target level is well above the MSY level. It is not currently being achieved (see 1.1.1b), however the MSC PIs specify that the harvest strategy should work to achieve the objectives set out in PI 1.1.1 SG80 (i.e. the MSY level), rather than other objectives set by the management body.

CMM 2014-06 commits WCPFC to developing a formal harvest strategy for skipjack and the other key stocks. Skipjack is ahead of the other stocks in having an interim TRP agreed; the other key milestone is to agree a Harvest Control Rule (HCR; management procedure) – this deadline was pushed back from 2020 to 2022 at WCPFC16 (see harvest strategy workplan; Attachment H in the WCPFC16 report). 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 interim target reference point (50% $SB_{F=0}$)
- 'Available' HCR (see 1.2.2), with management tools set out in CMM 2020-01
- Monitoring of implementation of CMM 2020-01 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 purse seine VDS aims to manage the tropical purse seine fishery targeting skipjack to a level where effort does not exceed 2010 levels. This is done via a TAE (Total Allowable Effort) and associated allocation of vessel days by EEZ of member countries, including FSM.

Overall scoring: The most recent stock assessment suggests that the stock status and fishing mortality are on the right side of MSY reference points with high probability (see 1.1.1). In 2020, SPC evaluated the effect of CMM 2018-01 with projections to 2047 (SPC-OFP, 2020). They used 'status quo' (2016-18 average), optimistic and pessimistic scenarios[6], all of which gave similar outcomes. The projections estimate that the current strategy will maintain $B>B_{MSY}$ and $F<F_{MSY}$ (median outcome), with a negligible risk of B falling below the LRP. The risk of F increasing above F_{MSY} is relatively low but not negligible (16-18% depending on scenario). Median biomass in 2048 is estimated at ~43%$SB_{F=0}$, which is well above the MSY level according to the stock assessment. **SG60 is met**.

SG80 requires that management is responsive to the state of the stock. In 2017, the working group charged with developing the Tropical Tuna CMM asked SPC to evaluate the likely consequences of a large set of different management options for yellowfin, bigeye and skipjack stocks. A series of options were evaluated based on the probability of future (2045) biomass and fishing mortality being on the wrong side of reference points (SB<LRP; $F>F_{MSY}$), with levels of risk defined in a 'traffic light' scale (green: <5%, orange: 5-20%, red: >20%). For skipjack, none of the options resulted in a risk of >5% of SB<LRP or $F>F_{MSY}$. None of the options correspond directly to CMM 2018-01 / 2020-01, but the options with higher risk were less precautionary than 2017-01 or 2018-01 which include FAD closures (SPC, 2017).

It is also relevant to consider the history of changes to the harvest strategy in relation to perceptions of stock status, to evaluate whether there has been a response to changes in this perception. Since the harvest strategy considers all three tropical tuna species together and given that the status of skipjack has always been good, changes in status of bigeye, which has varied over time, may be considered to determine the responsiveness of the harvest strategy. Measures to reduce F on bigeye took some time to be agreed, but once introduced, the harvest strategy progressively tightened over the period 2014-2017, with measures only relaxed slightly (in 2017-01, agreed in December 2017) when the perception of stock status was revised and improved in the 2017 assessment. The history of management for bigeye is an important piece of evidence that can be used once an HCR for the three species is well defined and in place.

At SG80, it is also required that the elements of the management strategy work together to achieve management objectives. The elements of the current harvest strategy are: i) monitoring / stock assessment; ii) evaluation of management options; iii) management actions put in place by WCPFC and iv) management actions put in place by PNA. The evaluation of management options is informed by the stock assessment (which is only possible because of monitoring and data collection); WCPFC decision-making is informed by the evaluation of different options. It is also clear that PNA and WCPFC work together; the PNA VDS is incorporated into CMM 2020-01 (see Table 1 of the CMM). However, the HCR was found to be only 'available' but not well defined and in place according to MSC definitions in PI 1.2.2. Although the framework is taken as evidence that the strategy can work, there is no record of the use of triggers (or surrogate of an HCR) to modify the fishery´s behaviour to stop a perceived decline. The implication is that with one element missing, elements of the strategy cannot be assured to work together to make it responsive to the state of the stock, therefore **SG80 is not met**.

b	Harvest strategy evaluation

[6] In fact, for skipjack both the optimistic and pessimistic scenarios were more pessimistic than the *status quo*, since both assume an increase in purse seine effort relative to 2016-18; the main difference is the assumption about longline effort which has no effect on skipjack projections since the longline catch is negligible. But this makes no difference to the analysis here.

	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

WCFPC agreed an interim TRP for skipjack of 50%$SB_{F=0}$ in CMM 2015-06. According to CMM 2015-06, this TRP should have been reviewed no later than 2019, but this review has not yet taken place. However, since 2020-01 was rolled over from 2018-01 without change, the interim TRP remains the stated management objective of the harvest strategy, even though SPC has stopped using it as a reference point for evaluating stock status.

In any case, as noted above, this is not the objective used for MSC scoring. To be consistent with 1.1.1b and 1.2.1a, we evaluate the objective of the harvest strategy in terms of MSY reference points – which is also a stated objective, according to SPC (2017).

Testing of the harvest strategy, via evaluation of management scenarios, is described above (see Pilling et al. (2019) and SPC (2017)). The stock assessment provides evidence that it is achieving the objective of maintaining SB above SB_{MSY} and F below F_{MSY}, and projections suggest it will continue to achieve them. **SG60 and SG80 are met.**

While projections suggest that the harvest strategy will continue to maintain the stock at appropriate levels, management measures are for the present adjusted annually on an *ad hoc* basis. Hence these projections do not map onto the actual management, and hence the harvest strategy cannot be fully evaluated. **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

Extensive monitoring is in place at the stock level. Data include tagging studies, biological data and fishery-dependent data (catches, size data, effort, CPUE), which are available in part or in full for 36 fisheries by region and nationality. Further information is provided in 6.4.4. **This SG60 scoring issue is met.**

d	Harvest strategy review

	Guide post	The harvest strategy is periodically reviewed and improved as necessary.
	Met?	Yes

Rationale

There is no evidence from stock assessments that the harvest strategy for skipjack needs improvement in the short term. In the long term the work is ongoing under 14-06 to put in place a new harvest strategy. The question here, therefore, is: Is there regular review in order to evaluate whether improvement is needed to the harvest strategy for skipjack, pending completion of the 14-06 process?

Each year, SPC present a set of indicators and projections for each stock, and these are discussed by the SC; the SC conclusions are presented to and discussed by the plenary. The key component of the harvest strategy – i.e. the tropical tuna management measures, are reviewed and adjusted each year, with input from stock assessments (in years when available), compilations of fishery indicators and long- and short-term projections under the status quo and under different management scenarios. There is review of the stock assessment as considered in 1.2.4, and the stock assessment process (notably the pre-assessment workshop) reviews and evaluates the various data sources available for stock assessment and how they should be used. At the same time, as mentioned above, there is a process underway which aims to arrive at a formal harvest strategy (under CMM 2014-06 and associated workplans), including Management Strategy Evaluation (MSE). SG100 is met.

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; this scoring issue is 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

According to the MSC Fisheries Standard SA3.1.6, the term 'unwanted catch' shall be interpreted by assessment teams 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. This scoring issue need not be scored if there is negligible unwanted catches of skipjack. Discarding of skipjack is not permitted unless unfit for human consumption (or in cases of gear malfunction causing risk to crew or vessel). Table 21 below shows the discard rates for target species, including skipjack, for free-school and FAD-associated sets. Taking a weighted average by catch of the two set types, this results in an overall discard rate for skipjack of ~2%, which we considered to be sufficiently low to be considered negligible. This PI is therefore not scored.

Table 21. Target species discard rates (as a % of total catch for that species) based on 2015 – 2019 UoA SPC observer data

Species	Unassociated	Associated
Skipjack	0.74	2.63
Yellowfin	1.37	2.05
Bigeye	0.14	1.99

References

Vincent et al. (2019), PNA (2016), SPC (2017), WCPFC (2019b, 2019c), Pilling et al. (2019), SPC-OFP (2020)

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	More information sought about unwanted catch at UoA level

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: skipjack

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:

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 B_{MSY} 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.

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:

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}.

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 negligible, it is not likely that the stock biomass will fall below this level in the next five years (see PI 1.1.1, 1.2.1a). WCPFC have an agreed, legally-binding framework in place to establish formal harvest strategies and control rules for their main stocks, including WCPO skipjack (see CMM 2014-06 and associated workplans; Section 6.3.7). The requirements of SA2.5.2-3 are therefore met for a HCR to be 'available'. **SG60 is met**.

Since the HCR 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

GSA2.5.2 on scoring uncertainty indicates the following: In scoring issue (b), teams must assess how well the HCRs are likely to function when the unexpected happens in the future. The scoring guideposts reflect the degree of confidence there is in the HCR performance in relation to risks, caused by both known and unknown factors.

An HCR is 'available' rather than pre-agreed, 'well defined' and 'in place'. The final nature of the HCR is not yet agreed so it is not yet possible to determine how much confidence we should have in its performance. The robust technical methodology that is being applied to the development of a HCR (MSE) provides confidence in the scientific aspects of HCR development, but the agreement of a HCR is a political as much as a scientific process, and this political element remains uncertain for the moment. SG80 is 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 skipjack are i) at regional level, CMM 2020-01 (and previous iterations), the provisions of which are described in Section 6.3.4; and ii) at sub-regional level the PNA VDS, of which FSM is a part (Section 6.3.6).

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 first, it is clear that $F<F_{MSY}$ (see PI 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 and a range of projections (see 1.2.1a) provide some evidence that the tools in use are sufficiently effective at controlling exploitation rates, **meeting the requirements at SG60**. As the HCR as required in CMM-2014-06 has not being yet provided or needed, there is no direct evidence that the tools in use are effectively achieving the exploitation rates under a potential HCR, therefore **SG80 is not met**.

References

Vincent et al. (2019), PNA (2016), SPC (2017), WCPFC (2019b, 2019c, 2020c) and Pilling et al. (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	60
Condition number (if relevant)	2

Scoring table 5. PI 1.2.3 – Information and monitoring: skipjack

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:

- A time series of total catch from 1970;
- Operational catch and effort data from the majority of fleets;
- Length sampling from observers and port sampling;
- Various studies to inform the attribution of purse seine catch to species, including avoiding sampling bias;
- Information on the biology of skipjack, including a growth curve from otoliths;
- A large data set of tag releases/returns;
- Information for standardising CPUE time series, including spatial and environmental information.

There are therefore data available on all the items listed in SG100. The stock assessment model is highly sophisticated and is designed to make use of as much of the available data as possible, so most of it is used in some way – e.g. in CPUE standardisation, or to inform the model regional structure, or to derive the underlying population model. There is also, however, data that may not be used regularly in a formal way, such as information on the spatial distribution and variability of productivity, ENSO status etc. (see citations in Vincent et al. (2019) and McKechnie et al. (2016)). **SG60, SG80 and 100 are met.**

Note : Covid caused a reduction in sampling from the fishery in 2020, but this information gap has not yet fed through into stock assessment and management advice.

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

As noted in SIa, stock abundance and removals are monitored at a level of accuracy and coverage that is sufficient to support the current harvest strategy. The information allows stock status to be evaluated and management decisions (past and future) to be evaluated as to their potential impact on the stock. CPUE abundance indices are derived from pole-and-line and purse seine fisheries to drive the assessment model, alongside a range of other data described above. Data come from all the significant fisheries on the stock (and some non-significant ones such as longline fisheries) and cover the entire spatial distribution of the stock. The purse seine vessels are required to have an observer on board at all times; and landings at port or at sea are also monitored and the catch is sampled. There has been extensive consideration of how best to measure purse seine effort, and the role and impact of effort creep. **SG60 and SG80 are met.**

There remain, however, some issues. For a short-lived species such as skipjack it is important that the most recent data are used in the assessment, but at times there are delays in the provision of data to SPC. The 2019 stock assessment uses catch/effort data to 2018, which is impressive – but it is noted that recent tag returns could not be incorporated because of delays in passing on the tags from the factories. A more critical problem is that the pole-and-line fishery, which provides the key abundance indices used in the assessment at present, is contracting, to the point where for some assessment regions standardisation will not be possible. Work is ongoing on a purse seine CPUE abundance index, although measuring effort in purse seine fisheries is difficult. In other RFMOs there has been encouraging progress in the use of an index derived from operational FAD data provided by the EU purse seine companies; however, such information is not (as far as we know) available to SPC for the moment. **SG100 is not met.**

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) subsistence and commercial 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. 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.

MRAG (2016) attempted to evaluate the magnitude of IUU fishing in the Asia-Pacific region and estimate that ~5% of purse seine skipjack catch might be IUU; however this may not all go unreported (e.g. FAD violations were a significant percentage); overall suggesting that total removals are fairly well estimated, to within a few percent. A report by Pew Charitable Trusts in 2019 (Pew, 2019), however, highlighted uncertainties in the declaration of transhipments and provides evidence that points to the possibility of significant levels of undeclared transhipments from longline vessels. The WCPFC Secretariat is developing a Transshipment Analysis Tool which uses VMS data to detect potential high seas transhipment events by noting when two vessels were within 250m of each other for at least 4 hours. They note that this is so far preliminary but hope that it will eventually be able to support validation of reported transhipment data (WCPFC, 2020e). WCPFC is also reviewing its transshipment CMM (2009-06) via a Transshipment Intersessional Working Group which first met at TCC15 (2019) but as of TCC16 (2020) does not appear to have made much progress (WCPFC_TCC, 2020). In any case, longline vessels take very little skipjack so the issue is not likely to result in unreported skipjack catch of any significance.

Thus, overall while there are some concerns around reporting of various types of data, these issues are being addressed by WCPFC and there is no evidence that they significantly compromise the robustness of the stock assessment (as per the conclusions of the pre-assessment workshop for the stock assessment). SG80 is met.

References

Vincent et al. (2019) and McKechnie et al. (2016) and references therein

Muller et al. (2018), Indonesia et al. (2018), Williams (2019), SPC (2019) 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	90
Condition number (if relevant)	N/a

Scoring table 6. PI 1.2.4 – Assessment of stock status: skipjack

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 8 spatial regions (with the previous 5-region structure also running alongside for comparison) and 16 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

The main way that the assessment takes into account uncertainty is via a range of sensitivity runs which examine a range of structural uncertainties in the model, although uncertainty within each model is also evaluated. Typically, the assessors run a wide range of uncertainties (in this case as proposed by the assessment preparation workshop) but in their final analysis present a subset which they feel characterise the main uncertainties in the model. These uncertainty runs provide the structural uncertainty grid. In this case, the grid included 54 different models settings (as described in Section 6.4.5), and SPC also provided two grids corresponding to two approaches to spatial structure. This allows quantitative 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. The model is tested via a range of analyses such as retrospective and jack knife analyses, which evaluate systematic bias and indicate the extent to which the model is driven by a particular dataset or a particular year of data. The transition from the 2016 to the 2019 diagnostic model is described in the stock assessment report 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 an new method of standardising CPUE; opportunities for improving the input data or developing new sources of input data (e.g. purse seine CPUE indices) are considered by the SC each year. **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 2019 nor the 2016 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. Participants in the pre-assessment workshop reviewed the main input datasets and provided recommendations regarding the range of assessment model options and sensitivities to be included within the stock assessment, which provide the main direction for the assessment. The SC also review the assessment and may ask for changes (not in this case, although they did conclude that the 8-region structure was most appropriate). 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

Tremblay-Boyer et al. (2017a), Vincent et al. (2019), McKechnie et al. (2016), Ianelli et al. (2012) and WCPFC (2019c)

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

6.5 Principle 1: Yellowfin

6.5.1 Yellowfin biology and stock definition

Information in this section is taken from Tremblay-Boyer et al. (2017b) and Vincent et al. (2020) except where otherwise indicated.

Yellowfin tuna are fast-growing; reaching approx. 25cm FL (fork length) at 3 months, and first appearing in surface fisheries at <1 year. They reach a maximum size of *ca*. 180 cm. Maturity is reached at *ca*. 100 cm, with spawning taking 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. However, this is not taken into account in the stock assessment model, which uses a single growth schedule across all regions. The growth model is a significant uncertainty in the stock assessment, and research has just been completed ('Project 82') to improve it by improving and cross-referencing otolith readings from labs across the Pacific and further afield (Farley et al., 2020).

Natural mortality (M) varies with size, being lowest for individuals that are pre-maturity (~50-80 cm) and increasing for younger and older fish. Tagging data suggest that it is commonplace for individuals to reach 4 years old, while the longest period at liberty between tag and recapture for a WCPO yellowfin is currently 6.5 years. Farley et al. (2020) estimated longevity of yellowfin tuna at least 15 years.

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. However, Moore et al. (2018) note that the evidence for discrete stocks in the western and eastern Pacific is strong, and in fact suggest three large-scale stocks, in the western, central and eastern Pacific. Farley et al. (2020) noted faster growth rates in the central Pacific relative to both east and west. Both genetic and non-genetic data suggest that there may be stocks or sub-stocks within the western Pacific; for example, 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 (Moore et al., 2018).

The WCPO yellowfin 'stock' may therefore actually be a cline or a metapopulation; but more evidence is needed to get any firm idea of what a more appropriate population structure would be, from the point of view of fisheries management. Since the current assessment allows for spatial structure, with movement rates between regions set within the model, it allows to some extent for this possibility. 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 (Figure 7).

For bigeye, the Scientific Committee has expressed some concern about the division of the eastern and western Pacific stocks at 150°W, but this seems to be less of a concern for yellowfin which has much lower relative catches around the 150°W line (Figure 7).

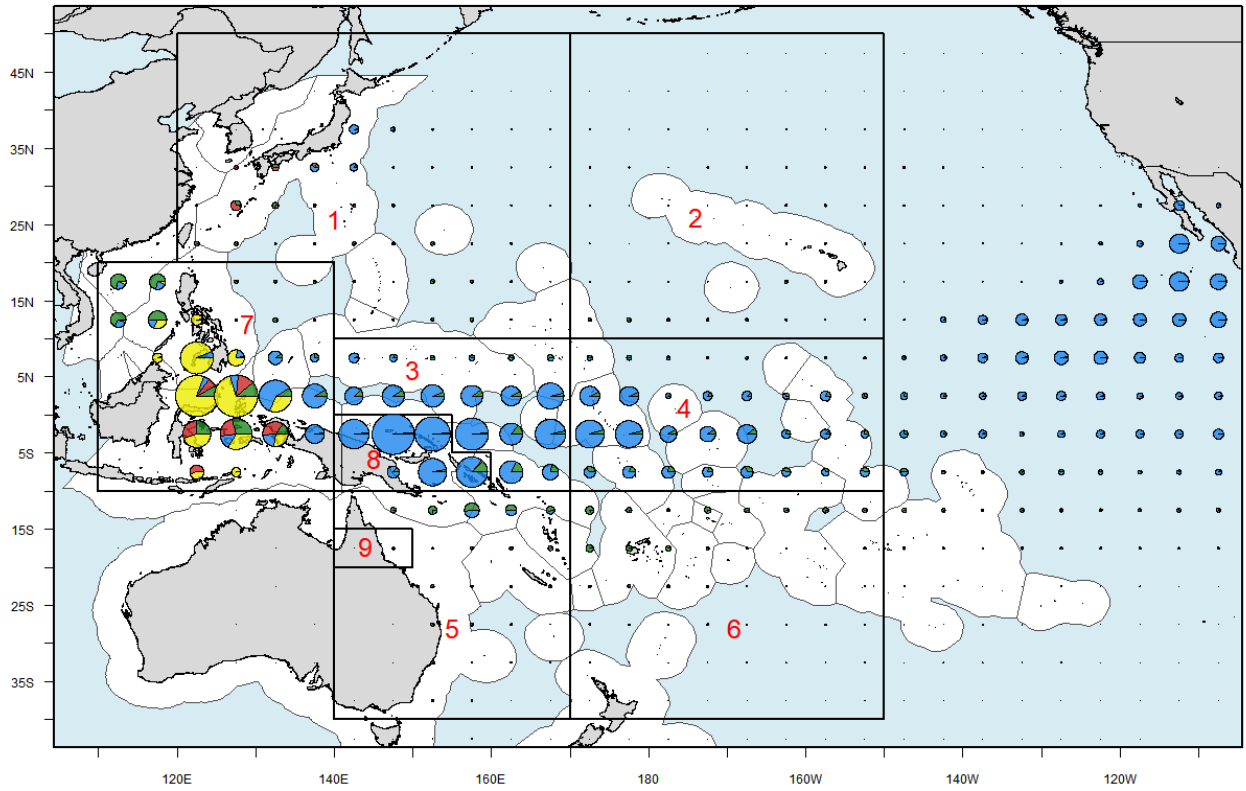


Figure 7. Geographical distribution of yellowfin catches in the Pacific Ocean 2009-18 (purse seine=blue, longline=green, pole and line=red, misc.=yellow), with the superimposed grid showing the regional structure and spatial limits of the SPC stock assessment. Source: Vincent et al. (2020).

6.5.2 Yellowfin stock status

The most recent stock assessment for WCPO yellowfin was carried out in 2020 (Vincent et al., 2020).

The new yellowfin 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). The three additional years of data included in the assessment, however, cover a period of strong El Niño conditions and increasing catch levels. Catch estimates for 2017 and 2018 suggest a record high catch of 695,107 t in 2017 with 690,207 t in 2018; an increase of 12% in 2017 above the 2012-16 average (WCPFC, 2019a).

SPC recommends that the stock status be evaluated and management advice formulated, not based directly on the diagnostic 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. A diagnostic model is nevertheless selected, which uses the values for each sensitivity which are considered most likely (or the middle values; further details in the stock assessment section below). The stock assessment report presents a grid of 72 models, and since the SC (meeting remotely) was not able to have a satisfactory discussion about which to retain or how to weight them, they agreed to retain the grid structure presented in the stock assessment by SPC (WCPFC, 2020d). This grid is summarised in Table 22. Majuro plots for the full grid and key sensitivities are given in Figure 8. Figure 9 shows the trajectory of spawner potential for the nine model regions.

Table 22. Yellowfin: Summary of stock status estimates relative to reference points, across all 72 models in the structural uncertainty grid used to characterise uncertainty; latest = 2018, recent = 2014-17; $SB_{F=0}$ = average spawning potential in the absence of fishing for 2008-17, following the definition of the LRP agreed by the SC. Source: Table 3 in Vincent et al. (2020).

Parameter	Min.	10%	Median	90%	Max.
F_{recent} / F_{MSY}	0.233	0.269	0.357	0.473	0.588
SB_{latest} / $SB_{F=0}$	0.404	0.471	0.542	0.601	0.664
SB_{latest} / SB_{MSY}	1.466	1.665	2.282	3.293	4.889
SB_{recent} / $SB_{F=0}$	0.424	0.507	0.583	0.641	0.677
SB_{recent} / SB_{MSY}	1.538	1.773	2.432	3.571	5.267
SB_{MSY} / $SB_{F=0}$	0.121	0.175	0.236	0.278	0.302

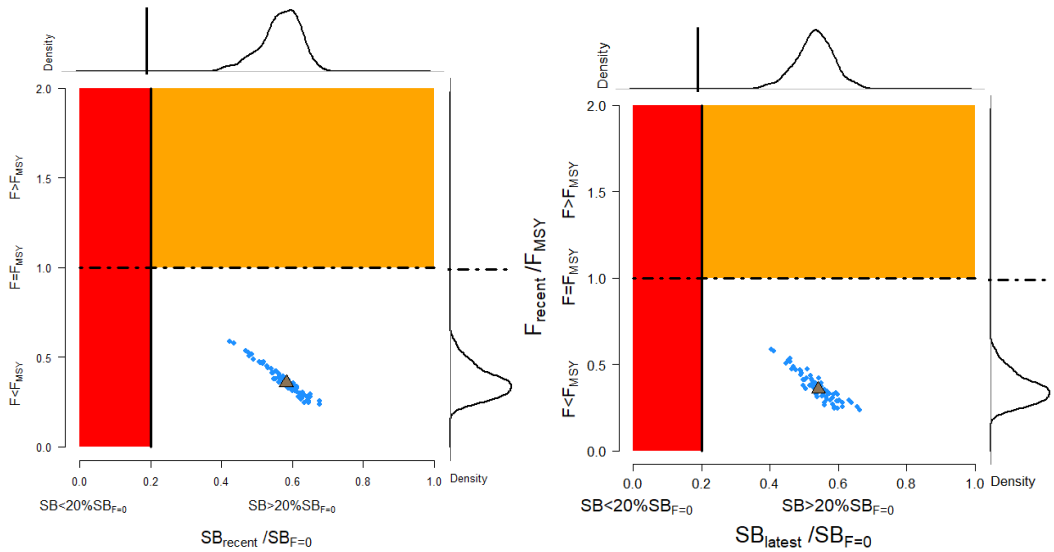


Figure 8. Yellowfin: Majuro plots summarising the results from the structural uncertainty grid: Left: recent (2014-17); Right: latest (2018); y-axis = F/F_{MSY}; orange zone = $F>F_{MSY}$; x-axis = $SB/SB_{F=0}$; red zone = $SB<20\%SB_{F=0}$.. Source: Figure 55 in Vincent et al. (2020).

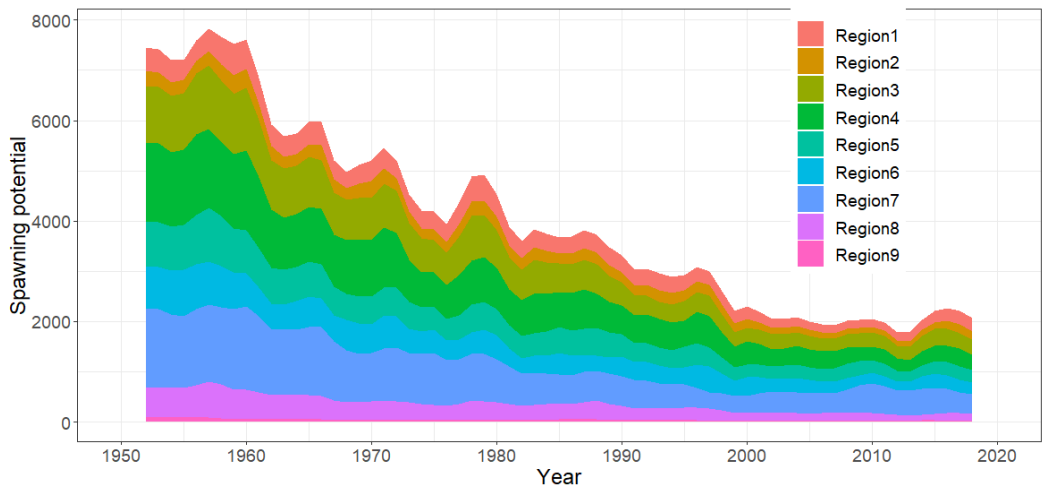


Figure 9. Yellowfin: Trajectory of spawner potential for each of the 9 model regions from 1952, from the median of the diagnostic model. Source: Figure YFT-1 in SC report; WCPFC (2020d)**).**

The results of the stock assessment can be summarised as follows (Vincent et al., 2020):

1. Spawner biomass is estimated to have declined since the 1970s for all models and all model regions.
2. The assessment is more optimistic than the previous assessment and this is mainly due to the new growth information.
3. All models put the biomass above the LRP.
4. There is ~90% probability that the biomass is above 50%$SB_{F=0}$.
5. Depletion is estimated to be greater in tropical regions, with the model driven in these regions by declining CPUE; depletion in temperate regions is estimated to be lower and driven more by lower recent recruitment. Depletion in all regions remains above the regional reference point of 20%$SB_{F=0}$.
6. F is below F_{MSY} (median 0.104) with high certainty.

6.5.3 Yellowfin stock status projections

The projections conducted for the three tropical stocks in relation to different management scenarios are described in Section 6.3.5 (Analysis of management options). Projections using the new stock assessment and based on the 'status quo' scenario (the most optimistic) are given in Figure 10. All scenarios maintain the yellowfin stock above the LRP and below F_{MSY} with high probability (see Section 6.5.2).

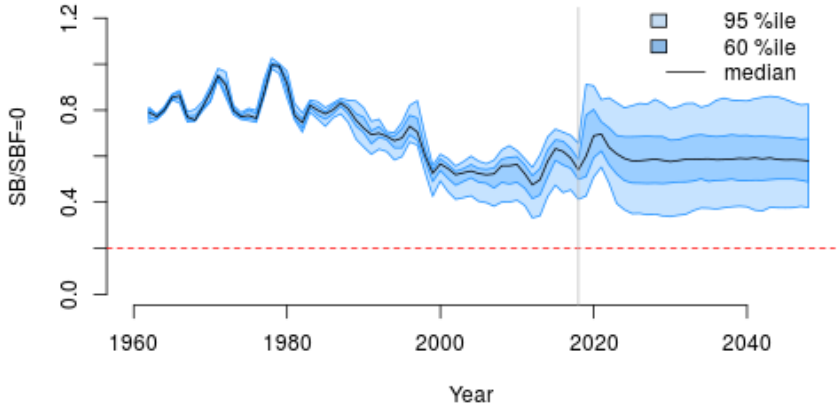


Figure 10. Yellowfin: Time series and projection of SB/$SB_{F=0}$ to 2084 (red dashed line is LRP). Source: Figure YFT-11 in SC report (WCPFC, 2020d)**.**

6.5.4 Yellowfin information available for stock assessment

The stock assessment report (Vincent et al., 2020) provides a full description of the data sources used, from which the summary in this section is taken unless otherwise indicated.

It is clear that there will be an information gap for the fishery in 2020 due to the Covid-19 pandemic, with few observer deployments and limited port sampling Pacific-wide. However, the stock assessment runs to the end of 2018, so this information gap is not yet felt in stock assessment and management advice.

Fisheries: The stock assessment defines 41 '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. A difference from the previous assessment is that in addition to each individual fishery, an 'index fishery' was generated for each region based on SPC's database of longline operational data. The 'index fishery' was allocated a nominal catch of one fish per quarter. This approach is considered to optimise both the spatial coverage of the abundance indices and also improves the weighting of the size data, which is a perennial problem. It has been made possible by improved access to operational-level data from these fisheries.

The information provided from each fishery is summarised in the graphic below (Figure 11; Vincent et al. (2020)). 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 ('index 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; sampling from the UoA is described in Section 6.3.8 above.

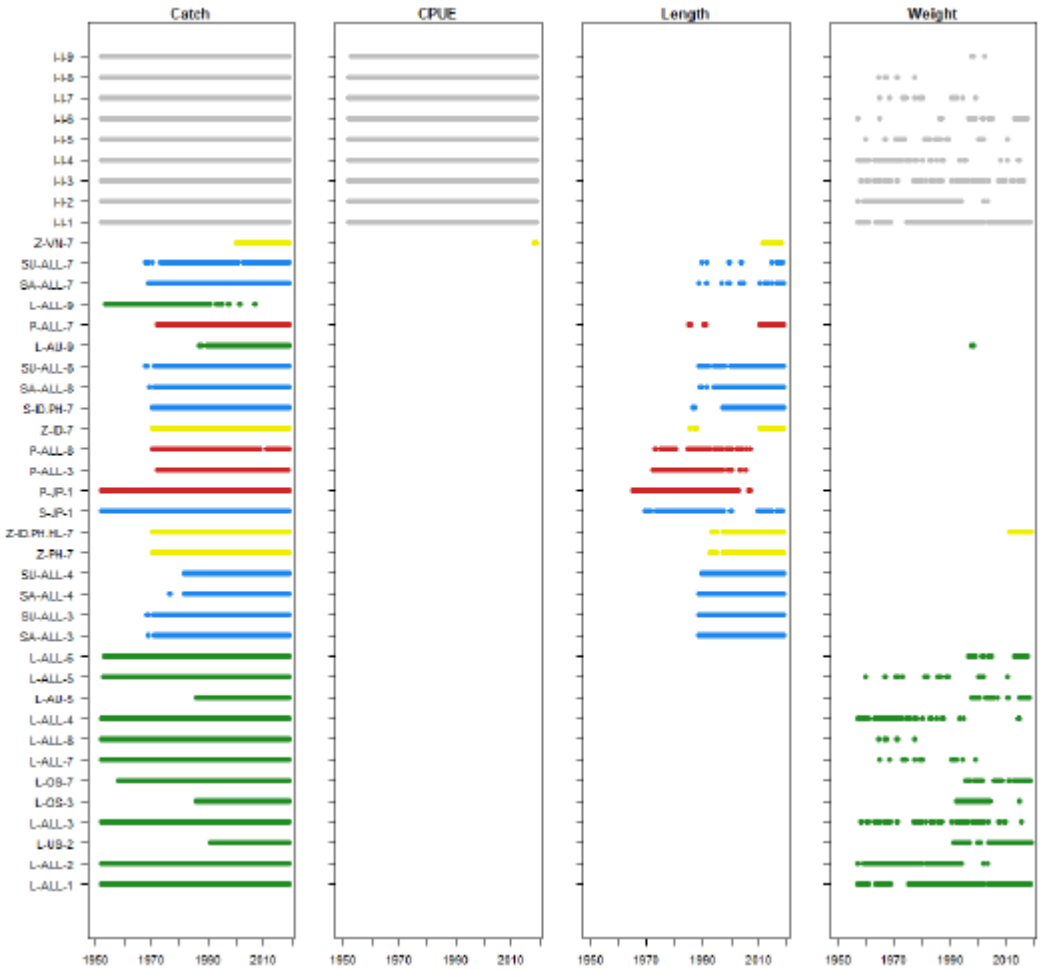


Figure 11. Yellowfin: Graphic representing the input data to the yellowfin stock assessment from each 'fishery' (as defined as described above). Left to right: catch, CPUE, catch length sampling and catch weight sampling; top to bottom: the 41 fisheries defined by the stock assessment; x-axis of each column 1952-2018 (Figure 6 in Vincent et al. (2020)).

Catches: 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 for dividing the catch by species (this after a process of review and revision, most

recently in 2019 based on the conclusions of WCPFC 'Project 60'; see references in stock assessment report).

Effort and CPUE: Effort is included in the stock assessment for the index fisheries.

Other fisheries: There has been gradual improvement in the data from Indonesia, the Philippines and Vietnam over the last decade or so. Effort for these fisheries is included as days fished where possible, but otherwise not included (this applies to three fisheries with '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 Philippines, and for the first time there was direct size information from Indonesia and Vietnam, instead of size structure for these fisheries being extrapolated from similar fisheries in the Philippines.

Tagging data: In total 116,125 effective releases and 22,406 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), the Pacific Tuna Tagging Programme (2006-2017) and the Japan Pacific Tagging Programme (2000-2017).

6.5.5 Yellowfin stock assessment

The most recent stock assessment for WCPO yellowfin is described in Vincent et al. (2020), from which the summary here is taken. The assessment uses data from 1952 to 2018, in quarterly timesteps.

As with the assessments for all the main WCPFC stocks, the assessment model is run in Multifan-CL (MFCL), which provides a Bayesian framework. 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 6.5.1 above. For each fishery, the assessment uses catch data, effort data and size data (as available; see 'information' above). The model also uses tagging data and biological information such as growth and maturity curves.

The 2020 stock assessment (Vincent et al., 2020) introduced a number of changes from the 2017 assessment (Tremblay-Boyer et al. (2017b)) which had a significant influence on estimates of stock status, making it more optimistic than before. The key driver of this change in perception is the new growth model (outcome of 'Project 82'; Eveson et al. (2020) and Farley et al. (2020)) based on an extensive analysis of otoliths. Other significant changes were the introduction of the 'index fishery' approach (see 'information' above), improvements to how purse seine catch is estimated (grab sample bias), improvements to how tagging data are dealt with, some adjustments to gear selectivity for certain fisheries and of course updating all the data sets through 2018.

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 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 2020 assessment was constructed

from 4 axes: steepness (3 settings), growth (3 settings), tag mixing (2 settings) and size data weighting (4 settings), resulting in 72 models in the grid (3x3x2x4 = 72).

Age/spatial structure: The model is structured into 9 regions and 40 quarterly age classes (the last a plus group; an increase from 28 in the previous assessment resulting from the new growth model).

Growth: Growth was assumed to be invariant by region and sex. The stock assessment explored four methods of applying the new growth data to the assessment: i) a Richards-type growth curve estimated from otolith data external to the assessment model ('external otolith'; Farley et al., 2020); ii) age estimated by Multifan within the model based on the same dataset of age/length ('conditional length-at-age'; Farley et al. 2020); iii) a VB-type growth curve estimated from otolith plus tagging data external to the assessment model (Eveson et al., 2020) and iv) age estimated from size data modes within the model ('modal estimate'; previous method). Ultimately the approach using tagging data was not included in the uncertainty grid, while approach ii) was taken as the diagnostic case.

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. In this assessment, the new growth curve resulted in changes to estimates of M, and SPC took the opportunity to review the process of estimating M and to conduct a meta-analysis (Vincent and Ducharme-Barth, 2020). This resulted in an estimate of M which was quite a bit lower than previously (in the range 0.11-0.15 as compared to 0.23 used previously). A sensitivity analysis was conducted using three values of M (0.11, 0.13 and 0.15) but not the higher previous value, for reasons which are unclear – this sensitivity run was not included in the final uncertainty grid.

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. The maturity ogive was reviewed and revised in this assessment based on the new growth model; however, SPC noted that there are not much data to inform this work and recommended that gonad samples be taken routinely alongside other sampling (Vincent and Ducharme-Barth, 2020).

Selectivity: Modelled using cubic spline smoothing. Fisheries can 'share' selectivity if their characteristics are similar, to reduce the number of model parameters.

Catchability: Constant catchability is assumed for index fisheries; because effort is not included for the other ('extraction') fisheries, catchability does not have to be estimated, except for the last few years of the time series, to inform projections.

Model runs: The model was run initially exactly as for 2017, and changes were made one at a time, so that the consequences of each change for the outcome of the assessment could be evaluated. In all, there were 16 steps between the 2017 diagnostic model and the 2020 diagnostic model.

Sensitivities: Several hundred sensitivity runs were done but not all were included in the structural uncertainty analysis (uncertainty grid); 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 23).

Table 23. Yellowfin: Key sensitivity runs selected to represent the range of uncertainties in the stock assessment. Table 4 in Vincent et al. (2020).

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
Growth	How data are used to generate the growth model within the assessment model	external otolith, **conditional length-at-age**, modal estimate
Size-frequency weighting	Testing the impact of different assumptions about effective sample size for the size-frequency data	effective sample size 20, **60**, 200, 500
Tag mixing period	Time taken for tagged fish to mix into the general population	one quarter, **two quarters**

6.5.6 Principle 1 Performance Indicator scores and rationales: Yellowfin

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. B_{MSY} (see 1.1.1b below) is analytically determined in the stock assessment to be 23.6%$SB_{F=0}$ (median of grid).

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 BMSY<27%B_0, in which case the default PRI should be 75%B_{MSY}.*

On this basis, since the PRI is not analytically determined but B_{MSY} is, and B_{MSY} is estimated to be <27%B_0, the PRI is taken to be 75%B_{MSY}. Yellowfin is a productive stock so there is no reason for additional precaution. This means that the default PRI proxy is 17.7%$SB_{F=0}$ (i.e. slightly below the LRP).

To achieve SG60 it has to be likely (≥ 70th %ile); for SG80 to be highly likely (≥ 80th %ile); and for SG100 there has to be a high degree of certainty (≥ 95th %ile) that current stock status is above the PRI (PRI proxy 17.7%$SB_{F=0}$). The 10th percentile is estimated directly in the uncertainty grid, so if this is above the PRI, **this would satisfy SG60 and SG80**. For SG100 to be met, three or fewer scenarios (out of 72), or the minimum value from the grid, should fall below 17.7%$SB_{F=0}$.

In the final grid used to characterise uncertainty (72 runs; Table 22) the 10th %ile of $SB_{latest}/SB_{F=0}$ and $SB_{recent}/SB_{F=0}$ respectively was 0.47 and 0.51, **so SG60 and SG80 are met**. The minimum value of the grid is 0.4 (latest) and 0.42 (recent), which is well above the default PRI. **SG100 is 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	Yes

Rationale

F_{recent}/F_{MSY} is estimated at $0.36F_{MSY}$ (median). The maximum estimate of F/ F_{MSY} from the grid was 0.59, suggesting that F is below F_{MSY} with a high degree of certainty.

The median estimate of SB/SB_{MSY} is 2.28/2.43 (latest/recent). The minimum estimate from the grid of SB/SB_{MSY} is >1 in both cases (1.47/1.54), suggesting that SB is above SB_{MSY} with a high degree of certainty (Table 22). The time series of $SB/SB_{F=0}$ (Figure 10) suggests that the lower limit of the confidence interval associated with the biomass trend has been above SB_{MSY} throughout the assessment period (from 1952). **SG80 and SG100 are met.**

References

Vincent et al. (2020), WCPFC (2020d)

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)	PRI proxy	$75\%B_{MSY}$ = 17.7% $SB_{F=0}$	Median estimate from final grid: $54\%SB_{F=0}$ (SB_{latest}); $58\%SB_{F=0}$ (SB_{recent})
Reference point used in scoring stock relative to MSY (SIb)	MSY target	SB_{MSY} = $23.6\%SB_{F=0}$	Median estimate from final grid: $2.28SB_{MSY}$ (SB_{latest}); $2.43SB_{MSY}$ (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	100
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 CMM 2020-01 is to maintain status quo biomass, pending agreement on a formal target reference point, which was due at WCPFC16 in 2019 but deferred to 2021.

CMM 2014-06 commits WCPFC to developing a formal harvest strategy for yellowfin and the other key stocks; none of the key milestones for yellowfin have yet been met however (see harvest strategy indicative workplan; Attachment H to the WCPFC17 outcomes document). 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 ($SB_{2012-15}$; from CMM 2020-01)
- 'Available' HCR (see 1.2.2), with some management tools set out in 2020-01
- Monitoring of implementation of CMM 2020-01 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 purse seine VDS is relevant for yellowfin because the majority of the reduction in spawning potential can be ascribed to the purse seine fishery, particularly in equatorial regions (see Figure 58 in the stock assessment report). A longline VDS has been established but plays a limited role in management for the moment.

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 1.1.1). SPC have evaluated the likely impact of CMM 2017-01 and 2018-01 (identical in relevant provisions to 2020-01), with 30-year projections (SPC, 2017, 2018; Pilling et al., 2019; SPC-OFP, 2020). In 2020, all scenarios resulted in a negligible risk of SB falling below the LRP or SB_{MSY}, or F increasing above F_{MSY}. On this basis, and given the results of the stock assessment (see 1.1.1), the harvest strategy is achieving stock management objectives: **SG60 is met.**

SG80 requires that management is responsive to the state of the stock. In 2017, the working group charged with developing the Tropical Tuna CMM asked SPC to evaluate the likely consequences of a large set of different management options for yellowfin, bigeye and skipjack stocks. A series of options were evaluated based on the probability of future (2045) biomass and fishing mortality being the wrong side of reference points (SB<LRP; $F>F_{MSY}$), with levels of risk defined in a 'traffic light' scale (green: <5%, orange: 5-20%, red: >20%). For yellowfin, only a small number of options (some of those with no FAD closures and/or those resulting an estimated increase in longline catch of 30% or more) resulted in a risk of >5% of SB<LRP or $F>F_{MSY}$, and none resulted in a risk of >20% for either indicator. None of the options correspond directly to CMM 2020-01, but the options with higher risk were less precautionary than 2017-01, 2018-01 or 2020-01, which include FAD closures and have established longline catch limits for bigeye, which are also likely to impact on longline catches of yellowfin.

It is also relevant to consider the history of changes to the harvest strategy in relation to perceptions of stock status, to evaluate whether there has been a response to changes in this perception. Since the harvest strategy considers all three tropical tuna species together and given that the status of yellowfin tuna has always been good, changes in status of bigeye, which has varied over time, may be considered to determine the responsiveness of the harvest strategy. Measures to reduce F on bigeye took some time to be agreed, but once introduced, the harvest strategy progressively tightened over the period 2014-2017, with measures only relaxed slightly (in 2017-01, agreed in December 2017) when the perception of stock status was revised and improved in the 2017 assessment. The history of management for bigeye is an important piece of evidence that can be used once an HCR for the three species is well defined and in place.

At SG80 it is also required that the elements of the management strategy work together to achieve management objectives. The elements of the current harvest strategy are: i) monitoring / stock assessment; ii) evaluation of management options; iii) management actions put in place by WCPFC and iv) management actions put in place by PNA. The evaluation of management options is informed by the stock assessment (which is only possible because of monitoring and data collection); WCPFC decision-making is informed by the evaluation of different options. It is also clear that PNA and WCPFC work together; the PNA VDS is incorporated into CMM 2020-01 (see Table 1 of the CMM). However, the HCR was found to be only 'available' but not well defined and in place according to MSC definitions in PI 1.2.2. Although the framework is taken as evidence that the strategy can work, there is no record of the use of triggers (or surrogate of an HCR) to modify the fishery´s behaviour to stop a perceived decline. The implication is that with one element missing, elements of the strategy cannot be assured to work together to make it responsive to the state of the stock, therefore **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	No

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; therefore, **SG60 and SG80 are met.**

While projections suggest that the harvest strategy will continue to maintain the stock at appropriate levels under most circumstances, management measures are for the present adjusted annually on an *ad hoc* basis. Hence these projections do not map onto the actual management, and hence the harvest strategy cannot be fully evaluated. **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

Extensive monitoring is in place at the stock level; including biological research, tagging and extensive fishery-dependent data (catch, effort including operational level logbook data and catch-at-size sampling. Details given in Section 6.5.4 and PI 1.2.3. **This SG60 scoring issue is met**.

d	Harvest strategy review		
	Guide post		The harvest strategy is periodically reviewed and improved as necessary.

	Met?			Yes

Rationale

There is no evidence from stock assessments that the harvest strategy for yellowfin needs improvement in the short term. In the long term the work is ongoing under 14-06 to put in place a new harvest strategy. The question here, therefore, is: Is there regular review in order to evaluate whether improvement is needed to the harvest strategy for skipjack, pending completion of the 14-06 process?

Each year, SPC present a set of indicators and projections for each stock, and these are discussed by the SC; the SC conclusions are presented to and discussed by the plenary. The key component of the harvest strategy – i.e., the tropical tuna management measures, are reviewed and adjusted each year, with input from stock assessments (in years when available), compilations of fishery indicators and long- and short-term projections under the status quo and under different management scenarios. There is review of the stock assessment as considered in 1.2.4, and the stock assessment process (notably the pre-assessment workshop) reviews and evaluates the various data sources available for stock assessment and how they should be used. At the same time, as mentioned above, there is a process underway which aims to arrive at a formal harvest strategy (under CMM 2014-06 and associated workplans), including Management Strategy Evaluation (MSE). SG100 is met.

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

As the target species is not a shark, this scoring issue is not applicable.

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

According to the MSC Fisheries Standard SA3.1.6, the term 'unwanted catch' shall be interpreted by assessment teams 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. This scoring issue need not be scored if there are no unwanted catches of yellowfin. Discarding of yellowfin is not permitted unless it is unfit for consumption (or gear malfunction leading to risk). Table 24 provides discard rates for the target species based on observer data. This gives an overall discard rate (weighted by catch from each set type) of ~1.8% for yellowfin. This is sufficiently low to be considered negligible, so this PI is not scored.

Table 24. Target species discard rates (as a % of total catch for that species) based on 2015 – 2019 UoA SPC observer data

Species	Unassociated	Associated
Skipjack	0.74	2.63
Yellowfin	1.37	2.05
Bigeye	0.14	1.99

References

PNA (2016), Tremblay-Boyer et al. (2017b), SPC (2017), Pilling et al. (2019). WCPFC (2020a, 2020c), Vincent et al. (2020), WCPFC (2020d)

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	More information sought on unwanted catch at the UoA level

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:

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 BMSY 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:

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 BMSY.

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 6.5.2 and 6.5.3, 1; Table 22). 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 6.3.7). The requirements of SA2.5.2-3 are therefore met for a HCR to be 'available'. **SG60 is met.** Since the HCR is not 'well defined' and '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

GSA2.5.2 on scoring uncertainty indicates the following: In scoring issue (b), teams must assess how well the HCRs are likely to function when the unexpected happens in the future. The scoring guideposts reflect the degree of confidence there is in the HCR performance in relation to risks, caused by both known and unknown factors.

An HCR is 'available' rather than pre-agreed, 'well defined' and 'in place'. The final nature of the HCR is not yet agreed so it is not yet possible to determine how much confidence we should have in its performance. The robust technical methodology that is being applied to the development of a HCR (MSE) provides confidence in the scientific aspects of HCR development, but the agreement of a HCR is a political as much as a scientific process, and this political element remains uncertain for the moment. SG80 is 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 yellowfin are i) at regional level, CMM 2020-01 (and previous iterations), the provisions of which are described in Section 6.3.4; and ii) at sub-regional level the PNA VDS, of which FSM is a part (Section 6.3.6).

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 first, it is clear that $F<F_{MSY}$ (see PI 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, **meeting the requirements at SG60**. As the HCR as required in CMM-2014-06 has not being yet provided or needed, there is no direct evidence that the tools in use are effectively achieving the exploitation rates under a potential HCR, therefore **SG80 is not met.**

References

PNA (2016), Tremblay-Boyer et al. (2017b), SPC (2017, 2018), Pilling et al. (2019), Vincent et al. (2020), WCPFC (2020a, 2020c), WCPFC (2020d)

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, 2019). 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, recently revised. Longline CPUE data are analysed and standardised as described in Vincent and Ducharme-Barth (2020), and provide the key stock assessment input; purse seine CPUE is not used (for now) 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

Age and growth: Age at size is based on otolith data and modelled using various techniques, which is part of the uncertainty grid for the stock assessment (see Section 6.5.5). In the previous stock assessment, SPC noted that age and growth was a significant uncertainty, but the completion of Project 82 has provided new growth data used in the 2020 stock assessment for the first time.

Natural mortality: The estimation of M for the stock assessment was also reviewed for the 2020 assessment, since the new growth model required a re-estimation in any case. A meta-analysis was conducted, resulting in significant revision relative to previous assessments (Vincent and Ducharme-Barth, 2020).

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 for some stock structure within the WCPO; this is addressed to some extent by a spatially structured stock assessment model. Some work has been done for bigeye to evaluate the usefulness of a combined management approach (McKechnie et al., 2015), which concluded that the approach of separate assessments in the WCPO and the EPO was appropriate at least for now – another combined assessment for bigeye will be conducted by IATTC in 2021. 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 (Vincent et al., 2020; WCPFC, 2020d), including estimates of spawner potential, recruitment, fishery impact etc.

On this basis, the team concluded that **SG60 and SG80 are met.**

5. Data gaps

Observer coverage (providing external verification of logbook data and information about discards) is low for the longline fishery. It is high for the purse seine fleet although lower in 2020 due to the covid-19 pandemic. 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, although big efforts have been made to reduce uncertainty around age and growth 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. There are also, and perhaps more importantly, some significant concerns about the catch data provided by Indonesia, which takes a significant proportion of the WCPO yellowfin catch; considered in more detail under SIc below.

Regarding SG100, it is certainly the case that the data available for assessment of this stock are excellent in relation to most other fisheries, and as per peer review comments it is arguable that this stock should score 100 in the same way as skipjack and bigeye. However, this scoring needs to be harmonised with other assessments on this stock, while harmonising across stocks is not a requirement. CABs have raised concerns in relation to this scoring based on the data gaps evaluated above. On the basis of precautionary and harmonised scoring, **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 e.g. (Pecoraro et al., 2016; Farley et al., 2019).

The stock assessments are based on abundance indicators derived from standardised CPUE time series of longline fisheries in each region. Starting with the previous assessment (2017) SPC were able to use a database of operational-level longline catch/effort data, including Pacific and distant-water fleets across each region. This enables the calculation of standardised abundance indices based on 'index fisheries' (combined longline fleets) in each region across the entire timeframe of the assessment.

Formal stock assessments have taken place every few years (2011, 2014, 2017, 2020). 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.

On this basis, **SG60 and SG80 are met.**

Regarding SG100, it is certainly the case that the data available for assessment of this stock are excellent in relation to most other fisheries. However, SG100 is a high bar ('high frequency and high degree of certainty'), and it is also relevant that there is no HCR in place in this fishery. On the basis of precautionary and harmonised scoring, **SG100 is not met**.

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) subsistence and commercial 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. 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. For Indonesia (important since it took 31% of the WCPO yellowfin catch in 2018 according to the WCPFC Tuna Fishery Yearbook), the system for generating catch statistics appears to have improved markedly in recent years. Recent Indonesia-SPC joint workshops under WPEA programme (WCPFC, 2019d) have continued to express some concerns, particularly about over-estimates of catch by some gears and problems in allocation of catch to particular gear types, but overall concluded that estimates for 2018 (the terminal year of the stock assessment) were an improvement over 2017 and previous years.

The stock assessment report notes that the WPEA project has improved understanding of and inputs from the main fisheries operating in Region 7 (Indonesia / Philippines / Vietnam) but notes that continued work to improve these data (particularly in relation to fisheries targeting juvenile yellowfin) will improve future yellowfin assessments.

MRAG (2016) attempted to evaluate the magnitude of IUU fishing in the Asia-Pacific region and on this basis the pre-assessment workshop did not consider that it needed to be considered for the yellowfin stock assessment (although it was for bigeye). A report by Pew Charitable Trusts in 2019 (Pew, 2019), however, highlighted uncertainties in the declaration of transshipments and provides evidence that points to the possibility of significant levels of undeclared transshipments from longline vessels. WCPFC estimates that ~15% of yellowfin catch was transshipped in 2019. The WCPFC Secretariat is developing a Transshipment Analysis Tool which uses VMS data to detect potential high seas transshipment events by noting when two vessels were within 250m of each other for at least 4 hours. They note that this is so far preliminary but hope that it will eventually be able to support validation of reported transshipment data (WCPFC, 2020e). WCPFC is also reviewing its transshipment CMM (2009-06) via a Transshipment Intersessional Working Group which first met at TCC15 (2019) but as of TCC16 (2020) does not appear to have made much progress (WCPFC_TCC, 2020).

Following peer review comments, the assessment team followed up the question of transshipment data with WCPFC (Dr Peter Williams, WCPFC, pers. comm.). In fact, WCPFC does not rely on transshipment data to quantify removals from the stock, since it is very challenging for transshipment observers to estimate quantities accurately. Instead, they rely on logbooks and reports from CCMs, and use VMS data to cross-check logbook data.

Thus overall while there are some concerns around reporting of various types of data, these issues are being addressed by WCPFC and there is no evidence that they significantly compromise the robustness of the stock assessment (as per the conclusions of the pre-assessment workshop for the stock assessment). SG80 is met.

References

Pecoraro et al. (2016), Indonesia et al. (2018), Farley et al. (2020), MRAG (2016), Hoyle and Nichol (2008), McKechnie et al. (2015), Vincent et al. (2020) ; Vincent and Ducharme-Barth (2020), WCPFC (2017a, 2019d), McKechnie et al. (2017a), WCPFC (2020e) and WCPFC_TCC (2020)

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 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 40 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. The assessment is appropriate for evaluating stock status; there is no HCR in place. **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. For this stock, both depletion-based reference points ($SB_{F=0}$) and MSY reference points (SB_{MSY},

F_{MSY} are estimated, and the key issues from which uncertainty arises for these reference points (e.g. current recruitment, steepness, natural mortality etc.) are evaluated via sensitivity analyses. **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

Several hundred runs were undertaken in conducting the 2020 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 4 axes: steepness (3 settings), growth model (3), tag mixing (2) and size data weighting (4). This allowed quantitative statements about probability of achieving management objectives to be made; therefore, **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 Table 23). The transition from the 2017 diagnostic case to the 2020 diagnostic case is explained step-by-step in the stock assessment report (Vincent et al., 2020), 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, Vincent and

Ducharme-Barth (2020) evaluates different methods for estimating the natural mortality vector. Opportunities for improving the input data (Peatman et al., 2017; Farley et al., 2019) or developing new sources of input data e.g. (PNA, 2017) are considered by the SC each year. **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 the 2014, 2017 and 2020 assessments were not 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 2020 pre-assessment workshop (PAW) (Hamer and Pilling, 2020). The PAW reviewed the main input datasets 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. 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, **SG80 is met but not SG100** which requires evidence of a formal external review and an appropriate response by SPC and WCPFC.

References

Farley et al. (2020), Hamer and Pilling (2020), Vincent and Ducharme-Barth (2020), Vincent et al. (2020), Davies et al. (2014), Tremblay-Boyer et al. (2017b), PNA (2017) 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 Bigeye biology and stock definition

Bigeye tuna are relatively fast-growing, with a maximum length of *ca*. 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. (2017; 2018b), followed by Project 81 and Project 94; Farley et al. (2018a, 2020)). 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), with an additional 34 from small fish added for the 2020 update. This work allowed a new growth curve for bigeye to be estimated, first used in the 2017 assessment and further adjusted for the 2020 assessment.

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. Most genetic studies do not suggest significant population differentiation. 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 (Figure 12). A recent review of stock structure (Moore et al., 2018) notes that the conclusions for bigeye are similar to those of yellowfin (see Section 6.5.1) and overall, the details of bigeye stock structure in the Pacific remain unresolved.

Nevertheless, the WCPFC Scientific Committee (SC14) have expressed some concern over the two-stock hypothesis. They note that fishing grounds around 150°W are a core area of bigeye catch (Figure 13) (unlike for yellowfin), and hence influence both stock assessments, while the recent 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) (WCPFC, 2018). Nevertheless, the two-stock structure is the working hypothesis for now. IATTC is reportedly planning a Pacific-wide bigeye assessment in 2021 (WCPFC, 2020d).

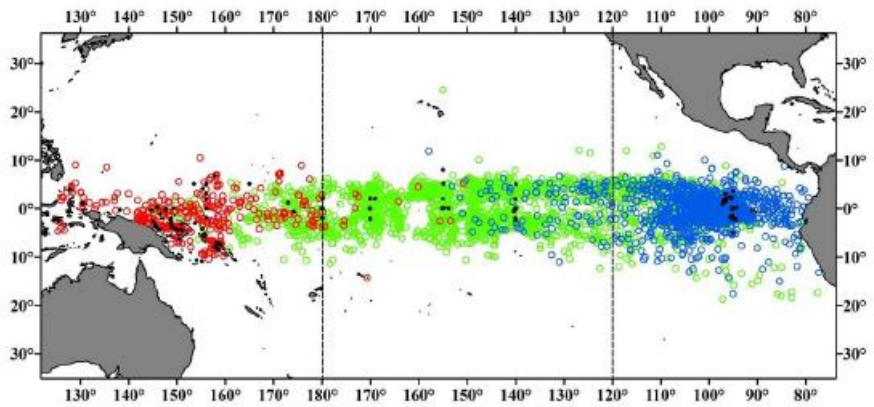


Figure 12. Bigeye: Movements of tagged bigeye divided into three regions. Black points are release locations; red are recapture locations for fish released in the western region; green for recaptures of fish released in the

central region; blue for recaptures of fish released in the eastern region. Figure taken from McKechnie et al. (2017a) who in turn sourced it from Schaefer et al. (2015)**.**

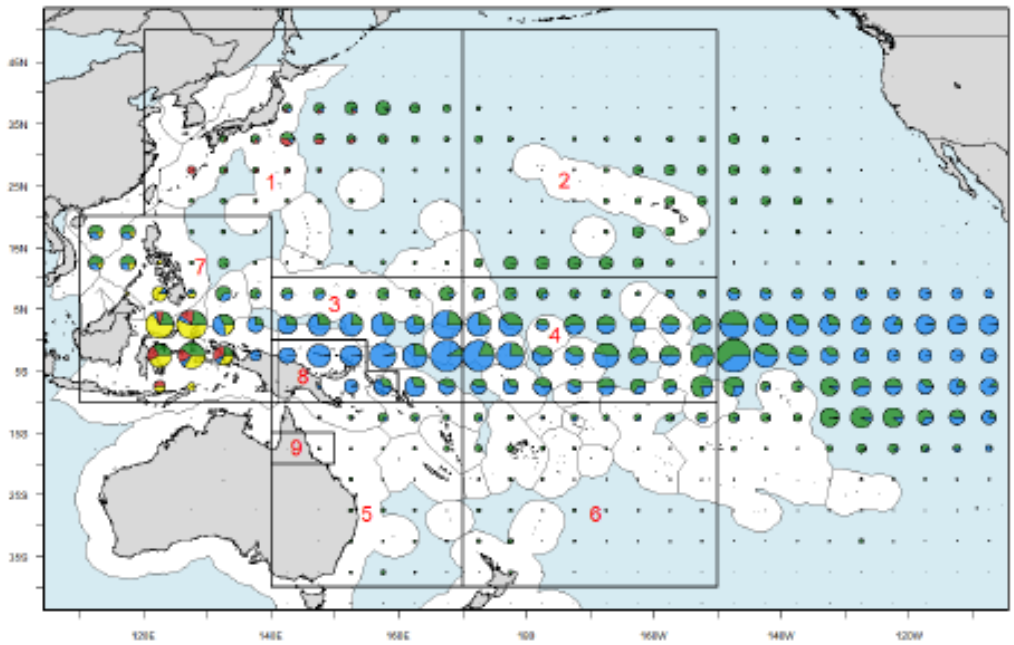


Figure 13. Bigeye: Geographical distribution of bigeye catch in the Pacific Ocean, 2009-2018 (purse seine=blue, longline=green, pole and line=red, misc.=yellow), with the superimposed grid showing the regional structure and spatial limits of the SPC stock assessment (Figure 5 in Ducharme-Barth et al. (2020)).

6.6.2 Bigeye stock status

The most recent full stock assessment for WCPO bigeye was in 2020 (Ducharme-Barth et al., 2020). The assessment incorporated a growth curve which has been updated by the results of the various studies on age, growth and reproduction of bigeye described above (Farley et al., 2017) (see Section 6.6.1 above). SPC made fewer large changes to the assessment than for the previous assessment in 2017, retaining the updated growth model and regional structure from the 2018 update, but made some important improvements to the input data (described in more detail below).

SPC does not designate a 'reference case model' as the basis for management advice, but instead provides the range of model outputs over a structural uncertainty grid made up of the key sensitivity runs. In this case, the grid was made up of 24 models over three axes of uncertainty. Normally the parameters of the uncertainty grid are set by the SC, but in this case the remote meeting format did not allow sufficient discussion, so the grid presented by SPC was retained (WCPFC, 2020d).

All 24 models in the grid put SB above the LRP, but a region-by-region analysis suggests that stronger depletion in equatorial regions (regions 3, 4, 7 and 8 – see Figure 13 above) is being buffered by lower levels of depletion in the peripheral temperate regions, and depletion in the equatorial regions may be approaching the level of the LRP. The relatively high recruitment rates estimated in recent assessments, driving relatively optimistic conclusions, do not appear to have persisted in the updated data.

Table 25 gives the stock assessment output from the uncertainty grid and Figure 14 gives the Majuro plot for each grid axis. Figure 15 shows spawner depletion by region across all 24 models, colour coded for the sensitivity axis that had the strongest impact on the output (weighting of the size-frequency

data). This clearly shows the difference in depletion between regions, as well as the uncertainty in model output and the difference in uncertainty between regions. Figure 16 shows catch over time in relation to estimated MSY, suggesting that catch has been fluctuating around MSY for the last two decades.

The basic conclusions of the stock assessment itself are summarised by the authors as follows (Ducharme-Barth et al., 2020):

- All the models in the uncertainty grid put SB above the LRP.
- In the most optimistic models, depletion in equatorial regions is buffered by lower depletion in temperate regions, in the more pessimistic models, depletion in temperate regions is also high (high uncertainty in regions 1 and 2 in particular).
- The impacts of fishing pressure on the bigeye stock are 'persistent and meaningful'.
- There appears to have been a downturn in stock status in recent years, driven by the end of a run of strong recruitments.

Table 25. Bigeye: Summary of stock status in relation to reference points over the 24 models in the structural uncertainty grid. 'Recent' is 2014-17 for F and 2015-18 for SB; 'latest' is 2018 (Ducharme-Barth et al., 2020).

Parameter	Min	10%	Median	90%	Max
F_{recent} / F_{MSY}	0.43	0.49	0.72	1.02	1.21
SB_{latest} / $SB_{F=0}$	0.23	0.30	0.38	0.47	0.51
SB_{latest} / SB_{MSY}	0.95	1.23	1.67	2.15	2.60
SB_{recent} / $SB_{F=0}$	0.21	0.27	0.41	0.52	0.55
SB_{recent} / SB_{MSY}	0.87	1.18	1.83	2.32	2.84
SB_{MSY} / $SB_{F=0}$	0.19	0.2	0.23	0.26	0.26

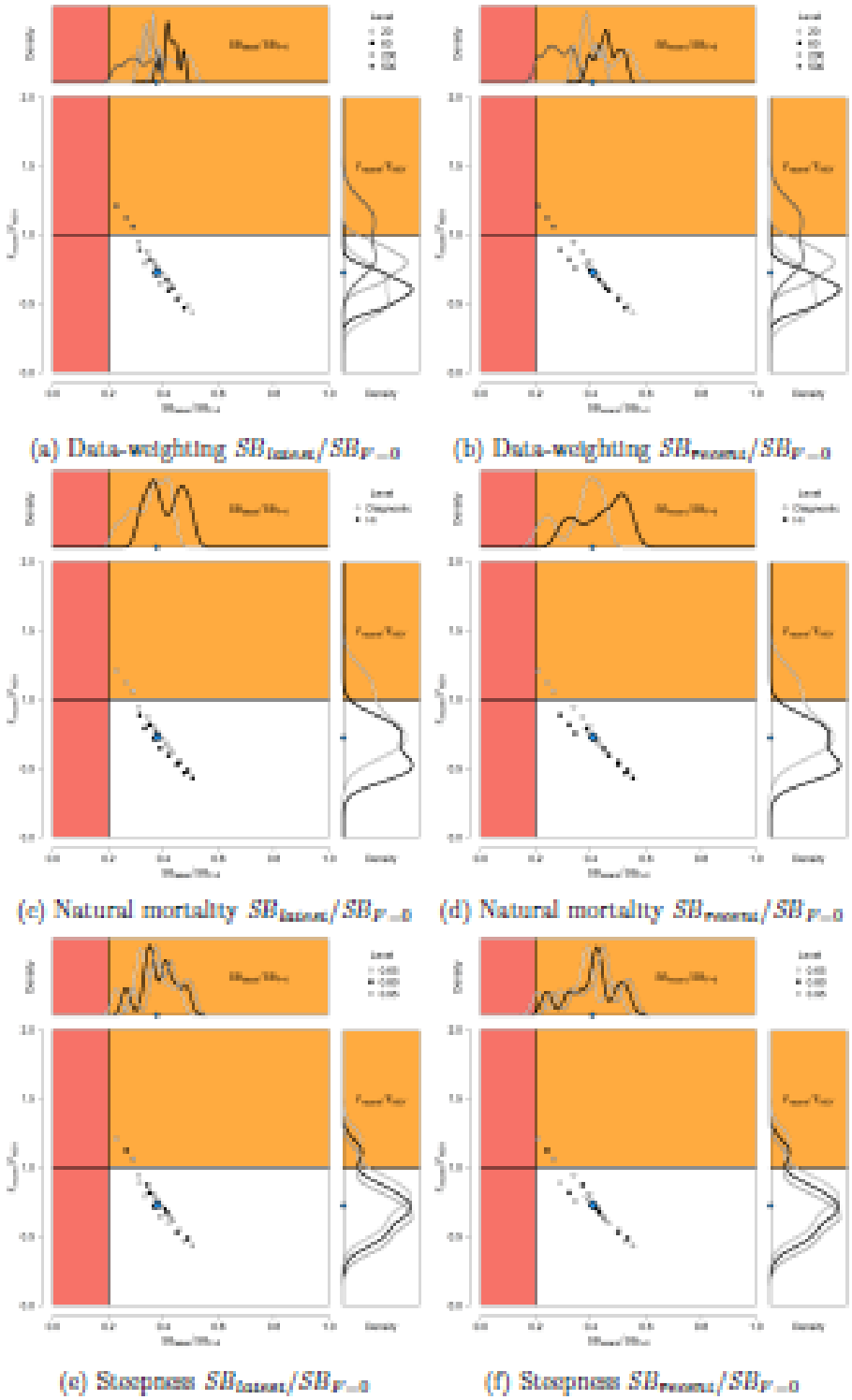


Figure 14. Bigeye: Majuro plot showing the outcome of each of the 24 models in the grid. Left plot=latest; right plot=recent; top to bottom: the three axes of the uncertainty grid; blue dot=median estimate of grid. The red area shows SB below the LRP, while the orange area shows F higher than F_{MSY} (Figure 43 in Ducharme-Barth et al., 2020).

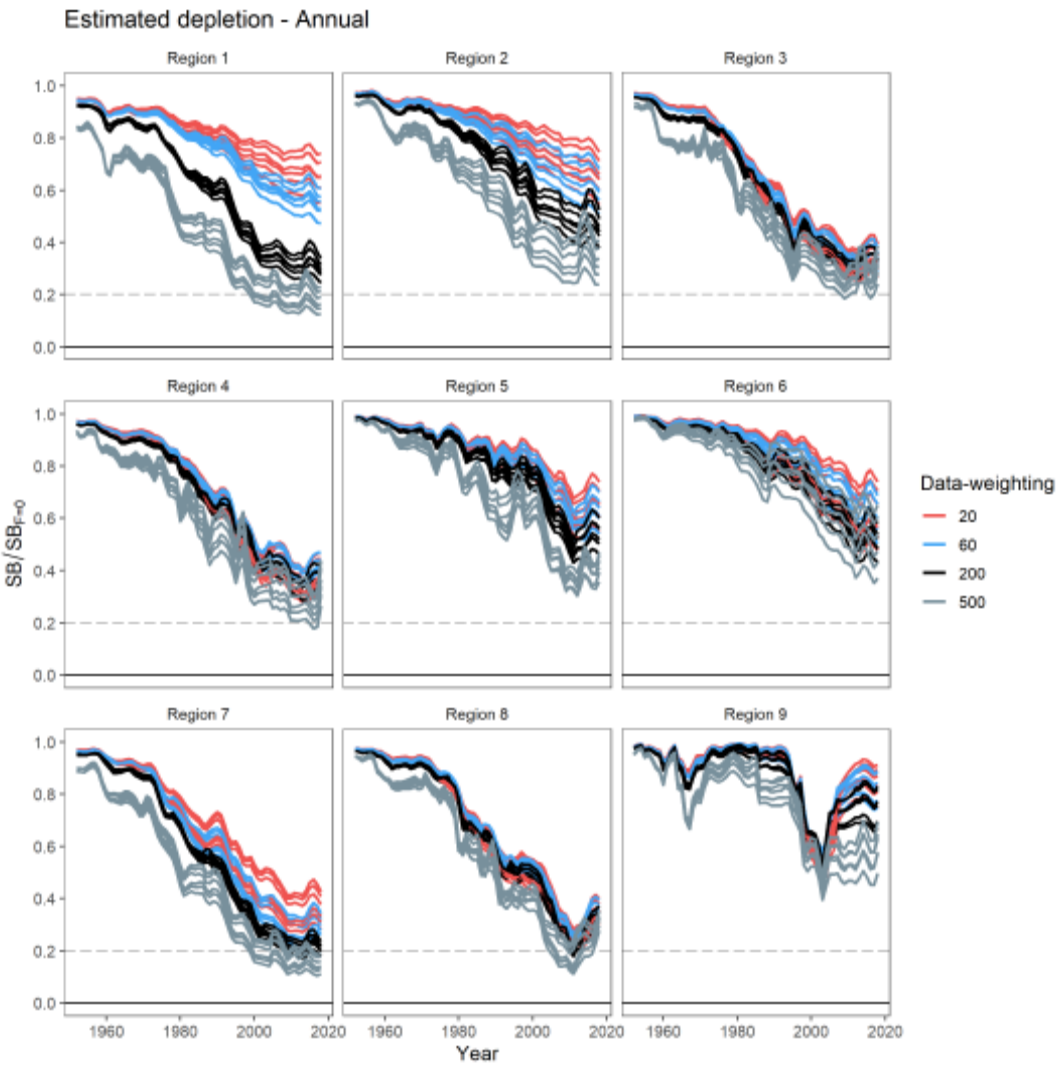


Figure 15. Bigeye: Time series of spawner depletion by region for all the 24 models in the uncertainty grid, colour coded by the four values in the size data weighting sensitivity axis (the most influential) (Figure 37 in Ducharme-Barth et al., 2020).

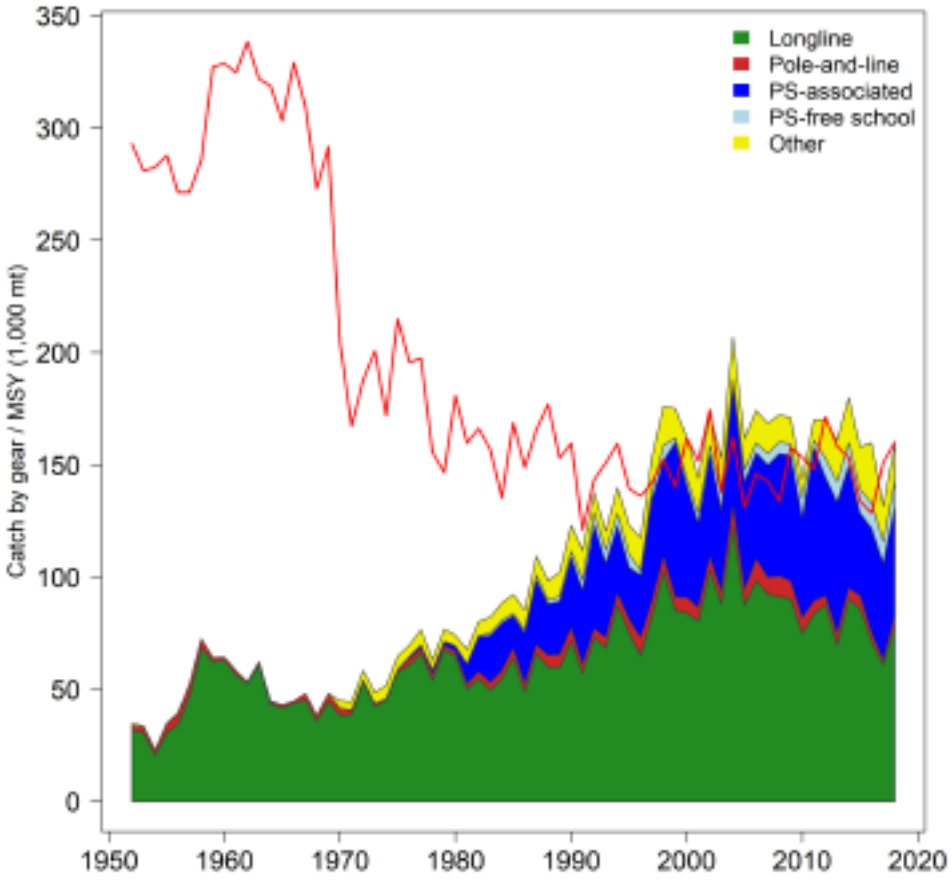
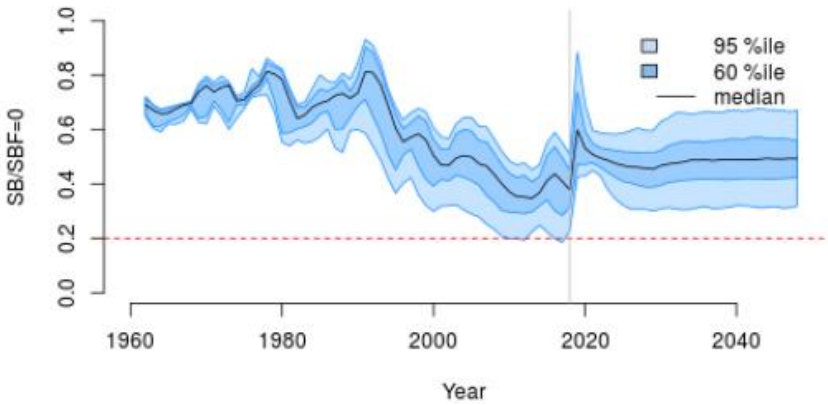


Figure 16. Bigeye: Time series of annual catch by gear type, 1952-2018, and time series of MSY (red line) – which varies according to the size selectivity of different fisheries (MSY is reduced by the purse seine fishery and others which catch mainly small fish) (Figure 48 in Ducharme-Barth et al., 2020).

6.6.3 Bigeye stock projections

The stock assessment model was used to generate stochastic 30-year projections of spawning potential, based on either recent recruitment (higher) or average recruitment across the whole time series (lower) (Figure 17). The assumption about recruitment has a significant influence on the output and uncertainty in these projections, but in either case the risk of SB falling below the LRP remains relatively low.



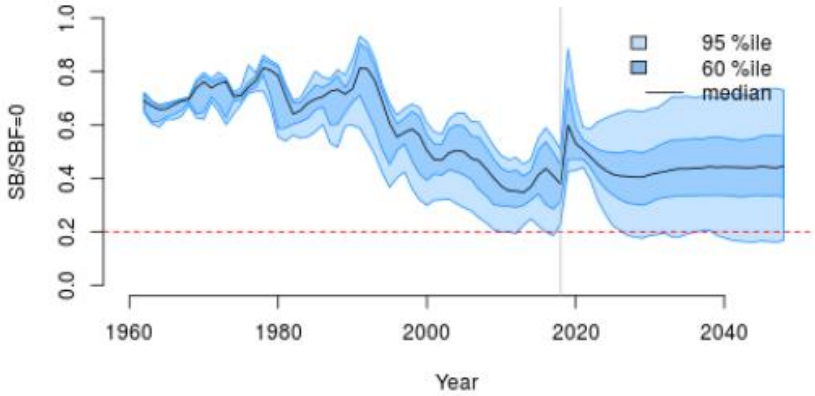


Figure 17. Bigeye: Time series of $SB/SB_{F=0}$ from the uncertainty grid with stochastic projections 2019-2048 assuming 2016-2018 average catches for longline and other fisheries and 2018 effort for purse seine fisheries. Red dashed line is the LRP. Top: Assuming recent recruitment; Bottom: Assuming long-term recruitment. Figures BET-11 and BET-12 in SC16 report (WCPFC, 2020d).

6.6.4 Bigeye information

The 2020 stock assessment report (Ducharme-Barth et al., 2020) 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 41 'fisheries' according to fishing gear and method (longline, purse seine by set type[7], 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 assessment uses the same new 'index fishery' approach as described above for yellowfin, hence the increase in the total number of fisheries over previous assessments results from the addition of an index fishery for each region.

The information provided from each fishery is summarised in the graphic below (Figure 18). It is clear that with a few exceptions, recent and historical (back to ~1980 at least) catch data are available from all the fisheries. Size data are available as weight for the longline fisheries and length (from port sampling) for the other gear types.

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 for dividing the catch by species (there is an ongoing process of analysis and review of this sampling methodology, most recently set out in Peatman et al. (2019)).

Effort: Contrary to previous assessments, effort is not included in the stock assessment except for the index fishery.

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 are available from all the main distant-water fleets as well as from Pacific island domestic fleets. An improvement in the 2017 and 2020 assessments 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 and Pacific island fleets.

[7] unassociated, or associated with FAD, natural log, dolphin, whale, whale shark or other, or unspecified

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

Illegal, Unregulated, Unreported (IUU): In the 2017 assessment, a stock assessment model run was done to evaluate the possible impact of systematic underreporting of bigeye (see MRAG (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 or CPUE to avoid over-weighting small sample sizes in the model.

Tagging: In total 36,847 releases and 9,256 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), the Pacific Tuna Tagging Programme (2006-2017) and the Japanese Tagging Programme (2000-2020), as well as a small amount of tagging from Tonga. Bigeye has the least amount of tagging data of the main stocks, but these figures are a significant improvement from the previous assessment.

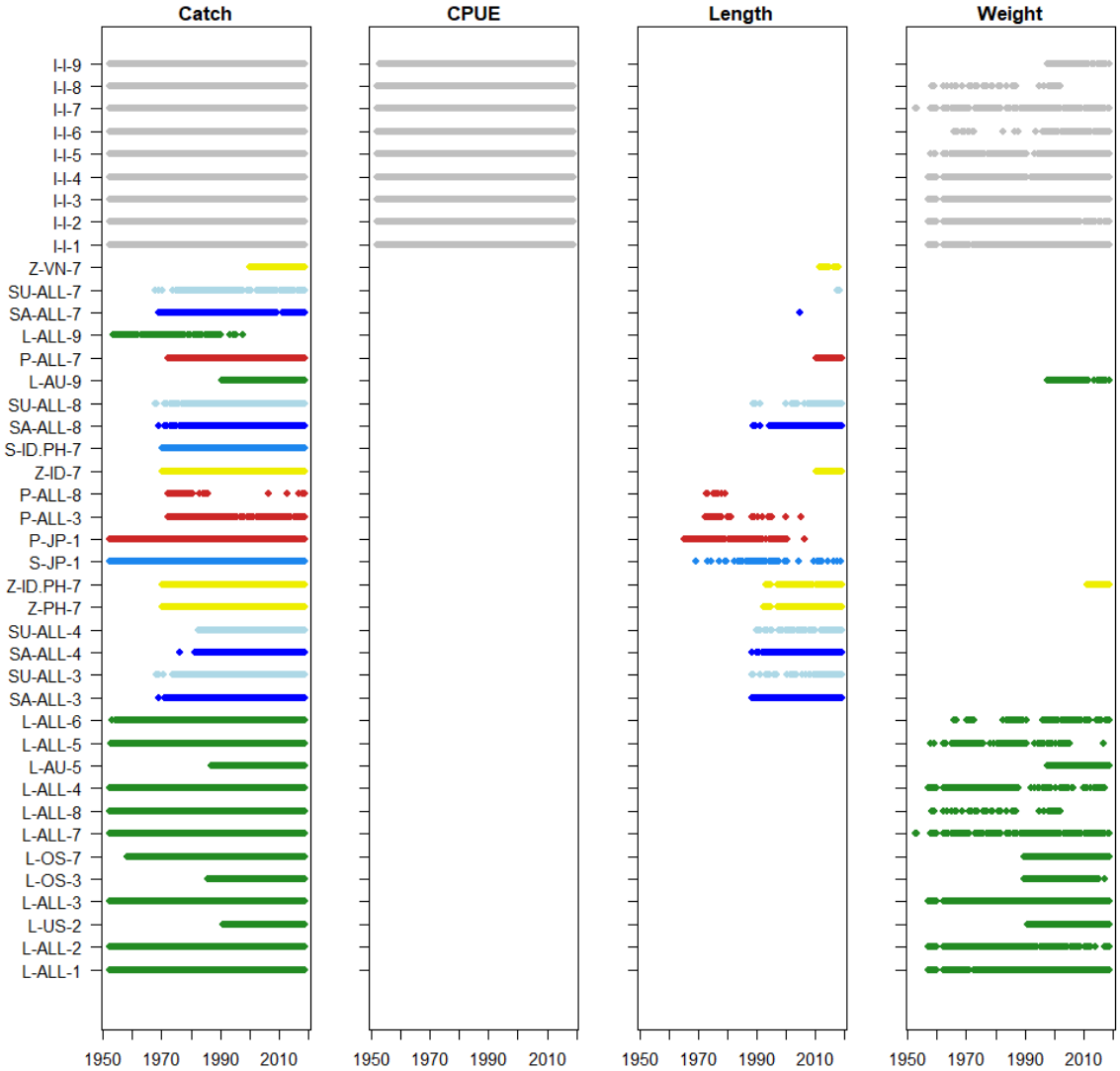


Figure 18. Bigeye: Graphic representing the input data to the stock assessment from each 'fishery' (as defined as described above). Left to right: catch, CPUE, catch length sampling and catch weight sampling; top to bottom: the 41 fisheries defined by the stock assessment; x-axis of each column 1952-2018 (Figure 2 in Ducharme-Barth et al., 2020).

6.6.5 Bigeye stock assessment

The most recent full stock assessment for WCPO bigeye is described in Ducharme-Barth et al. (2020). The summary here is taken from this report unless otherwise indicated. The assessment uses data from 1952 to 2018, in quarterly time-steps.

As with the assessments for all the main WCPFC stocks, including those described above, the assessment model is run in Multifan-CL (MFCL). MFCL requires that 'fisheries' are defined with as near as possible constant selectivity and catchability. For each fishery, the assessment uses catch data, effort data (in some cases) and size data. The model also uses tagging data. Age and growth parameters are estimated externally and can be incorporated in a variety of ways (see below).

Temporal 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 regional structure has

been the cause of some debate in previous assessments, but SPC and SC appear to have settled on a region boundary at 10° N and S. The regions are shown in Figure 19.

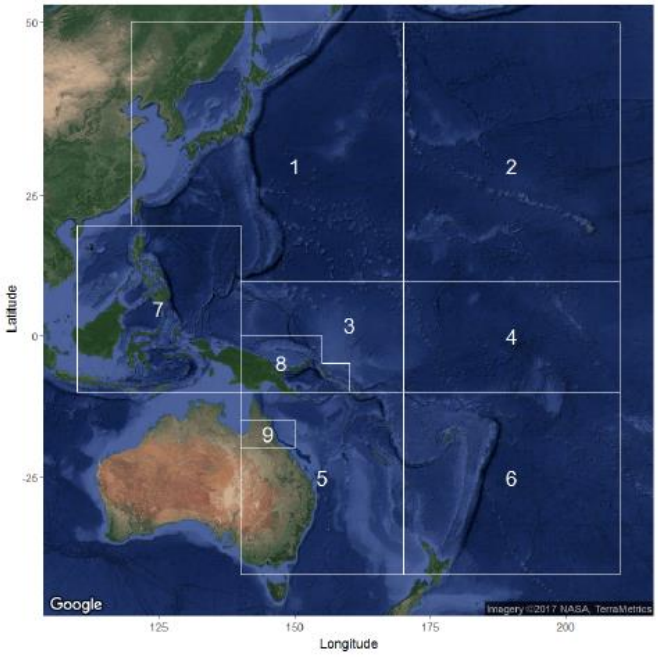


Figure 19. Bigeye: The regions used to stratify the stock assessment model (Ducharme-Barth et al., 2020).

Growth: There has been extensive work on age and growth of bigeye (Projects 36, 81 and 94; see Farley et al. (2020)). Three approaches to modelling growth were considered, which are new since the previous assessment which used a VB curve:

- A fixed Richards growth curve based on otoliths (Farley et al., 2020);
- A fixed Richards growth curve based on otoliths plus tagging (Eveson et al., 2020);
- Conditional age-length dataset input to MFCL which then estimates the Richards growth curve within the model.

The otolith/tagging curve was used in the diagnostic model; the other two models were run as sensitivities but not ultimately included in the uncertainty grid.

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. As for yellowfin, a meta-analysis was used to estimate the mean value of M, resulting in an estimated value of ~0.11. Different options for mean M were used in the sensitivity analyses and uncertainty grid.

Selectivity: Modelled using cubic spline smoothing. Fisheries can 'share' selectivity if their characteristics are similar, to reduce the number of model parameters.

Catchability: Constant catchability is assumed for the index fisheries. Since effort is not now included for the other fisheries, there was no need to estimate catchability, except in the final years to generate the projections – for this a constant catchability was assumed.

Model runs: The model was run initially exactly as for 2017, and changes were made one at a time, so that the consequences of each change for the outcome of the assessment could be evaluated. In all there were 16 steps from the 2017 diagnostic model to the 2020 diagnostic model.

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 for the structural uncertainty grid of 24 models (Table 26).

Table 26. Bigeye: Key sensitivity runs selected by SPC to represent the range of uncertainties in the stock assessment (Ducharme-Barth et al., 2020).

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
Natural mortality	Mean natural mortality	**Mean**, 95% CI of meta-analysis
Size-frequency weighting	Testing the impact of different assumptions about effective sample size for the size-frequency data	sample size divided by **20**, 60, 200, 500
Regional structure	See above	2017 vs. 2014 structure

6.6.6 Principle 1 Performance Indicator scores and rationales: Bigeye

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 PRI for this stock is not known but B_{MSY} is estimated at 23%$SB_{F=0}$. 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 BMSY<27%B_0, in which case the default PRI should be 75%B_{MSY}.* On this basis, since B_{MSY} is analytically determined to be <27%B_0, we use 75%B_{MSY} as a proxy for the PRI – i.e. 17.3%$SB_{F=0}$.

Based on the uncertainty grid (Table 25) (Ducharme-Barth et al., 2020), there is high probability that the SB is above the PRI proxy (minimum estimates: $SB_{latest}/SB_{F=0}$=23%, $SB_{recent}/SB_{F=0}$=21%). Although the stock assessment and the SC note with concern higher rates of depletion in equatorial regions than previously estimated, the median spawner depletion remains above 20%$SB_{F=0}$ in all regions (Figure 15).

The stock-recruit relationship is plotted in Figure 20 below and 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 (yellow end of the spectrum), with the exception of two very large recruitments in the early part of the time series, recruitment does not appear to change.

Overall, the team concluded that there is a high degree of certainty that the stock is above the PRI; **SG60, SG80 and SG100 are met.**

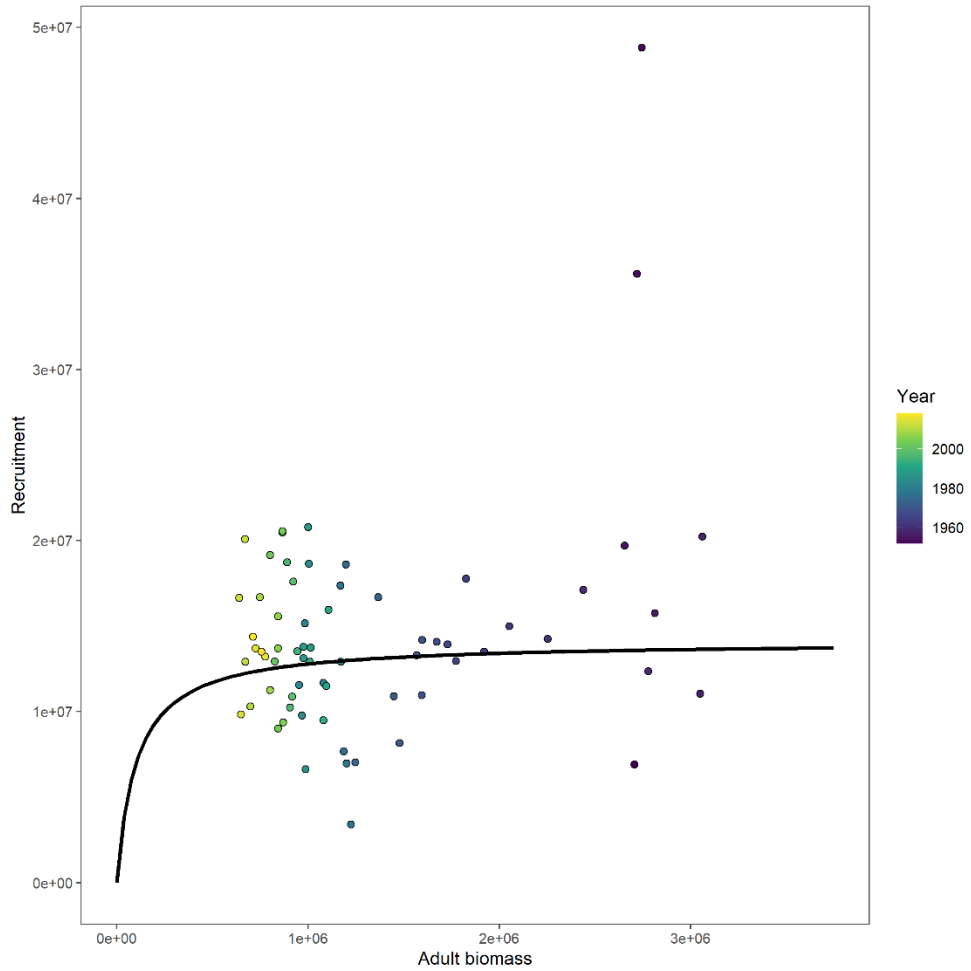


Figure 20. Stock-recruit pairs, 1952-2018, trending from purple to yellow over time (Ducharme-Barth et al., 2020)

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 23%SB_0.

According to the uncertainty grid, SB_{recent}/SB_{MSY} is estimated as follows: 1.83 (median), 1.18 (10% CI), 0.87 (min.) - The minimum estimate is the lowest out of 24 or 4.2 (Table 25). In other words, the stock is estimated to be at a level consistent with SB_{MSY} with more than 90% probability (10% CI above SB_{MSY}) but less than 95.8% (min. estimate below SB_{MSY}). (The probability has not been directly quantified in either of the reports). The grid estimates F/F_{MSY} at 0.72 (median), 1.02 (90% CI), 1.21 (max) (Table 25), so based on the uncertainty grid the probability of $F>F_{MSY}$ is roughly 10% or slightly higher. Catch has been fluctuating around MSY for the last few years (Figure 16). **SG80 is met.**

In relation to SG100, a 'high degree of certainty' is defined by MSC for this PI as a probability of 95% or more. This is not met in terms of the probabilities estimated from the uncertainty grid either for SB or for F. In addition, concerns are raised by the SC around several features of the model and its outputs – depletion is high in some regions and the SC considered the model to be overparameterised, requesting an external review at the earliest opportunity. **SG100 is not met.**

References

Ducharme-Barth et al. (2020), WCPFC (2020d)

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)	MSY	75%SB_{MSY} = 17.3%$SB_{F=0}$	SB_{recent} = 41%$SB_{F=0}$ = 1.83SB_{MSY};; SB_{latest} = 38%$SB_{F=0}$ = 1.67 SB_{MSY} (median of SC uncertainty grid)
Reference point used in scoring stock relative to MSY (SIb)	MSY	SB_{MSY} = 23%SBF=0	

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 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 CMM 2020-01 is to maintain status quo biomass, pending agreement on a formal target reference point, which was due at WCPFC16 in 2019 but deferred to 2021.

CMM 2014-06 commits WCPFC to developing a formal harvest strategy for bigeye and the other key stocks; none of the key milestones for bigeye have yet been met however (see harvest strategy indicative workplan; Attachment H to WCPFC (2020a)). 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 ($SB_{2012-15}$; from CMM 2020-01)
- 'Available' HCR (see 1.2.2), with some management tools set out in 2020-01
- Monitoring of implementation of CMM 2020-01 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 purse seine VDS is relevant for bigeye because the majority of the reduction in spawning potential can be ascribed to the purse seine fishery, particularly in equatorial regions where spawner depletion is highest. A longline VDS has been established but plays a limited role in management for the moment.

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 bigeye (see 1.1.1). SPC have evaluated the likely impact of CMM 2017-01 and 2018-01 (identical in relevant provisions to 2020-01), with 30-year projections (SPC, 2017, 2018; Pilling et al., 2019; SPC-OFP, 2020). Assuming that recent recruitment levels (high) continue, the risk of SB falling below the LRP remained negligible, while the risk of $F>F_{MSY}$ ranged from 0-13% depending on assumptions about effort. Assuming long-term mean recruitment (lower), the risk of $F> F_{MSY}$ in 2048 was significant (37-58% depending on assumed effort) while the risk of SB<LRP was not negligible but nevertheless remained low (5-19%) (noting that the LRP is close to the estimated level of B_{MSY}). On this basis, and given the results of the stock assessment (see 1.1.1), the harvest strategy is achieving stock management objectives: **SG60 is met.**

At SG80 it is required that the harvest strategy be responsive to the state of the stock and that the elements of the strategy work together to achieve management objectives. The Guidance to the MSC Fisheries Standard indicate in GSA2.4 that, the elements of the harvest strategy include the control rules, the information and the monitoring of stock status as well as the responsiveness of the system. For bigeye tuna in the WCPO, the elements of the current harvest strategy are: i) monitoring / stock assessment; ii) evaluation of management options; iii) management actions put in place by WCPFC, iv) management actions put in place by PNA and v) an HCR that under the definitions in PI1.2.2a is only 'available', but not well defined and not in place. The 'available' HCR condition is accepted for bigeye tuna following SA2.5.2 (a) because the evidence indicates that biomass has not previously been reduced below the level producing MSY and is not predicted to be below such level within the next 5 years. SA2.5.3 also allows to recognize that this 'available' HCR is expected to reduce exploitation as the PRI is approached because of the existence of a framework requiring to adopt an HCR if the stock declines below Bmsy. The evaluation of management options is informed by the stock assessment (which is only possible because of monitoring and data collection); WCPFC decision-making is informed by the evaluation of different options. It is also clear that PNA and WCPFC work together; the PNA VDS is incorporated into CMM 2020-01 (see Table 1 of the CMM). However, because there is no well-defined HCR in place, there is an element missing of the harvest strategy so that the elements required by the Standard cannot work together and be responsive to stock status. **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	No

Rationale

As noted above, stock status projections suggest that current management is precautionary in the short term. The stock assessment suggests that the biomass will remain above the LRP with high probability.

Management measures over the past few years (2013-01 – 2020-01) have been adjusted (strengthened from 2013-01 through 2016-01 and then weakened in 2017-01; 2018-01 and 2020-01 are 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 2018; i.e. in the terminal year of the assessment, 2017-01 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 (SPC-OFP, 2020). **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 2020-01 and its predecessors) is carried out via self-assessment by CCMs, included in their Part 1 and 2 reports submitted to WCPFC annually. **This SG60 scoring issue is Met.**

d	Harvest strategy review	
	Guide post	The harvest strategy is periodically reviewed and improved as necessary.
	Met?	No

Rationale

Not scored and therefore not considered met as 1.2.1a **does not meet SG 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; this scoring issue is 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

According to the MSC Fisheries Standard SA3.1.6, the term 'unwanted catch' shall be interpreted by assessment teams 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. This scoring issue need not be scored if there are no unwanted catches of bigeye. Although this fishery does not specifically target bigeye, the catch limits under CMM 2020-01 do not apply to FSM and there are no other requirements such as minimum or maximum landing sizes which could lead to any of this catch being unwanted. Discarding of bigeye is not permitted unless it is unfit for consumption (or gear malfunction leading to risk). Table 27 gives discard rates of target species by set type. For bigeye, these figures give an overall discard rate for bigeye (weighted average by catch by set type) of ~1.8%. This is sufficiently low to be considered negligible. This SI is therefore scored 'not applicable'.

Table 27. Target species discard rates (as a % of total catch for that species) based on 2015 – 2019 UoA SPC observer data

Species	Unassociated	Associated
Skipjack	0.74	2.63
Yellowfin	1.37	2.05
Bigeye	0.14	1.99

References

Ducharme-Barth et al. 2020, PNA (2016), WCPFC (2017b, 2018, 2019a, 2019c, 2020a, 2020c, 2020d),

CMMs 2020-01, 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	More information sought on unwanted catch at the UoA level

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:*

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.

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:*

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}.

The 2020 stock assessment estimated a low probability that SB was below SB_{MSY} at any point, and probability of $F>F_{MSY}$ of ~10% (see 1.1.1b, Figure 14 and Figure 15). The projections from the stock assessment estimate that the trajectory of median biomass will remain above the LRP (20%$SB_{F=0}$) and above SB_{MSY} (23%$SB_{F=0}$) for either recruitment assumption (Figure 17). On this basis, SA2.5.2a is met, therefore it is considered that the system has an 'available' HCR.

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 6.3.4). SA2.5.3b is therefore met. On this basis, a HCR can be considered to be 'available' for this stock and is expected to reduce the exploitation rates as the PRI is approached, **SG60 is met.**

Although the framework requires the development of an HCR if necessary, no pre-agreed rule has been presented that is well-defined nor has been set 'in place', therefore **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

GSA2.5.2 on scoring uncertainty indicates the following: In scoring issue (b), teams must assess how well the HCRs are likely to function when the unexpected happens in the future. The scoring guideposts reflect the degree of confidence there is in the HCR performance in relation to risks, caused by both known and unknown factors.

An HCR is 'available' rather than pre-agreed, 'well defined' and 'in place'. The final nature of the HCR is not yet agreed so it is not yet possible to determine how much confidence we should have in its performance. The robust technical methodology that is being applied to the development of a HCR (MSE) provides confidence in the scientific aspects of HCR development, but the agreement of a HCR is a political as much as a scientific process, and this political element remains uncertain for the moment. SG80 is 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 2020-01 (and previous iterations), the provisions of which are described in detail in Section 6.3.4; and ii) at sub-regional level the PNA VDS (Section 6.3.6).

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 Section 6.3.7). F is estimated to be below F_{MSY} with ~90% 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

Ducharme-Barth et al. (2020) and WCPFC (2020a, 2020d)

CMMs 2014-06, 2017-01, 2018-01, 2020-01

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)	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 1952, 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'; recently revised) (Hampton and Williams, 2017). Longline CPUE data are analysed, standardised and used generate 'index fisheries' as described in Ducharme-Barth et al. (2020) and provide the key stock assessment input.

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., 2017, 2018) is considered to be very detailed compared to what is available for most stocks. Concerns expressed by the SC that it did not include enough very large and very small fish are addressed by Project 81 and Project 92 (Farley et al., 2020).

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. In addition, for the 2020 assessment the mean value of the vector was re-evaluated based on a meta-analysis (Vincent and Ducharme-Barth, 2020).

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, and potentially stock structure at smaller scales, which remains unresolved (Moore et al., 2018; see Section 6.6.1). Some work has been done to evaluate the usefulness of a combined management approach (McKechnie et al., 2015), which concluded that the approach of separate assessments in the WCPO and the EPO was appropriate for now. SC16 discussed the issue of stock structure and noted that IATTC was planning a pan-Pacific bigeye assessment in 2021, supported by SPC, which might shed further light on the validity of existing assumptions about stock structure.

4. Information inferred from the stock assessment

A significant range of information relating to stock status comes as the output of the stock assessment (Ducharme-Barth et al., 2020), 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. It is normally high for the purse seine fishery but in 2020 was limited by the Covid-19 pandemic, as was port sampling. It remains to be seen what impact this data gap will have in the future – at present we cannot judge. 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 (although a proposal is put forward in the stock assessment appendix). 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. **SG60, SG80 and SG100 are 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. aging studies).

Formal stock assessments have taken place every few years (2011, 2014, 2017 updated 2018, 2020). 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 (Pilling et al., 2016, 2017; Brouwer et al., 2018).

On this basis, **SG60 and SG80 are 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 (Hampton and Williams, 2017);
- Some data gaps remain in fishery-dependent data (see Section 6.6.4);
- 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 stock assessments has been much reduced since the work on growth starting in 2017/18, 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. There has been gradual improvement in the data from Indonesia, the Philippines and Vietnam over the last decade or so. The most recent WCPFC/Indonesia workshop noted a considerable improvement in catch estimates from Indonesia in 2019 relative to previous years.

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), and was not included in subsequent assessments.

A report by Pew Charitable Trusts (Pew, 2019) highlights uncertainties in the declaration of transshipments and provides evidence that points to the possibility of significant levels of undeclared transshipments from longline vessels. WCPFC estimates that ~34% of bigeye catch was transshipped in 2019 so for bigeye this is a significant issue. WCPFC is reviewing its transshipment CMM (2009-06) via a Transshipment Intersessional Working Group which first met at TCC15 (2019) but as of TCC16 (2020) does not appear to have made much progress (WCPFC_TCC, 2020). The WCPFC Secretariat is also developing a Transshipment Analysis Tool which uses VMS data to detect potential high seas transshipment events by noting when two vessels were within 250m of each other for at least 4 hours. They note that this is so far very preliminary but hope that it will eventually be able to support validation of reported transshipment data (WCPFC, 2020e).

Following peer review comments, the assessment team followed up the question of transshipment data with WCPFC (Dr Peter Williams, WCPFC, pers. comm.). In fact, WCPFC do not rely on transshipment data to quantify removals from the stock, since it is very challenging for transshipment observers to estimate quantities accurately. Instead, they rely on logbooks and reports from CCMs, and use VMS data to cross-check logbook data.

Thus, overall while there are some concerns around reporting of various types of data, these issues are being addressed by WCPFC and there is no evidence that they significantly compromise the robustness of the stock assessment (as per the sensitivity including IUU in the stock assessment). **SG80 is met.**

References

Pilling and Brouwer (2017), Indonesia et al. (2018), Farley et al. (2019), Farley et al. (2017; 2018b; 2020), Hampton and Williams (2017), Vincent et al. (2018), Williams (2017, 2019), Hoyle and Nichol (2008), McKechnie et al. (2015), Brouwer et al. (2018), WCPFC (2018, 2019d), McKechnie et al. (2017a), Ducharme-Barth et al. (2020), Peatman et al. (2019), Pew (2019), WCPFC (2020e) and WCPFC_TCC (2020)

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 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. A new approach for the 2020 assessments is to combine longline data in each region into a standardised 'index fishery'. SPC have considerable experience in the development and application of MFCL. The assessment is considered appropriate for the stock, taking into account the major features relevant to the biology of the species and the nature of the UoA (more detail is given in Section 6.6.5). Although there is no HCR in place, the assessment is appropriate for the stock and for a potential rule as required by the framework in CMM 2014-06 and accounts for the major features of the species and the UoA, therefore **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

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 25 and PI 1.1.1. **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

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 6.6.5). **SG60 and SG80 are 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 25). The probabilities quoted in 1.1.1 are based on the uncertainty grid, which normally would be defined by the SC – but in this case (lack of scope to debate the issues in a remote meeting) the grid defined by the stock assessment team was retained unchanged.

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). It should be noted that this is no different to any other stock assessment. 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?		No

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 26). The transition from the 2017 to the 2020 diagnostic model is set out in the stock assessment report (Ducharme-Barth et al., 2020) 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. (2015) (although the SC recommend revisiting this hypothesis, as is due to happen in 2021); the index fishery approach has been used here for the first time having been first tried in the most recent South Pacific albacore assessment. Opportunities for improving the input data (e.g. Peatman et al. (2019), Vincent and Ducharme-Barth (2020)) or developing new sources of input data (e.g. PNA (2017)) are considered by SPC and/or the SC each year. In other words, alternative hypotheses and approaches are rigorously explored.

SC SC16, however, expressed concerns about how robust this assessment is: specifically they are concerned that it is over-parameterised, and they requested an external review of the assessment at the earliest opportunity. On this basis, it may not be robust – **SG100 not 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

The initial proposed approach from SPC is reviewed by external scientists in a pre-assessment workshop (Hamer and Pilling, 2020). The final assessment is then evaluated by the Scientific Committee who (in normal circumstances) 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). **SG80 is met**. Although there is some external review, SC16 expressed the review that it was not sufficient and a formal external review was required, so on this basis, **SG100 is not met.**

References

Pilling and Brouwer (2017), Tremblay-Boyer et al. (2017a), Vincent et al. (2018), PNA (2017), McKechnie et al. (2015; 2017a), Peatman et al. (2017), WCPFC (2018, 2020d), Ianelli et al. (2012), Ducharme-Barth et al. (2020), Peatman et al. (2019), Vincent and Ducharme-Barth (2020), Hamer and Pilling (2020)

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

6.7 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 programme, 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 Redlist 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 Primary species and secondary species

According to the observer data (Table 14 and Table 15), no **main** primary or secondary species were identified, other than the Principle 1 target species outside their respective UoAs, all of which are primary species. Further detail on the assessment of the primary and secondary species components is presented in the scoring tables (Section 1.1.1).

6.7.3 ETP species

The criteria for designating ETP species are set out in Section 6.7.1. The following legislation and binding agreements were considered for the designation of ETP species:

- WCPFC Conservation and Management Measures:
  - CMM 2011-03 to address the Impact of Purse Seine Activity on Cetaceans
  - CMM 2018-03 to mitigate the impact of fishing for highly migratory fish stocks on seabirds
  - CMM 2018-04 on sea turtles
  - CMM 2019-04 on sharks
  - CMM 2019-05 on mobulid rays caught in association with fisheries in the WCPFC Convention Area (in force from January 2021).
- CITES appendix I listing: Bryde's whale, blue whale, sei whale, minke whale, all sea turtles, black-footed albatross; and
- Section 913 of FSM Code Title 24: Additional FSM national legislation on all sharks and rays.

The ETP species found to be interacting with the UoA according to the observer data (Table 14 and Table 15) are listed in Table 28 and Table 29 for unassociated and associated sets, respectively. For each species, the total yearly number of encounters recorded by observers between 2015 and 2019 is shown, as well as the condition upon release.

Each ETP species scoring element is discussed further in the ETP Species Performance Indicator scoring tables (Section 1.1.1).

Table 28. Total annual ETP species encounters recorded in SPC UoA observer data for unassociated sets (UoAs 1, 3, 5) between 2015 and 2019, together with a summary of the condition upon release (all individuals were discarded). Empty cells signify no encounters observed.

Species	2015	2016	2017	2018	2019	Condition upon release
Elasmobranchs						
Silky shark	45	722	215	219	1081	19% alive; remainder dead or unknown
Oceanic whitetip shark	13		2	1	5	27% alive; remainder dead or unknown
Copper shark					21	Condition unknown
Whale shark	3	1		1	5	All alive
Great hammerhead	1					Unknown condition
Mobulidae*	22			3	13	All in unknown condition
Giant manta	9	1		2	16	All in unknown condition
Pelagic stingray	2					All in unknown condition
Cetaceans						

Species	2015	2016	2017	2018	2019	Condition upon release
Bryde's whale				17		Majority in unknown condition
Common dolphin					10	All dead
Rough-toothed dolphin					9	78% dead
Short-finned pilot whale	6					All alive
False killer whale	2			2	3	All alive
Blue whale					1	Alive
Sea turtles						
Green turtle	1			1		Both alive

*Mobulidae species: may include *Mobula kuhlii* (shortfin devil ray), *Mobula mobular* (giant devil ray), *Mobula eregoodootenkee* (pygmy devil ray), *Mobula japonica* (spinetail devil ray), *Mobula munkiana* (Munk's devil ray), *Mobula tarapacana* (Chilean devil ray), *Mobula thurstoni* (smoothtail mobula), *Mobula alfredi* (Alfred manta), *Manta birostris* (giant manta) (Couturier et al., 2012).

Table 29. Total annual ETP species encounters recorded in SPC UoA observer data for associated sets (UoAs 2, 4, 6) between 2015 and 2019, together with a summary of the condition upon release (all individuals were discarded). Empty cells signify no encounters observed.

Species	2015	2016	2017	2018	2019	Condition summary
Elasmobranchs						
Silky shark	1746	1992	1873	1430	1751	8% alive; remainder dead or unknown
Oceanic whitetip shark	9	2	3	26	12	52% alive; remainder dead or unknown
Copper shark					9	All in unknown condition
Whale shark	2		1	1	4	All but 1 alive, 1 in unknown condition
Bigeye thresher	1					Unknown condition
Mobulidae spp.*	17	9	22	13	5	All in unknown condition
Giant manta	1	2	1	17	11	All in unknown condition
Pelagic stingray		3		1		All in unknown condition
Cetaceans						
False killer whale	31	30	20	21	31	80% alive; remainder dead or unknown
Rough-toothed dolphin	23		7	5		51% alive
Sei whale					23	All but one alive
Spinner dolphin			10	1		All dead
Melon-headed whale					11	All in unknown condition
Short-finned pilot whale				3		All alive

Species	2015	2016	2017	2018	2019	Condition summary
Bryde's whale	2				1	All alive
Indo-Pacific bottlenose dolphin			1		12	60% alive; remainder dead or unknown
Baleen whales nei	1					Alive
Bottlenose dolphin				1		Dead
Minke whale	1					Alive
Cuvier's beaked whale	1					Alive
Sea turtles						
Green turtle	1			1	2	All but 1 alive; 1 in unknown condition
Olive ridley turtle			1	1		All alive
Loggerhead turtle	1	1				1 alive; 1 in unknown condition
Hawksbill turtle	2					All alive
Leatherback turtle				1		Alive
Seabirds						
Black-footed albatross	1					Alive
Antarctic giant petrel		1				Alive

*Mobulidae species: may include *Mobula kuhlii* (shortfin devil ray), *Mobula mobular* (giant devil ray), *Mobula eregoodootenkee* (pygmy devil ray), *Mobula japonica* (spinetail devil ray), *Mobula munkiana* (Munk's devil ray), *Mobula tarapacana* (Chilean devil ray), *Mobula thurstoni* (smoothtail mobula), *Mobula alfredi* (Alfred manta), *Manta birostris* (giant manta) (Couturier et al., 2012).

6.7.4 Habitats

The purse seine gear in this fishery is strictly pelagic and therefore the fishing operation itself does not impact on benthic habitats. Note that commercial purse seining for tuna is not permitted in waters up to 24nm from any FSM islands – these waters are instead reserved for domestic resource exploitation. Considering the significant cost of the gear, the size of the operation, the make-up and configuration of the gear (with the net attached to two parts of the boat), the loss of the purse seine is considered unlikely. This was confirmed by the client group during the site visit who indicated most gear damage occurs when the net tears and which can be repaired onboard the vessel. Between trips, gear condition is also checked and maintained to prevent such incidents from occurring.

Units of Assessment 2, 4 and 6 all involve purse seine sets on floating objects, amongst which drifting FADs form an important component (up to 71% of all set types according to observer data; Table 13). FADs are subject to water logging and are likely to lose buoyancy by 10-12 months but have been known to have a lifespan of up to 2 years (Banks and Zaharia, 2020). Drifting FADs may also be abandoned when they drift out of a company's fishing grounds, including into areas where a vessel is not authorized to fish, as well as at the beginning of a dFAD seasonal closure period. A vessel may retrieve its satellite buoy but abandon the attached dFAD if the fishing grounds were not productive and if the dFAD was worn-out and damaged (FAO, 2018). A significant number of FADs that are deployed also gets appropriated by competitive fleets. Therefore, when a satellite buoy signal ceases,

companies most often do not know the cause: they do not know if the buoy was exchanged by another company, if the buoy malfunctioned or if the dFAD and buoy sank (FAO, 2018). An overview of the fate of FAD buoys in PNA waters (based on company, including UoA, buoy data submitted to the PNA FAD tracking programme) is shown in Figure 21. The majority of FAD buoys were classified as abandoned (42.1%), followed by those classified as uncertain (41.1%). Amongst the latter, 21.1% were deactivated by the fishing company and left drifting unmonitored at sea (uncertain fate classified as "Closure", "End of Year" and "Pre beaching"); and 20.0% were sunk, appropriated, or with a malfunctioning buoy (uncertain fate classified as "Unknown" and "PNA border"). Overall, Escalle et al. (2020a) estimate that 16,147 buoys (43.4%) are unmonitored within PNA waters. Finally, a total of 9% of buoys were retrieved and 7.4% were beached (Escalle et al., 2020a).

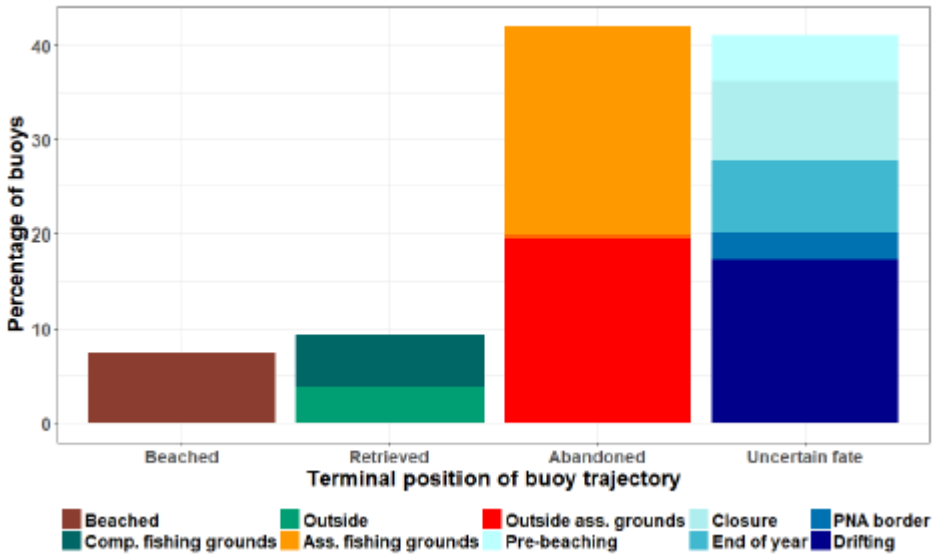


Figure 21. Percentage of buoys' terminal position classified as beached; retrieved (within or outside the fishing grounds of the company owning the FAD) by any vessel; abandoned (within or outside the general purse seine associated fishing grounds); or uncertain from 2016–2020. Results based on buoys from companies with at least three purse seiners and with the last transmission in the dataset before 2020 (37,210 buoys). From Escalle et al (2020a).

In the WCPO, abandoned, lost or discarded FADs can end up stranded in Pacific Island countries, whose coasts are lined with coral reef (e.g. Escalle et al. (2019)). The prevailing westward currents across the tropics in the Pacific carry dFADs in a westward direction, with beaching events influenced by (i) the density of dFADs near landmasses and (ii) local bathymetry and ocean circulation close to land (Escalle et al., 2019). Escalle et al. (2019) estimated the distribution of projected dFAD beaching events[8] from the PNA purse seine fishery, which this fishery is a part of, based on 22,620 observed dFAD trajectories between Jan 2016 – Dec 2017[9], as well as Lagrangian particle simulations of over 1.5 million virtual dFADs. Using the trajectories of both datasets, the connectivity between observed

[8] Beaching events were assumed when dFADs had the last recorded position within 10 km of shore (excluding positions located at less than 10km from major ports) and at least the last three positions at 0m, <10m, or <100m from each other. Coastal cells (1 × 1°) with at least one projected beaching event were classified as beaching cells (Escalle et al., 2019 and 2020a).

[9] The findings by Escalle et al. (2019) reflect beaching conditions under specific oceanographic conditions. In particular, early 2016 corresponded to the decay phase of a strong El Niño, which was followed by neutral conditions throughout 2017. Beaching patterns and connectivity are likely to change under different ENSO phases (Escalle et al., 2019).

beaching areas and dFAD deployment source locations was quantified with three "beaching regions" defined: (i) the southwest area comprising the EEZs of Papua New Guinea and Solomon Islands (and any other areas west of 175°E), with the highest number of beaching events per single cell and per EEZ; (ii) the southeast area comprising mostly the EEZs of Nauru, Kiribati Gilbert Islands and Tuvalu, with relatively high numbers of beaching events by cell; and (iii) the north area comprising mostly Federated States of Micronesia and Republic of the Marshall Islands EEZs, which presented a lower number of beaching events (Escalle et al., 2019).

Three types of 'notable' beaching locations, i.e. those with particularly high or low numbers of beaching events relative to their local dFAD density, were identified: (i) "high density cells", where beaching events are proportional to dFAD density; (ii) "beaching prone cells", with higher number of beaching events relative to the local density; and (iii) "beaching resilient cells", with a low number of beaching events and a high local dFAD density. Beaching prone cells were mostly found in the southwest area (Papua New Guinea and Solomon Islands), but also some in the southeast area. Finally, only two beaching resilient cells were found, both located in the southeast area (Figure 22).

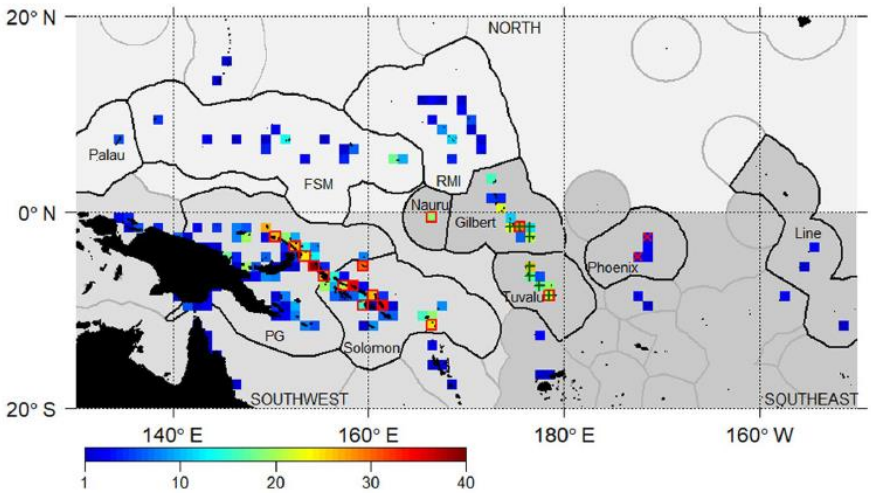


Figure 22. Number of beaching events (1,320 in total) per 1° grid cell across 2016 and 2017. Countries that form the Parties to the Nauru Agreement (Federated States of Micronesia, Kiribati (Gilbert, Phoenix and Line Islands), Republic of the Marshall Islands, Nauru, Palau, Papua New Guinea (PG), Solomon Islands and Tuvalu) and the three defined beaching areas (north, southwest and southeast) are indicated on the map (different shades of grey). Notable beaching cells are displayed as follows: (i) high-density cells (green plus) where beaching events are proportional to dFAD density; (ii) beaching-prone cells (red crosses) with high numbers of beaching events but low local dFAD density; and (iii) beaching-resilient (red squares) cells with low numbers of beaching events and high local dFAD density (Escalle et al., 2019)**.**

According to the authors, broad-scale connectivity between beaching areas and deployment zones, based on both observed and simulated dFADs were comparable. In particular, there was limited cross-equatorial connection for dFADs. In the north area, there was no dominant direction for dFAD movement, with FSM and the Republic of the Marshall Islands experiencing relatively low levels of beaching, from dFADs deployed in the northern hemisphere and influenced by ocean circulation (Escalle et al., 2019).

The likelihood and severity of beaching events can be mitigated through limiting FAD deployments, simplifying FAD structure, avoiding FAD deployment areas that imply high risk of stranding, using FADs that remain in the fishing area (e.g. FADs with navigation capability, FADs that could be sunk, anchored FADs), recover FADs at sea, and recover FADs from the coast (Davies et al., 2017). In this context, the

Client fishery has been taking a number of steps to reduce the likelihood and severity of beaching events:

Non-entangling FAD and biodegradable FADs:

As explained in Section 6.2, all dFADs used in this fishery are designed in accordance with ISSF best practice, and lower-entanglement risk FADs are use, as verified by observers through Gen-5 form (under FAD materials and attachments), through periodic audits by an independent, third-party auditor pursuant to the current ISSF PVR Audit Protocols[10], and via photographic evidence provided to the audit team. Within the client group, CFC have also been testing biodegradable FADs in the context of ISSF's Guide to Non-entangling and Biodegradable FADs (ISSF, 2019) and activities to support the conservation work of the WCPFC: ISSF — in collaboration with the FAO-GEF-funded Common Oceans ABNJ Tuna Project — hosted four biodegradable FAD workshops in the WCPO in 2019: in Papua New Guinea, FSM, the Philippines and the Marshall Islands.

After the workshops, a pilot project to test 100 biodegradable FADs with the Carolina Fishing Company fleet based in FSM was launched. ISSF partner scientists used lessons from the workshops and pilot project to plan a potential WCPO-wide biodegradable FAD research project that considers the regional characteristics of FADs and fleet behaviour[11]. Under the pilot project, CFC are testing two different FAD type designs, both of which are non-entangling. One consists of steps of canvas and the other is a box made of bamboo and canvas that is hoisted to about 40-60 meters in depth. Trials thus far have identified some issues[12] as the materials used are not sufficiently durable; however, CFC are planning on deploying 27 more biodegradable FADs with new specifications in the first half of 2021.

At regional level, CMM 2018-01 (now superseded by CMM 2020-01) sets out the following requirements in relation to FAD design:

- To reduce the risk of entanglement of sharks, sea turtles or any other species, as from 1st January 2020, CCMs shall ensure that the design and construction of any FAD to be deployed in, or that drifts into, the WCPFC Convention Area shall comply with the following specifications:
    - The floating or raft part (flat or rolled structure) of the FAD can be covered or not. To the extent possible the use of mesh net should be avoided. If the FAD is covered with mesh net, it must have a stretched mesh size less than 7 cm (2.5 inches) and the mesh net must be well wrapped around the whole raft so that there is no netting hanging below the FAD when it is deployed.
    - The design of the underwater or hanging part (tail) of the FAD should avoid the use of mesh net. If mesh net is used, it must have a stretched mesh size of less than 7 cm (2.5 inches) or tied tightly in bundles or "sausages" with enough weight at the end to keep the netting taut down in the water column. Alternatively, a

[10] https://iss-foundation.org/pvr-terms-and-conditions/

[11] https://iss-foundation.org/promoting-fisher-gear-that-can-better-protect-the-worlds-largest-tuna-fishing-region/

[12] ISSF comment (dated June 2021) : From a point of view of developing more sustainable fishing technology, the initial trials were very successful as they allowed for the identification of critical changes that needed to be implemented. These changes will be trialed in a second phase that is starting now.

single weighted panel (less than 7 cm (2.5 inches) stretched mesh size net or solid sheet such as canvas or nylon) can be used.

- To reduce the amount of synthetic marine debris, the use of natural or biodegradable materials for FADs should be promoted. The use of non-plastic and biodegradable materials in the construction of FADs is encouraged.
- The Scientific Committee shall continue to review research results on the use of non-entangling material and biodegradable material on FADs, and shall provide specific recommendations to the Commission as appropriate.
- The Commission at its 2020 annual session, based on specific guidelines defined by the FAD Management Options Intersessional Working Group and advice from SC16 and TCC16 shall consider the adoption of measures on the implementation of non-entangling and/or biodegradable material on FADs.

Limits on FAD deployment:

Escalle et al. (2019) recommended that WCPO-wide or region-specific deployment limits should be considered as potential mitigation measures against negative impacts of dFAD use such as beaching. Although the connectivity between FAD deployment and beaching events varied depending on region and deployment zone in their study, Escalle et al. (2019) concluded that overall limits would be required for effective mitigation in areas where beaching is influenced by ocean circulation (Papua New Guinea, Solomon Islands, Tuvalu and northern area's EEZ including FSM), with more spatially explicit restrictions on FAD deployments required in other areas.

There is no formal company policy that limits FAD deployment. For both companies combined, approximately 1,400 FADs were deployed in 2020 based on buoy data, which is approximately 140 per year per vessel (based on 10 currently active vessels in the UoA). The level of UoA FAD deployments is therefore well below the regionally set limits as per CMM 2020-01. In addition, seasonal FAD closures apply, which the UoA is required to adhere to. The FAD set requirements set out in CMM 2020-01 are as follows:

- Prohibition of deploying, servicing or setting on FADs from 1 July to 30 September in all waters within the WPCFC convention area;
- Additional 2-month closure on the High Seas (with some exceptions not relevant to the UoA), either from April to May or November to December;
- A flag CCM shall ensure that each of its purse seine vessels shall have deployed at sea, at any one time, no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys. The Commission at its 2019 annual session, based on consideration in the FAD Management Options Intersessional Working Group, shall review whether this number is appropriate.

The degree to which the above 350 buoy limit truly limits FAD deployments is, however, under debate. PNA in particular have stated the following to the assessment team: "*PNA does not support FAD limits since were vessels to apply 350 FADs, it actually caters for a significant increase in FAD deployments. PNA's focus on FAD management is explicitly to follow the recommendations in Banks and Zaharia* (ref to Banks and Zaharia (2020)) to *transition to Non Entangling FADs, and thereafter to biodegradable FADs. These would most likely reduce the impact of coastal and benthic habitats, and eliminate the impact of FADs on unobserved catch*."

At national level, the FSM FAD management plan represents the policy of the FSM Government and does not have legal effect in its own right. The plan sets out an annual limit of 100 FADs per FSM flagged vessel in both the FSM EEZ and High Seas, and 50 per foreign flagged vessel in the FSM EEZ. However, interviews carried out during the site visit indicate that FAD or FAD buoy deployments are not currently being monitored by NORMA and this measure is not being enforced.

FAD tracking

In order to quantify and manage the number of dFADs deployed in and drifting through the EEZs of PNA members (Federated States of Micronesia, Kiribati, Republic of the Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu), a dFAD-tracking programme was initiated in January 2016 by the PNA Office (PNAO). This programme requires fishing companies to report data from satellite buoys deployed on dFADs to the PNA via the satellite service provider. Up till now, participation has been voluntary, with CFC and DYS submitting FAD tracking data to PNAO with a 60-day delay.

Transmission frequency (usually every hour) may vary over time due to fishers setting different transmission 'modes'. For example lower frequencies are typically used when dFADs drift away from main fishing areas or during the WCPO dFAD closure period. Transmissions start when the buoy is activated, which can be a few hours to several days before deployment, and continue until deactivation (e.g. dFAD lost, retrieved, beached or outside the productive area that each vessel operates in) (Escalle et al., 2019). In addition, FAD deployments recorded by observers since 2011 (the first year of full observer coverage requirement) provides further information on vessel-level patterns in the WCPO (Escalle et al., 2018). These data are now being used in the context of FAD impact management, particularly as it relates to beaching events (see for example Escalle et al. (2019)).

Note however that systematic modification of buoy transmissions to PNA with information outside PNA EEZs being removed prior to data transmissions (i.e. "geo-fenced" FADs) occurred throughout the whole 2016–2020 period in the Escalle et al. (2020a) study. Although PNA Members have agreed to require all FAD buoys to be registered and transmit regular position data to the PNA while a vessel is licensed to a PNA Member – including transmitting data from high seas areas between 20° North and 20° South of the WCPFC convention area (Escalle et al., 2020a) –this was not in force at the time of the assessment.

FAD recovery

In contrast with the Indian Ocean, where the multi-sectoral FAD Watch project was implemented to prevent and mitigate FAD beaching across islands in the Seychelles (Zudaire et al., 2018), there is no formal FAD recovery project in the WCPO. However, according to Escalle et al. (2019), such a programme would be more complicated for the WCPO given (i) the large geographic spread of dFADs; (ii) the number of small remote islands; (iii) the size of the purse seine fleet; and (iv) the number of dFADs deployed. From PNA FAD tracking data, Escalle et al. (2020a) determined that abandoned buoys were typically found at distances 502–952 km from port, with an average of 780 km. This suggests the potential recovery of abandoned buoys would currently be complicated and expensive. Escalle et al. (2019) comment that switching to a different management regime or designing specific measures to limit marine pollution and beaching may be more appropriate for this region, including the requirement that dFAD position should be reported to better aid estimation of total beaching events and assist in locating dFADs already beached for potential retrieval.

In this context, Escalle et al. (2020b) outlined a series of data collection programmes that are currently underway: these include programmes that have commenced earlier in 2020 in the Cook Islands and

Wallis and Futuna, along with the distribution of local communication support. Reports include dFADs and satellite buoys newly beached or drifting in coastal waters, but also an inventory of dFADs and buoys previously picked up by the public. The development of a data collection awareness programme was also due to commence in 2020 in the Federated States of Micronesia (FSM) and the Republic of Marshall Islands (RMI), but the onset of COVID-19 has slowed progress. In addition to an English version, posters have also been translated into 5 languages in FSM and into Marshallese in RMI. They will be printed in the coming months for distribution, followed by the start of data collection soon thereafter. Outer island communities regularly find FADs and keep satellite buoys. One potential initiative for these isolated communities is to associate the data collection programme with learning ways of re-using and recycling FAD and buoy materials for their own use. French Polynesia has also started a large project to quantify the number of dFADs drifting within its EEZ, including the number of beached dFADs and their ecosystem impacts. Finally, at Palmyra Atoll, The Nature Conservancy (TNC) and the U.S. Fish and Wildlife Service (USFWS) have been collecting data on dFAD strandings since 2009 and a dFAD Watch type program (e.g. see Zudaire et al. (2018)) is also currently under development at Palmyra Atoll. This would involve fishing companies alerting local partners if a dFAD comes close to Palmyra Atoll's shores, so that it can be picked up before causing any environmental damages. Overall, the data collected will allow comparison with existing dFAD-related databases in the WCPO (e.g., observer data, PNA dFAD tracking data), but also in the EPO as currents usually bring dFADs East to West. This could help identify the origin (deploying vessel) and life history of dFADs (area and date of deployment, drift and/or fishing performed on dFADs). In addition, this would complement data already collected on beaching events (i.e. PNA FAD tracking data, see Escalle et al. (2020b))

6.7.5 Ecosystem

The P2 Ecosystem component considers the broad ecological community and ecosystem in which the fishery operates and addresses system-wide issues, primarily impacted indirectly by the fishery, including ecosystem structure, trophic relationships and biodiversity (Blyth-Skyrme, 2016).

The vast majority of the FSM EEZ and adjacent High Seas areas lies within the Western Pacific Warm Pool (Warm Pool). In the context of this fishery, the assessment focused on the pelagic ecosystem of the Western Pacific Warm Pool, as the ecosystem under consideration. This body of water is characterised by high sea surface temperatures and low levels of primary production compared to the adjacent equatorial upwelling known as the cold tongue. The Warm Pool represents the western boundary of the South Pacific Subtropical Gyre, containing some of the warmest open ocean temperatures in the world (reaching up to 27°C at the edges, and 30°C in the centre) (Kawahata et al., 2000). The expanse of the Warm Pool is constantly in flux. On an annual basis, warm water will migrate south of its average position during the Northern Hemisphere's winter, and vice versa. During a La Niña or El Niño year, the eastern boundary of the warm pool will often advance or pull back for several months (Lehodey, 2001). Here, annual variations are overlaid upon slower oscillation periods, occurring over 10 to 20 years. While the yearly oscillations affect the position of the Warm Pool within the Pacific, the long-term patterns of oscillation affect its expanse (Lindegren et al., 2018). The underpinning mechanism for these long-term patterns is thought to be fluctuating subsurface currents, though this has yet to be proven (Hu et al., 2015). Front systems, where fish tend to aggregate, are thus subject to unpredictable distortion and displacement. The result of this variability is that the FSM waters are undergoing complex temperature oscillations, with implications for the distribution and abundance of primary production, large pelagics biomass and as would be expected, fisheries.

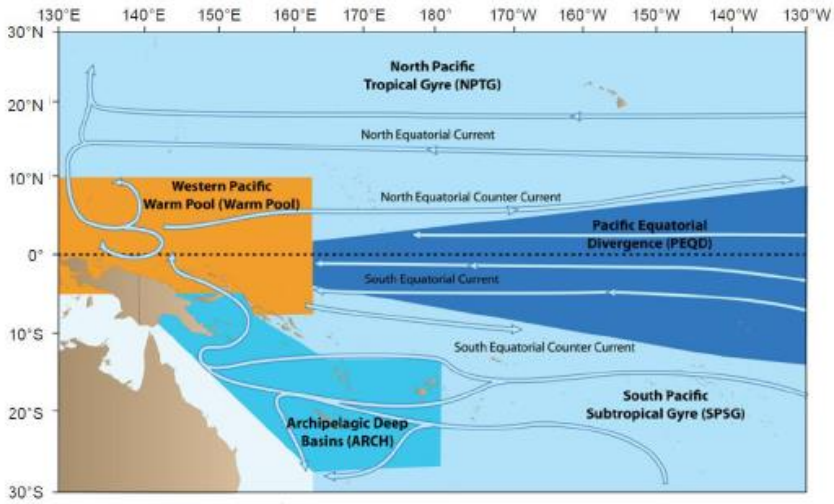


Figure 23. The five ecological provinces of the tropical Pacific Ocean. The FSM EEZ is located in the Warm Pool (from Le Borgne et al. (2011)**).**

6.7.6 Scoring elements

Table 30. Principle 2 scoring elements

Component	Scoring elements	Designation	Data-deficient
Primary	Unassociated sets: UoA 1: WCPO yellowfin UoA 3: WCPO skipjack UoA 5: WCPO skipjack, WCPO yellowfin Associated sets: UoA 2: WCPO yellowfin, WCPO bigeye UoA 4: WCPO skipjack, WCPO bigeye UoA 6: WCPO skipjack, WCPO yellowfin	Main	No
	Unassociated sets: UoAs 1, 3: WCPO bigeye, Western and Central North Pacific striped marlin, Southwest Pacific striped marlin, North Pacific albacore, South Pacific albacore UoA 5: Western and Central North Pacific striped marlin, North Pacific albacore Associated sets: UoAs, 2, 4, 6: Western and Central North Pacific striped marlin, Southwest Pacific striped marlin, North Pacific albacore, South Pacific albacore	Minor	No
Secondary	None	Main	No
	See Table 14 and Table 15	Minor	Yes (however RBF not applied which caps the score at 80)
ETP	See Table 28 and Table 29 for a list of ETP species scoring elements for each UoA	N/a	No
Habitats	Water column	Commonly encountered	No

	Coral reef	VME	No
	Seagrass beds, mangroves, sandy beaches, seamounts and abyssal plains	Minor	Yes – RBF not applied

6.7.7 Principle 2 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	Main primary species are **likely** to be above the PRI. OR 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.	Main primary species are **highly likely** to be above the PRI. OR 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.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	All UoAs	Skipjack, yellowfin and bigeye – Yes	Skipjack, yellowfin and bigeye – Yes	Skipjack, yellowfin and bigeye – Yes

Rationale

According to the observer data (Table 14 and Table 15), no main primary were identified, other than the Principle 1 target species outside their respective UoAs, all of which are primary species. The main primary species are therefore as follows:

Unassociated sets:

UoA 1: WCPO yellowfin

UoA 3: WCPO skipjack

UoA 5: WCPO skipjack, WCPO yellowfin

Associated sets:

UoA 2: WCPO yellowfin, WCPO bigeye

UoA 4: WCPO skipjack, WCPO bigeye

UoA 6: WCPO skipjack, WCPO yellowfin

Skipjack: There is a high degree of certainty that skipjack is above the PRI (see 1.1.1.a; Scoring table 1) and is fluctuating around a level consistent with MSY (see 1.1.1b; Scoring table 1). **SG60, SG80 and SG100 is met**.

Yellowfin: There is a high degree of certainty that yellowfin is above the PRI (see 1.1.1.a; Scoring table 7) and is fluctuating around a level consistent with MSY (see 1.1.1b; Scoring table 7). S**G60, SG80 and SG100 is met.**

Bigeye: There is a high degree of certainty that bigeye is above the PRI (see 1.1.1.a; Scoring table 13) and is fluctuating around a level consistent with MSY (see 1.1.1b; Scoring table 13). **SG60, SG80 and SG100 is met**.

UoAs 2, 4, 6 (associated sets; all scoring elements): In relation to unobserved mortality caused by entanglement in FADs (whether they are active, lost or abandoned), the client fleet has committed to deploying lesser-entangling FADs only, which is in line with WCPFC CMM 2018-01 requirements and its successor CMM 2020-01. All netting used is small-meshed (as per ISSF guidance). Although lesser entangling FADs can still unravel over time (thereby increasing the risk of entanglement) the team concludes that the risk posed by deteriorating sausage nets at the scale of the UoA remains sufficiently low. Murua et al. (2014) state that 'This kind of tied-netting design was initially envisaged by scientists as an intermediate step towards non-entangling FADs that greatly reduces entanglement, with a low incidence of ghost fishing reported only if the bundles become untied'. FAD design is verified by observers through Gen-5 form (under FAD materials and attachments), through periodic audits by an independent, third-party auditor pursuant to the current ISSF PVR Audit Protocols, and via photographic evidence provided to the audit team. This, combined with the relatively low amount of FADs deployed by the UoA (approximately 140 per vessel per annum) means that the direct effects of the UoA through unobserved mortality are likely to be a negligible factor in the fishery's interactions with main primary species to the extent that this will have stock-level effects.

SG60, SG80 and SG100 are met for all UoAs.

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

		If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	All UoAs	Bigeye, striped marlin, albacore – Yes

Rationale

According to the observer data in Table 14 and Table 15, the following minor primary species were identified:

Unassociated sets:

UoAs 1, 3: WCPO bigeye, Western and Central North Pacific striped marlin, Southwest Pacific striped marlin, North Pacific albacore, South Pacific albacore

UoA 5: Western and Central North Pacific striped marlin, Southwest Pacific striped marlin, North Pacific albacore, South Pacific albacore

Associated sets:

UoAs, 2, 4, 6: Western and Central North Pacific striped marlin, Southwest Pacific striped marlin, North Pacific albacore, South Pacific albacore

Bigeye: see scoring issue a; this stock is highly likely to be above the PRI; **SG100 is met.**

Striped marlin: Although most of the UoA fishery takes place in the North Pacific (within the FSM EEZ), some high seas sets may be carried out south of the Equator. Given that there are two Western Pacific striped marlin stocks (one North, one South), both were considered in the scoring here.

Western and Central North Pacific striped marlin: According to the latest stock assessment (ISC, 2019), the 2017 spawning stock biomass of 981 mt is 62% below SSB_{MSY} (2,604 t) and the 2015-2017 fishing mortality exceeds F_{MSY} by 7%. Therefore, relative to MSY-based reference points, overfishing is occurring and the WCNPO striped marlin stock is overfished (WCPFC, 2019e). No limit reference point has been defined for this stock; however, applying the MSC default PRI proxy of 75% B_{MSY} (for situations where B_{MSY} <27%B_0 – see GSA2.2.3.1), the spawning stock biomass is clearly below this level. The first part of SG100 is therefore not met. According to the UoA observer data (Table 14, Table 15), annual catch of this species (both stocks combined) averages at less than 0.5t for each UoA set type (the 2019 total combined WCPO catch was estimated at 2,825 tonnes[13]). It can therefore be concluded that there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species. **SG100 is met.**

Southwest Pacific striped marlin: The latest stock assessment (Ducharme-Barth et al., 2019), updates all data to the end of 2017 and reflects recommendations from the 2012 stock assessment report, the 2019 pre-assessment workshop (PAW), updates to the MULTIFAN-CL software, and explores uncertainties in the model, particularly as related to

[13] https://www.wcpfc.int/doc/annual-catch-estimates-excel-files (last accessed 7 April 2021).

the biological assumptions made (see Ducharme-Barth et al. (2019) and references therein). Uncertainty in the stock status and key reference points was high, though a consensus of models indicated a clear, declining trend in stock status. 69% of runs estimate recent spawning biomass to be less than the spawning biomass that supports MSY (SB_{recent}/SB_{MSY} < 1) and 50% of runs indicate that recent spawning biomass is at less than 20% of the unfished level of spawning biomass ($SB_{recent}/SB_{F=0}$ < 0.2), considered here as the PRI proxy. The first part of SG100 is therefore not met. According to the UoA observer data (Table 14, Table 15), annual catch of this species (both stocks combined) averages at less than 0.5t for each UoA set type (the 2019 total WCPO combined catch was estimated at 2,825 tonnes). It can therefore be concluded that there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species. **SG100 is met.**

Albacore: As for striped marlin, scoring takes into account the presence of a South and North Pacific albacore stock.

North Pacific albacore: According to the latest stock assessment (ISC, 2017), the SSB_{2015} was estimated to be 80,618 t and was 2.47 times greater than the LRP threshold of 32,614 t; the stock is not considered overfished relative to the limit reference point adopted by the WCPFC (20%$SSBcurrent_{F=0}$). **SG100 is met**.

South Pacific albacore: The latest stock assessment was carried out by Tremblay-Boyer et al. (2018). 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} is analytically determined in the stock assessment to be below the LRP (~15.6%$SB_{F=0}$). 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 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 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}. 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**.

UoAs 2, 4, 6 (associated sets): In relation to unobserved mortality caused by entanglement in FADs (whether they are active, lost or abandoned), the team took into account the fact that the UoA makes use of 'sausage nets', i.e. lower entanglement risk FADs, and concluded that unobserved mortality through entanglement at the scale of the UoA was highly unlikely to be a significant factor in the fishery's interactions with minor primary species to the extent that this will have stock-level effects.

References

ISC (2017, 2019), Vincent et al. (2018, 2019), WCPFC (2019e), Tremblay-Boyer et al. (2017b), McKechnie et al. (2017a), Ducharme-Barth et al. (2019), 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	More information sought: complete UoA logbook data needed

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

Overall Performance Indicator score	All UoAs: 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.
	All UoAs	Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – Yes Minor species – No

Rationale

See PI 2.1.1 for main and minor primary species by UoA.

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- “Measures” are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- 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.

- 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.

Skipjack, yellowfin and bigeye: 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 WCPFC16 (December 2019). In the meantime, skipjack, yellowfin and bigeye are managed through CMM 2018-01 (now superseded by CMM 2020-01), the objectives of which are as follows:

- Yellowfin and bigeye: 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.
- Skipjack: The spawning biomass of skipjack tuna is to be maintained on average at a 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.

The elements of the WCPFC harvest strategy are therefore the following (see Principle 1 for detailed discussion):

- Data collection on the stock and fishery
- Stock assessment process
- Limit reference point (20%$SB_{F=0}$), interim target reference point (50% $SB_{F=0}$) (for skipjack only) and management target ($SB_{2012-15}$; from CMM 2018-01/2020-01) (see Section 6.3.4);
- 'Available' HCR (see 1.2.2; Scoring table 4, Scoring table 10 and Scoring table 16), with some management tools set out in 2018-01 (described in Section 6.3.4), including the PNA 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, including FSM;
- Monitoring of implementation of CMM 2018-01 (superseded by CMM 2020-01) via data gathering and Part 1 and 2 reports to the Commission.

This management strategy is reviewed annually during the Commission meeting.

On the basis of the above, a strategy is in place of the main primary species. **SG60, SG80 and SG100 are met**

Minor primary species:

Note that minor species are only considered at the SG100 level; **SG60 and SG80 are therefore met by default**.

Bigeye: see above; **SG100 is met.**

Albacore:

North Pacific albacore: CMM 2019-03 requires that the total level of fishing effort for North Pacific albacore in the Convention Area north of the equator shall not be increased beyond current levels (and that CCMs shall take necessary measures to ensure that the level of fishing effort by their vessels fishing for North Pacific albacore in the WCPF Convention Area is not increased beyond 2002-2004 annual average levels) and sets out reporting requirements. This is not considered a full strategy. **SG100 is not met.**

South Pacific albacore: 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 (HCR), which at WCPFC16 was pushed back from 2021 to 2022 to avoid a clash with a stock assessment in 2021. The elements of the harvest strategy are the following:

- Data collection on the stock and fishery
- Stock assessment process
- Limit reference point (20%$SB_{F=0}$) and interim target reference point (56% $SB_{F=0}$)
- Management tools set out in CMM 2015-02 which requires 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
- Monitoring of implementation of CMM 2015-02 via data gathering and Part 1 and 2 reports to the Commission.

On the basis of the above, the team concludes that this meets the definition of a strategy under Principle 2. **SG100 is met**.

Striped marlin: CMM 2010-01 is in place for North Pacific striped marlin, which sets out a phased reduction such that by 1 January 2013 the catch is 80% of the levels caught in 2000 to 2003. The CMM also states that these measures should be amended in 2011 which does not appear to have happened. This is not considered a full strategy. **SG100 is not met.** For Southwest Pacific striped marlin, CMM 2006-04 mainly requires CCMs to limit the number of fishing vessels fishing for striped marlin in the Convention Area south of 15^{0}S, to the number in any one year between the period 2000 – 2004. Again, this is not considered a full strategy. **SG100 is not met.**

Applying the all or nothing approach for minor species, **SG100 is not met for minor species overall**.

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.
	All UoAs	Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – No Minor species – No

Rationale

Skipjack: Testing of the harvest strategy, via evaluation of management scenarios, is described in Section . The stock assessment provides evidence that it is achieving the objective of maintaining SB above SB_{MSY} and F below F_{MSY}, and projections suggest it will continue to achieve them (Section 6.4.3). This provides an objective basis for confidence that the strategy will work. **SG60 and SG80 are met**. **SG100 is not met** because these projections do not map onto the current management regime, and hence the harvest strategy cannot be fully evaluated.

Yellowfin: 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; therefore, **SG60 and SG80 are met.** While projections suggest that the harvest strategy will continue to maintain the stock at appropriate levels under most circumstances (Section 1), **SG100 is not met** because these projections do not map onto the current management regime, and hence the harvest strategy cannot be fully evaluated.

Bigeye: 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, providing an objective basis for confidence that the strategy will work. **SG60 and SG80 are 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 (Section 6.6.3).

Minor primary species:

Note that minor species are only considered at the SG100 level; **SG60 and SG80 are therefore met by default**. Given that the strategy or partial strategies have not been tested for all minor species (e.g. bigeye), **SG100 is not met** for minor species overall.

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).
	All UoAs		Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – Yes Minor species – No

Rationale

Skipjack, yellowfin and bigeye: There have been no non-compliance issues with the purse seine VDS TAE by the UoA fleet or FSM (the main instrument for controlling catches in the purse seine fishery). The comprehensive observer coverage in this fishery (see Section 6.2.4.2) provides clear evidence that at the scale of the UoA, the strategy is being implemented successfully and is achieving its overall objective. **SG80 and SG100 are met.**

Minor species: Note that minor species are only considered at the SG100 level; **SG80 is therefore met by default**. Clear evidence for all minor species is lacking; e.g. the CMMs for striped marlin being out of date by seven years makes it impossible to provide clear evidence that it is being implemented successfully. **SG100 is not met** for minor species overall.

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.
	All UoAs	N/a	N/a	N/a

Rationale

None of the primary species are sharks; this scoring issue is 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.
	All UoAs	Skipjack, yellowfin and bigeye – N/a Minor species – Yes (default)	Skipjack, yellowfin and bigeye – N/a Minor species – Yes (default)	Skipjack, yellowfin and bigeye – N/a Minor species – No

Rationale

Skipjack, yellowfin and bigeye: for the main primary species, the UoA discard rates are very low, for both the unassociated and associated set types – see Table 31. It can be concluded that the unwanted catch for these species is negligible and this scoring issue is therefore not applicable.

Minor species: Note that minor species are only considered at the SG100 level; **SG60 and SG80 are therefore met by default**. From Table 31 it is clear that discarding of striped marlin is substantial for both set types. In the absence of any reviews of measures to reduce unwanted catch of this species, **SG100 is not met** for minor species overall.

Table 31. Primary species discard rates (as a % of total catch for that species) based on 2015 – 2019 UoA SPC observer data

Species	Unassociated	Associated
Skipjack	0.74	2.63
Yellowfin	1.37	2.05

Bigeye	0.14	1.99
Albacore	0.00	0.00
Striped marlin	58.71	44.14

References

WCPFC (2020b)

ISC (2017, 2019), Vincent et al. (2018, 2019), WCPFC (2019e), Tremblay-Boyer et al. (2017b), McKechnie et al. (2017a), Tremblay-Boyer et al. (2018)

UoA observer data

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

Draft scoring range	≥80
Information gap indicator	More information sought: complete UoA logbook data needed; information on implementation VDS at UoA and FSM level.

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

Scores by scoring element	
Skipjack, yellowfin, bigeye	95
Minor species	80
Overall Performance Indicator score	All UoAs: 85
Condition number (if relevant)	N/a

Scoring table 21. PI 2.1.3 – Primary species information

Note: In response to the Covid-19 pandemic, the requirements for observer coverage on purse seine vessels were suspended from April 2020 until 15 February 2021 (https://www.wcpfc.int/doc/circ-2020-125/commission-decision-extend-decisions-response-covid-19-until-15-february-2021). The implications of the reduced observer coverage cannot not yet be assessed at the time of assessment as in many cases observer coverage will have reduced gradually rather than immediately following the derogation, with observers completing trips during the derogation period or staying in rotation. Any scoring implications will therefore be considered as and when observer data for this period becomes available – this will likely be at the next available opportunity (e.g. surveillance), pending the successful outcome of this assessment.

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.
	All UoAs	Yes (all species)	Yes (all species)	Yes (all species)

Rationale

Skipjack, yellowfin and bigeye: There is quantitative information on the catch of main 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 (see Table 31), logbooks (which provide 100% coverage), together with observer data at comprehensive levels of coverage (see Table 12) enable the impact of the UoA on these stocks to be evaluated with a high degree of 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.
	All UoAs			Yes

Rationale

Minor species: There is quantitative information on the catch of minor primary species (landings and discards) from logbooks and observers. Each of the minor primary stocks has a stock assessment (see 2.1.1b), providing quantitative information on total landings and stock biomass. Not all minor primary species are retained for sale (see Table 31 for striped marlin in particular), logbooks (which show retained catch) therefore only provide a partial picture. The high levels of observer coverage however (Table 12) ensure there is some quantitative information, which is adequate to estimate the impact of the UoA on minor species with respect to status. **SG100 is met** for the minor species.

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.
	All UoAs	Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – Yes Minor species – Yes (default)	Skipjack, yellowfin and bigeye – Yes Minor species – No

Rationale

Skipjack, yellowfin and bigeye: The combination of stock assessments (with all the associated regional data inputs), UoA logbook data at 100% coverage and high levels of observer coverage (Table 12) and VMS data, means that the information is available and adequate to support a strategy to manage all main primary species and to determine with a high degree of certainty whether the strategy is achieving its objective at the UoA level. **SG60, SG80 and S100 are met** for the main primary species.

Minor species: Note that minor species are only considered at the SG100 level; **SG60 and SG80 are therefore met by default**. Although the information is both available and adequate to support a strategy to manage the minor primary species, for striped marlin in particular, the CMMs are out of date, the extent to which it cannot be determined with a high degree of certainty whether it is achieving its objective. **SG100 is not met** for minor primary species overall.

References

WCPFC (2020b)

ISC (2017, 2019), Vincent et al. (2018, 2019), WCPFC (2019e), Tremblay-Boyer et al. (2017b), McKechnie et al. (2017a), Ducharme-Barth et al. (2019), Tremblay-Boyer et al. (2018)

UoA observer data

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

Draft scoring range	≥80
Information gap indicator	More information sought: complete UoA logbook data needed

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

Scores by scoring element	
Skipjack, yellowfin, bigeye	100
Minor species	90
Overall Performance Indicator score	All UoAs: 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	Main secondary species are **likely** to be above biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits. OR 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. AND 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.	There is a **high degree of certainty** that main secondary species are above biologically based limits.
	All UoAs	N/a	N/a	N/a

Rationale

No main secondary species were identified (Table 14 and Table 15). This scoring issue is not relevant.

In relation to unobserved mortality caused by entanglement in FADs (whether they are active, lost or abandoned), the team took into account the fact that the UoA makes use of lower entanglement risk FADs, and concluded that unobserved mortality through entanglement at the scale of the UoA was highly unlikely to be a significant factor in the fishery's interactions with secondary species to the extent that this will have stock-level effects.

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
	All UoAs	No

Rationale

There is a long list of minor secondary species (see Table 14 and Table 15) and they have not been evaluated individually. Using an all or nothing approach[14], this scoring issue is therefore not met.

References

UoA observer data

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

Draft scoring range	≥80
Information gap indicator	More information sought: complete UoA logbook data needed

[14] https://mscportal.force.com/interpret/s/article/Minor-species-and-scoring-element-approach-at-SG100-7-10-7-1527586956233

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

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

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.
	All UoAs	Yes	Yes	No

Rationale

In the absence of main secondary species, **SG60 and SG80 are met** by default. The majority of secondary species identified in Table 14 and Table 15 however are not managed. **SG100 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 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.
	All UoAs	Yes	Yes	No

Rationale

As above, **SG60 and SG80 are met** by default. The majority of secondary species have no management associated with them, which can therefore also not have been tested. **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).
	All UoAs		Yes	No

Rationale

For the same reasoning given in scoring issue b, **SG80 is met by default**, **SG100 is not met** as the majority of secondary species have no management associated with them.

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.
	All UoAs	N/a	N/a	N/a

Rationale

None of the secondary species are sharks; all sharks are considered under the ETP species component (2.3). This scoring issue is 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.
	All UoAs	Yes	Yes	No

Rationale

In the absence of main secondary species, **SG60 and SG80 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

UoA observer data

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

Draft scoring range	≥80
Information gap indicator	More information sought: complete UoA logbook data needed

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

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

Scoring table 24. PI 2.2.3 – Secondary species information

Note: In response to the Covid-19 pandemic, the requirements for observer coverage on purse seine vessels were suspended from April 2020 until 15 February 2021 (https://www.wcpfc.int/doc/circ-2020-125/commission-decision-extend-decisions-response-covid-19-until-15-february-2021). The implications of the reduced observer coverage cannot not yet be assessed at the time of assessment as in many cases observer coverage will have reduced gradually rather than immediately following the derogation, with observers completing trips during the derogation period or staying in rotation. Any scoring implications will therefore be considered as and when observer data for this period becomes available – this will likely be at the next available opportunity (e.g. surveillance), pending the successful outcome of this assessment.

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.
	All UoAs	Yes	Yes	Yes

Rationale

Most of the secondary species are not retained and the logbook data therefore only provide a partial picture. Observer coverage in this fishery is comprehensive, however, exceeding 50% in all years (Table 12), providing confidence in the determination that there are no main secondary species. **SG60, SG80 and SG100 is 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

The majority of the secondary species identified have no stock assessments. The UoAs impacts on those species/stocks with respect to status can therefore not be estimated. **SG100 is not met.**

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.**
	All UoAs	Yes	Yes	No

Rationale

In the absence of main secondary species, **SG60 and SG80 are met by default.** In the absence of a strategy to manage all secondary species, **SG100 is not met.**

References

UoA observer data

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

Draft scoring range	≥80
Information gap indicator	More information sought: complete UoA logbook data needed

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

Overall Performance Indicator score	All UoAs: 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.
	All UoAs	N/a	N/a	N/a

Rationale

ETP species are discussed in Section 6.7.3 and 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.
	UoAs 1, 3, 5	All species – Yes	All species – Yes	No - Silky shark, copper shark, whale shark, Mobulidae spp., giant manta, Bryde's whale, common dolphin, rough-toothed dolphin, short-finned pilot whale, false killer whale, all sea turtle species Yes - Oceanic whitetip shark, great hammerhead shark, pelagic stingray, blue whale

	UoAs 2, 4, 6	All species – Yes	All species – Yes	All species – No

Rationale

ETP species are discussed in Section 6.7.3 and include the following:

- Elasmobranchs (UoAs 1,3, 5: 8 species; UoAs 2, 4, 6: 8 species)
- Sea turtles (UoAs 1, 3, 5: 1 species; UoAs 2, 4, 6: 5 species)
- Cetaceans (UoAs 1, 3, 5: 6 species; UoAs 2, 4, 6: 11 species)
- Seabirds (UoAs 2, 4, 6: 2 species)

Elasmobranchs

Silky shark: Silky shark are a circumtropical species found in tropical waters of the Pacific Ocean. Although the greatest impact on the stock is attributed to bycatch from the longline fishery, 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 latest stock assessment by Clarke et al. (2018).The new WCPO assessment uses data through 2016 and concludes the following:

- The stock declined steadily over the model period (1995-2016);

- The model estimates spawning biomass in 2016 to have been at 47% of the unexploited level (SB_{2016}/SB_0 = 0.469). Current biomass is estimated to be above the MSY reference biomass level; however, there is considerable uncertainty associated with the estimate of stock status (SB_{2016}/SB_{MSY} = 1.178 95% CI 0.590-1.770);

- The stock is not considered to be overfished, i.e. there is a 78% probability that SB_{2016} is greater than $SB_{MSY;}$

- Fishing mortality is estimated to be above F_{MSY} (F_{2016}/F_{MSY} = 1.607, $Pr(F_{2016} > F_{MSY})$ = 84%). The current level of catch is substantially higher than the MSY. If catches remain at the current level there is a high probability that the biomass will decline to below the SB_{MSY} level in the foreseeable future (~ 5 years).

There are important uncertainties in the newly parameterized, single-region (WCPO) model including the relatively short index of abundance time-series (14 years) and the lack of understanding of the relationships between oceanographic conditions and abundance. Confidence intervals around the reported point values remain broad, indicating a high degree of uncertainty in the estimates.

The most recent silky shark catch estimate (year 2016 in Figure 2 - Clarke et al. (2018)) is just over 700,000 sharks.

Unassociated UoAs: The numbers taken by the unassociated UoAs correspond to *ca*. 0.15% of the Clarke et al. (2018) estimate, assuming 100% mortality (Table 28). 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** for the unassociated UoAs. However, considering the declining stock status and uncertainty in stock biomass and fishing mortality estimates, a high degree of confidence is lacking. **SG100 is not met.**

Associated UoAs: The numbers taken by the associated UoAs correspond to *ca*. 0.3% of the Clarke et al. (2018) estimate, assuming 100% mortality (Table 29). As such, the team is confident that the direct effects of the UoA through observed mortality are highly likely to not hinder recovery of silky shark and **SG60 and SG80 are met** for the associated UoAs. Here also, considering the declining stock status and uncertainty in stock biomass and fishing mortality estimates, a high degree of confidence is lacking. **SG100 is not met**. Unobserved mortality related to the risk of entanglement in dFADs is discussed further at the end of this scoring rationale.

Oceanic whitetip shark: 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/Fcrash 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 fishery would have contributed ~0.04 % (unassociated UoAs – Table 28) and 0.08% (associated UoAs – Table 29). It is therefore highly likely that the direct effects of these UoAs through observed mortality do not hinder recovery of oceanic whitetip shark and **SG60 and SG80 are met**. Considering the high observer coverage in the fishery (Section 6.2.4.2), the team concludes that there is a high degree of confidence that this is the case; **SG100 is also met.** Unobserved mortality related to the risk of entanglement in dFADs is discussed further at the end of this scoring rationale.

Other, less frequently caught sharks and rays include the copper (or bronze whaler) shark, whale shark, bigeye thresher, great hammerhead, Mobulidae (which may include *Mobula kuhlii* (shortfin devil ray), *Mobula mobular* (giant devil ray), *Mobula eregoodootenkee* (pygmy devil ray), *Mobula japonica* (spinetail devil ray), *Mobula munkiana* (Munk's devil ray), *Mobula tarapacana* (Chilean devil ray), *Mobula thurstoni* (smoothtail mobula), *Mobula alfredi* (Alfred manta), *Manta birostris* (giant manta)), giant manta and pelagic stingray. The average annual observed catch for each of these species by UoA is shown in Table 32. Observer coverage in this fishery is high, with all vessels required to carry observers for all trips which translates into approximate observer coverage levels exceeding 50% for all years based on target species catch (Table 12). For some of the species, regional catch estimates were available, and these are reported in the table below. The resulting scoring conclusions are also shown in the table. Note that unobserved mortality related to the risk of entanglement in dFADs is discussed further at the end of this scoring rationale.

Table 32. Average annual observed catch (in numbers, with annual minimum and maximum) of less frequently caught shark species based on 2015-2019 data for unassociated (Table 28) and associated sets (Table 29).

Species	Unassociated sets (UoAs 1, 3, 5)	Associated sets (UoAs 2, 4, 6)	Regional catch estimate	Scoring conclusion
Copper/bronze whaler shark	Average: 4 (Min: 0; Max: 21)	Average: 2 (Min: 0; Max: 9)	Not known	Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of copper shark. **SG60 and SG80 are met. SG100 not met** as no regional catch estimates or stock assessment.
Whale shark	Average: 2 (Min: 0; Max: 5)	Average: 2 (Min: 0; Max: 4)	According to ABNJ (2018a), total observer reported interactions per year ranged from 31 in 2006 (prior to when all vessels were required to carry observers) to 247 in 2014.	Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of whale shark. **SG60 and SG80 are met. SG100 not met** due to lack of stock assessment.
Bigeye thresher	-	Average: <1 (Min: 0; Max: 1)	Thresher shark catch in WCPFC convention area for 2017 was 799 t (SPC, 2019). Bigeye threshers make up the bulk of these catch estimates. A sustainability risk assessment was carried out for this species (ABNJ, 2018b) with longline fisheries considered the biggest threat.	Extremely low encounter rates suggest there is a high degree of confidence that the direct effects of the UoAs do not hinder recovery of bigeye thresher. **SG60, SG80 and SG100 are met.**
Great hammerhead	Average: <1 (Min: 0; Max: 1)	-	Not known	Although this is a data poor species, the extremely low encounter rates suggest there is a high degree of confidence that the direct effects of the UoAs do not hinder recovery. **SG60, SG80 and SG100 are met**.
Mobulidae	Average: 8 (Min: 0; Max: 22)	Average: 13.2 (Min: 0; Max: 22)	Croll et al. (2016) estimate an average annual capture of 7,817 mobulid rays per year in WCPO purse seine fisheries.	Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of Mobulidae species including manta rays. **SG60 and SG80 are met. SG100 not met** due to lack of species-specific catch data and low confidence in WCPO data.
Giant manta	Average: 6 (Min: 0; Max: 16)	Average: 6 (Min: 1; Max: 17)		
Pelagic stingray	Average: <1 (Min: 0; Max: 2)	Average: 1 (Min: 0; Max: 3)	Not known	Extremely low encounter rates suggest there is a high degree of confidence that the direct effects of the UoAs do not hinder recovery of pelagic stingray. **SG60, SG80 and SG100 are met.**

Cetaceans

Based on a regional assessment by Peatman et al. (2018) for 2003-2017, bycatch of marine mammals in large-scale purse seine fleets operating in equatorial and tropical waters displays strong interannual variability, with drifting FAD sets accounting for the highest proportion. As shown in Table 33, the estimated bycatch of marine mammals in these large-scale purse seine fisheries was 427 ind. (median estimate) in 2017, 32% of which were observed in dFAD sets.

The average annual observed catch for the cetacean species encountered in unassociated (UoAs 1, 3, 5) and associated sets (UoAs 2, 4, 6) is shown in Table 34. Observer coverage in this fishery is high, with all vessels required to carry observers for all trips which translates into approximate observer coverage levels exceeding 50% for all years based on target species catch (Table 12). IUCN status information and the resulting scoring conclusions are also shown in the table. Note that unobserved mortality related to the risk of entanglement in dFADs is discussed further at the end of this scoring rationale.

Table 33. Left: Total estimated marine mammal bycatch in individuals (median, and lower and upper 95 % confidence intervals) for large-scale purse seine fleets. Average annual bycatch rates by set and '000 metric tonnes of target catch are also included. Right: Proportion of annual estimated marine mammal bycatch (individuals) by association type. Data shown for 2015 – 2017 only, as extracted from Peatman et al. (2018)**.**

	Estimated bycatch			Bycatch rate per	
Year	Low	Median	High	set	'000 mt
2015	377	435	513	0.009	0.28
2016	273	334	421	0.007	0.21
2017	257	427	722	0.009	0.30

Year	aFAD	dFAD	log	FS	whale	whale.shk
2015	5.1%	58.9%	21.0%	13.9%	1.2%	0.0%
2016	13.9%	45.1%	20.1%	19.4%	1.5%	0.0%
2017	12.0%	32.3%	16.9%	26.9%	12.0%	0.0%

Table 34. Average annual observed catch (in numbers, with annual minimum and maximum) of cetacean species based on 2015-2019 data for unassociated (Table 28) and associated sets (Table 29).

Species	Unassociated sets (UoAs 1, 3, 5)	Associated sets (UoAs 2, 4, 6)	Other information	Scoring conclusion
Bryde's whale	Average: 3.4 (Min: 0; Max: 17)	Average: <1 (Min: 0; Max: 2)	- IUCN Least Concern: the species has historically been reduced by whaling, but not to the extent that would result in an IUCN Red List threatened category within its worldwide range. The taxon is therefore listed as Least Concern. There are several subpopulations or subspecies that should be assessed separately and may warrant threatened categories. One of these, the Gulf of	Either released in unknown condition (unassociated sets) or alive (associated sets). Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of this species. **SG60 and SG80 are met. SG100 not met** as species is data poor with taxonomic uncertainty.

			Mexico Whale, has been listed as Critically Endangered on the Red List (Cooke and Brownell, 2018). - The Southern Hemisphere stocks of Bryde's whales have not been re-assessed since 1980, but the abundance estimates accepted at the time were 16,585 ind. for the western South Pacific. Based on a majority recommendation of the Scientific Committee, the International Whaling Commission (IWC) subsequently reset the classification of these stocks to zero catch limit pending a satisfactory estimate of stock size (Cooke and Brownell, 2018).	
Common dolphin	Average: 2 (Min: 0; Max: 10)	-	- Abundant circumglobal species. Pacific Ocean estimate of 1,428,000 individuals off Japan and in the temperate central Pacific Ocean (Kanaji et al., 2017). - Listed as Least Concern on IUCN Red List: "Despite ongoing threats to local populations, the species is widespread and very abundant (with a total population in excess of four million), and none of these threats is believed to be resulting in a major global population decline" (Hammond et al., 2008).	All observed interactions led to 100% mortality; however, interactions were recorded during 2019 only in 5-year dataset. Despite the high mortality for individuals encountered, the overall impact of the fishery (unassociated sets only) remains low. Therefore, the direct effects of the UoA are highly likely to not hinder recovery of this species. **SG60 and SG80 are met.** Regional bycatch levels are not known, and the IUCN status report (Hammond et al., 2008) is out of date. **SG100 is not met.** Note: a recommendation is made in relation to the observed mortality rates for this species (Section 4.4).
Rough-toothed dolphin	Average: 2 (Min: 0; Max: 9)	Average: 7 (Min: 0; Max: 23)	Listed as Least Concern on IUCN Red List: The sum of existing abundance estimates is approximately 220,000 individuals. Since estimates are available for only a small proportion of the range of the species, the total abundance is likely considerably greater than this. While there is little information available on trends, no major threats have been identified, thus the species is assessed as Least Concern (Kiszka et al., 2019).	Individuals were released alive in about half of observed interactions for the associated sets. Although fewer interactions were recorded in unassociated sets, the mortality upon release was greater (78%). However, the overall impact of the fishery remains low. Therefore, the direct effects of the UoA are highly likely to not hinder recovery of this species. **SG60 and**

				SG80 are met. Regional bycatch levels are not known, with little information available on population trends. **SG100 is not met.** Note: a recommendation is made in relation to the observed mortality rates for this species (Section 4.4).
Short-finned pilot whale	Average: <1 (Min: 0; Max: 6)	Average: <1 (Min: 0; Max: 3)	Listed as Least Concern on IUCN Red List: The total of all available abundance estimates is approximately 700,000 but large parts of the species range have not been surveyed and therefore actual abundance must be considerably greater than this. Information on trends in abundance at the global scale is lacking but a lack of threats over much of the range does not suggest declining trends (Minton et al., 2018).	According to the observer data, all individuals encountered were released alive. Low level of UoA catch implies direct effects of the UoA are highly likely to not hinder recovery of this species. **SG60 and SG80 are met.** The species remains data-poor in much of its range, especially in the southern hemisphere (Minton et al., 2018), which precludes **SG100 from being met.**
False killer whale	Average: 1 (Min: 0; Max: 3)	Average: 27 (Min: 20; Max: 31)	Listed as Near Threatened on IUCN Red List: Species occurs at highest densities in tropical areas, but are generally among the less common delphinids. The sum of existing abundance estimates is 59,157 animals, although most of this estimate is more than 25 years old and there is an estimated population decline of >50% in two generations in the one population that has been quantitatively assessed (Hawaii). No abundance estimates are available for a substantial part of the range of the species. The species is particularly vulnerable to hook and line fisheries, as well as to directed hunting or culling in some areas (Baird, 2018).	Encounters of this species were predominantly recorded for the associated UoA where 80% of individuals were released alive, albeit with unknown post-release survival rates. Although the level of interactions is non-negligeable, the fact remains that at the scale of the UoA, the fishery is highly unlikely to hinder recovery of this species. **SG60 and SG80 are met. SG100 is not met** because abundance estimates are imprecise, and thus there is no ability to assess trends in most areas (Baird, 2018).
Blue whale	Single encounter in 2019	-	Listed as Endangered on the IUCN Red List: The cause of the population reduction of blue whales (commercial whaling) is reversible, understood, and is not currently operating. The current global mature population size is uncertain but likely to be in the range 5,000- 15,000, with evidence of increase in those regions where the species was most depleted (Antarctic and North Atlantic) (Cooke, 2018a).	The single individual encountered was released alive. Based on the extremely low encounter rate and evidence of increasing populations (Cooke, 2018a), there is a high degree of confidence that the UoA will not hinder species recovery. **SG60, SG80 and SG100 are met.**

Sei whale	-	Average: 5 (Min: 0; Max: 23)	Listed as Endangered on the IUCN Red List: The cause of the population reduction (commercial whaling) that occurred in the 20th century is reversible and is understood and has been brought under control. Population assessment results indicate severe depletion from 1948 to a minimum in the 1970s, followed by gradual recovery such that the global population of mature animals in 2018 is predicted to be around 30% of the 1948 level and to be increasing (Cooke, 2018b). Recent abundance estimates for sei whales from the North Pacific are consistent with the inferred rate of recovery (Cooke, 2018b).	Encounters of this species were only recorded for the associated UoA where interactions were recorded in a single year out of a 5-year dataset. Although the number of encounters is non-negligeable (23) with a high rate of mortality upon release, the fact remains that at the scale of the UoA, the fishery is highly unlikely to hinder recovery of this species, particularly considering its increasing trends globally and in the North Pacific (Cooke, 2018b). **SG60 and SG80 are met. SG100 is not met** because there remain significant data gaps; e.g. in the southern hemisphere where the species is not well monitored and the recovery is instead predicted by the population model (Cooke, 2018b).
Spinner dolphin	-	Average: 2 (Min: 0; Max: 10)	Listed as Least Concern on the IUCN Red List: the species is one of the most abundant cetaceans globally with the sum of existing abundance estimates more than one million dolphins, and as these estimates are from only a small fraction of the total distribution range of the species, total abundance is presumably much higher. There is little quantitative information on bycatch rates in most range states, but it is clear that as well as being one of the most abundant cetaceans, it is one of the more frequently bycaught species. Direct removals are substantial in a few areas, notably the Solomon Islands (average of 214 spinners per year 2000-2002). However, given its generally high abundance and pan-tropical distribution, and in the absence of evidence that threats are significant throughout the species' extensive range, the spinner dolphin is assessed as Least Concern (Braulik and Reeves, 2018).	Encounters of this species were only recorded for the associated UoA where interactions were recorded in two years out of a 5-year dataset. Although there was a high rate of mortality upon release, the fact remains that at the scale of the UoA, the fishery is highly unlikely to hinder recovery of this species, based on the information given in Braulik and Reeves (2018). **SG60 and SG80 are met. SG100 is not met** because there remain significant data gaps; e.g. about bycatch rates and population levels at a smaller scale than reported in Braulik and Reeves (2018). Note: a recommendation is made in relation to the observed mortality rates for this species (Section 4.4).

Melon-headed whale	-	Average: 2 (Min: 0; Max: 11)	Listed as Least Concern on the IUCN Red List: Global trends in abundance are not available, however, worldwide abundance is at least 180,000 based on the sum of estimates from the eastern tropical Pacific, the Gulf of Mexico, Hawaii, and the southwestern Indian Ocean. Since these estimates refer to only a small proportion of the range of the species, the actual total abundance is likely considerably greater. Threats that could cause declines include high levels of anthropogenic sound, especially military sonar and bathymetric surveys, and localized interactions with drift gillnet and pelagic longline fisheries (Kiszka and Brownell, 2019).	Encounters of this species were only recorded for the associated UoA where interactions were recorded in one year out of a 5-year dataset. Although condition upon release is unknown, the fact remains that at the scale of the UoA, the fishery is highly unlikely to hinder recovery of this species. **SG60 and SG80 are met. SG100 is not met** because there remain significant data gaps on global abundance trends (Kiszka and Brownell, 2019).
Indo-Pacific bottlenose dolphin	-	Average: 3 (Min: 0; Max: 12)	Listed as Near Threatened on the IUCN Red List: Primarily coastal species, occurring in a relatively small and restricted near-shore range where it is particularly vulnerable to gillnet entanglement and coastal habitat degradation. Based on the sum of existing abundance estimates, the total population size for the species over its entire range is likely well in excess of 40,000 individuals. Large parts of the range have never been surveyed (e.g. much of the Arabian Sea, Arabian/Persian Gulf, Pakistan, India, Red Sea, Somalia, Yemen, Mozambique, Indonesia, Philippines) (Braulik et al., 2019).	Encounters of this species were only recorded for the associated UoA where interactions were recorded in two years out of a 5-year dataset, with over half of the individuals released alive. As this is a coastal, near shore species, the risk of overlap with the purse seine fishery is limited. At the scale of the UoA, the fishery is therefore highly unlikely to hinder recovery of this species. **SG60 and SG80 are met. SG100 is not met** because the species is near threatened and much of the data cited by Braulik et al. (2019) is outdated.
Common minke whale	-	Average: <1 (Min: 0; Max: 1)	Listed as Least Concern on the IUCN Red List: There is no estimate of global population size of this species, but estimates covering most of the summer range in the North Atlantic and the North Pacific total around 200,000 individuals (Cooke, 2018c).	The single individual encountered was released alive. Based on the extremely low encounter rate and abundance estimate (Cooke, 2018c) there is a high degree of confidence that the UoA will not hinder species recovery. **SG60, SG80 and SG100 are met.**
Cuvier's beaked whale	-	Average: <1 (Min: 0; Max: 1)	Listed as Least Concern on the IUCN Red List: The global abundance and trend of this species are unknown but given their range and regional abundance estimates that do exist, the species	The single individual encountered was released alive. Based on the extremely low encounter rate and abundance estimate (Baird et al., 2020) there is a high degree of

			numbers at least 100,000. They are very widely distributed in oceanic waters worldwide (Baird et al., 2020)	confidence that the UoA will not hinder species recovery. **SG60, SG80 and SG100 are met.**

Sea turtles

Based on a regional assessment by Peatman et al. (2018), bycatch of sea turtles in **l**arge-scale purse seine fleets operating in equatorial and tropical waters amounted to 216 – 148 ind. (2015 – 2017 median estimates), with the highest proportion of turtle bycatch (*ca*. 60 – 70%) in free school sets (Table 35). This is in contrast with the fishery under assessment where most encounters (in terms of numbers and species) were recorded in associated sets (UoAs 2, 4, 6), albeit still at low numbers overall. For all UoAs and species, the rate of encounters averaged at less than 1 ind. per year (based on 2015-2019 dataset shown in Table 28 and Table 29) with observers reporting zero encounters for some years. All but 2 individuals were released alive; the other 2 were released in unknown condition.

Table 35. Left: Total estimated turtle bycatch in individuals (median, and lower and upper 95 % confidence intervals) for large-scale purse seine fleets. Average annual bycatch rates by set and '000 metric tonnes of target catch are also included. Right: Proportion of annual estimated turtle bycatch (individuals) by association type. Data shown for 2015 – 2017 only, as extracted from Peatman et al. (2018)**.**

	Estimated bycatch			Bycatch rate per	
Year	Low	Median	High	set	'000 mt
2015	203	216	229	0.005	0.14
2016	148	160	172	0.003	0.10
2017	97	148	219	0.003	0.10

Year	aFAD	dFAD	log	FS	whale	whale.shk
2015	3.7%	24.5%	9.7%	62.1%	0.0%	0.0%
2016	3.5%	21.3%	5.9%	68.7%	0.6%	0.0%
2017	0.0%	7.6%	3.8%	87.6%	1.0%	0.0%

Five species of sea turtle were encountered in the observer reports: green turtle, olive ridley turtle, loggerhead turtle, hawksbill turtle, and leatherback turtle (Table 28 and Table 29). 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.

- Hawksbill sea turtles, though found in the Pacific, generally have a coastal distribution which minimises their interaction with offshore fisheries and this species was therefore not assessed in the ABNJ (2017b) study. Although the species is listed as Critically Endangered on the IUCN Red List (Mortimer and Donnelly, 2008), the largest rookery for hawksbill turtles in the oceanic South Pacific (the Arnavon Islands within hawksbill Regional Management Unit Southwest Pacific, with many of the nesting hawksbills having migrated from their foraging grounds in Australia, Torre Straits and Papua New Guinea), is showing signs of recovery based on 22 years of monitoring data from the Arnavon Islands turtle nesting beaches (Hamilton et al., 2015).

Observer coverage in this fishery is high, with all vessels required to carry observers for all trips which translates into approximate observer coverage levels exceeding 50% for all years based on target species catch (Table 12). Based on these observer data, catches of sea turtles in unassociated and associated UoA sets remain sporadic (averaging at less than 1 per year – Table 28 and Table 29). The observed low level of encounters suggests that the direct effects of the UoAs are highly likely to not hinder recovery of sea turtles. **SG60 and SG80 are met. SG100 is not met** because of the lack of population estimates for all species.

Seabirds (UoAs 2, 4, 6 only)

Only two individuals of seabirds (1 black-footed albatross, 1 Antarctic giant petrel) were recorded in the 5-year UoA observer datasets. Both encounters occurred in the associated set fishery (UoAs 2, 4, 6) and on both occasions, the individual was released alive. According to Peatman and Smith (2018), the majority of seabird bycatch data held by SPC relates to observed bycatch on longline fishing vessels. In the most recent summary report of purse seine bycatch (Peatman et al., 2018b in Peatman and Smith (2018)), there were 11 purse seine sets in SPC's observer data holdings with observed catch events of seabirds, 7 of which were catches of one individual. These data suggest that WCPO purse seine fisheries are unlikely to be problematic in terms of seabird bycatch, as evidenced by the low encounter rates in the UoA fishery. On that basis, and taking into account the high observer coverage (Table 12), the team concludes that there is a high degree of certainty that the direct effects of the UoA are highly likely to not hinder recovery of seabirds. **SG60, SG80 and SG100 are met.**

Unobserved mortality due to entanglement (UoAs 2, 4, 6) – Note, this rationale applies to all scoring elements for those UoAs.

In terms of the risk of entanglement to ETP species, the client fleet has committed to deploying lesser-entangling FADs only, which is in line with WCPFC CMM 2018-01 requirements and its successor CMM 2020-01. Although lesser entangling FADs can still unravel over time (thereby increasing the risk of entanglement) the team concludes that the risk posed by deteriorating sausage nets at the scale of the UoA remains sufficiently low so that it remains likely that the UoA does not hinder recovery of the ETP species concerned. This is particularly because all netting used is small-meshed (as per ISSF guidance) - **SG60 is met.** Murua et al. (2014) state that '*This kind of tied-netting design was initially envisaged by scientists as an intermediate step towards non-entangling FADs that greatly reduces entanglement, with a low incidence of ghost fishing reported only if the bundles become untied'*. FAD design is verified by observers through Gen-5 form (under FAD materials and attachments), through periodic audits by an independent, third-party auditor pursuant to the current ISSF PVR Audit Protocols, and via photographic evidence provided to the audit team. This, combined with the

relatively low amount of FADs deployed by the UoA (approximately 140 per vessel per annum) means that the direct effects of the UoA through unobserved mortality are highly likely to not hinder recovery of ETP species. **SG80 is met.**

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.
	All UoAs	All species – Yes	All species – No

Rationale

Potential indirect effects for the ETP species considered above may include reduced availability of prey items due to their removal by the UoA; disturbance of nesting / roosting behaviour. ETP species habitat modification induced by the UoA may be relevant to FAD sets and is further discussion under the Habitat Component (2.4).

The below rationales apply to all species listed under scoring issue b.

Removal of prey:

Sharks are opportunistic feeders with a varied diet consisting a range of teleosts including barracuda, jacks, dolphinfish, tuna, skipjack and other scombrids, white marlin, and squid, and occasionally stingrays, seabirds, turtles, marine gastropods, crustaceans, carrion from marine mammals, and garbage (Compagno, 1984 in Bonfil et al. (2008)). Although they are apex predators, the diversity of prey items makes it highly unlikely that the UoA fishery, through its exploitation of mainly skipjack, yellowfin and bigeye, would lead to unacceptable impacts on any of the ETP shark species through competition. Giant manta rays and whale sharks 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; and baleen whales (Bryde's whale, blue whale, sei whale, minke whale) are planktivorous. Although the toothed whales (common dolphin, rough-toothed dolphin, spinner dolphin, Indo-Pacific bottlenose dolphin, bottlenose dolphin short-finned pilot whale, false killer whale and Cuvier's beaked whale) do feed on tuna, they do not do so exclusively; Trites et al. (1997) for example estimated the overlap between marine mammal diets and fishery catches and found that the most important prey items for marine mammals in the Pacific as a whole were squids and mesopelagic fishes, most of which are deep-water species not targeted by the UoA. At the scale of the UoA it is highly unlikely that the fishery would lead to unacceptable impacts on the ETP species concerned through the removal of prey. **SG80 is met**. In the absence of a more targeted study, however, there is no high degree of certainty. **SG100 is not met**.

Disturbance of nesting / roosting behaviour:

The UoA fishery takes place far from any land masses and is therefore highly unlikely to disrupt any feeding/nesting grounds to the extent that there would be unacceptable impacts on the species involved.

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

UoA observer data

Clarke et al. (2018), Rice and Harley (2013), Tremblay-Boyer et al. (2019), Rice and Harley (2012), ABNJ (2017b, 2018a, 2018b), SPC (2019), Croll et al. (2016), Peatman et al. (2018), Peatman and Smith (2018), Cooke and Brownell (2018), Kanaji et al. (2017), Hammond et al. (2008), Braulik et al. (2019), Kiszka et al. (2019), Kiszka and Brownell (2019), Minton et al. (2018), Baird (2018), Baird et al. (2020), Cooke (2018a, 2018b, 2018c), Braulik and Reeves (2018), Mortimer and Donnelly (2008), Hamilton et al. (2015), Bonfil et al. (2008), Trites et al. (1997)

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

Draft scoring range	<60 (more information needed)
Information gap indicator	More information sought: details on observer coverage, or logbook data needed to determine a scale factor and thus the magnitude of the UoA impact on the ETP populations

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

Scores by scoring element – UoAs 1, 3, 5	
Silky shark, copper shark, whale shark, Mobulidae spp., giant manta, Bryde's whale, common dolphin, rough-toothed dolphin, short-finned pilot whale, false killer whale, all sea turtle species	80
Oceanic whitetip shark, great hammerhead shark, pelagic stingray, blue whale	90
Overall Performance Indicator score – UoAs 1, 3, 5	85
Condition number (if relevant)	N/a

Scores by scoring element – UoAs 2, 4, 6	
All ETP species	80
Overall Performance Indicator score – UoAs 2, 4, 6	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.
	All UoAs	All species – Yes	All species – Yes	All species – No

Rationale

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- "Measures" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- 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" is a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses.

All ETP species: FSM 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 (now superseded by CMM 2018-05) entered into force on 15 February 2008 and provided the basis of the rules and development of the WCPFC ROP. All purse seine vessels operating in the High Seas and national EEZs between 20°S and 20°N are required to carry observers. The requirements for this are set out in paragraphs 34 and 35 of CMM 2018-01 (superseded by CMM 2020-01).

At UoA level, both companies participate routinely in the ISSF skipper workshops (https://iss-foundation.org/what-we-do/areas-of-focus/bycatch/skippers-workshops/) and are listed on ISSF's ProActive Vessel Register (PVR) which audits vessels on *inter alia* their shark finning policy, observer coverage levels, skipper participation in ISSF best practice workshops (or equivalent training), and company policy on non-entangling FADs. Both companies have a bycatch mitigation policy in place which requires its vessels and/or companies to release and apply best practices for bycatch handling and release of elasmobranch, turtles, cetaceans and birds (CFC and DYS), record the ETP species in the fishing logbook for all that are landed, communicate with other fishers when encountering bycatch "hotspots", and not to engage in trading with the fishing companies which do not observe the above clauses (DYS). Finally, in relation to associated set types (UoAs 2, 4, 6), both companies have committed to using lower-entanglement risk FADs, with CFC also collaborating with ISSF for the trialing of biodegradable FADs.

Elasmobranchs (UoAs 1,3, 5: 8 species; UoAs 2, 4, 6: 8 species – see 2.3.1b): At national FSM level, all elasmobranchs (sharks and rays) are protected under Section 913 of its FSM Code Title 24. The regulation does not ban the landing of sharks, but stipulates that all sharks caught alive must be released and that any shark dead upon hauling may be landed with its fins naturally attached. At state level (Chuuk, Pohnpei, Kosrei and Yaap), shark sanctuaries are in place and sharks are only allowed to be targeted for traditional use. This does not affect the UoA however as this fishery takes place outside the 24nm limit. Although the regulations do not prohibit the landing of sharks, the ban on shark finning is crucial in that it acts as a disincentive for retention (volume taken up by the carcass of a shark is disproportionate to its value). Note, however, that according to the observer data, none of the sharks caught by the UoA were retained.

At regional level, there are various CMMs in place which relate to shark bycatch, as summarized in Table 36 below.

Table 36. Overview of WCPFC CMMs as they apply to elasmobranchs in the context of the UoA fishery

CMM	Key points
2010-07 (all shark species) - superseded	- Requires implementation of FAO International Plan of Action for the Conservation and Management of Sharks (IPOA Sharks), with drafting of National Plans of Action by CCMs as required (to include measures to minimize waste and discards from shark catches and encourage the live release of incidental catches of sharks). - Sets out annual reporting requirements for key shark species. - WCPFC to provide appropriate assistance to developing State Members and participating Territories for the implementation of the IPOA and collection of data on retained and discarded shark catches. - CCMs shall take measures necessary to require that their fishers fully utilize any retained catches of sharks; vessels to have on board fins that total no more than 5% of the weight of sharks on board up to the first point of landing (with appropriate control measures to be implemented by CCMs). - In fisheries for tunas and tuna-like species that are not directed at sharks, CCMs shall take measures to encourage the release of live sharks that are caught incidentally and are not used for food or other purposes.

CMM	Key points
	- Subject to annual review by the SC, TCC and Commission.
CMM 2011-04 (oceanic whitetip shark) - superseded	- Prohibition on retaining on board, transshipping, storing on a fishing vessel, or landing any oceanic whitetip shark, in whole or in part, in the fisheries covered by the Convention. - Requires any oceanic whitetip shark that is caught as soon as possible after the shark is brought alongside the vessel, and to do so in a manner that results in as little harm to the shark as possible. - Annual reporting requirements for CCMs. - Collection of biological data by observers to support research activities approved by SC.
CMM 2012 -04 (whale shark) - superseded	- Prohibition on setting a purse seine on a school of tuna associated with a whale shark if the animal is sighted prior to the commencement of the set. - In the event that a whale shark is not deliberately encircled in the purse seine net, the master of the vessel shall: (a) ensure that all reasonable steps are taken to ensure its safe release.; and (b) report the incident. - Annual reporting requirements for CCMs.
CMM 2013-08 (silky shark) - superseded	- Prohibition on retaining on board, transshipping, storing on a fishing vessel, or landing any silky shark, in whole or in part, in the fisheries covered by the Convention. - Requires any silky shark that is caught as soon as possible after the shark is brought alongside the vessel, and to do so in a manner that results in as little harm to the shark as possible. - Annual reporting requirements for CCMs. - Collection of biological data by observers to support research activities approved by SC.
CMM 2014-05 (all sharks) - superseded	N/a – applies to longlines only.
CMM 2019-04 (all sharks, skates, rays and chimaeras – in force from 1st November 2020)	This CMM will replace CMM 2010-07, 2011-04, 2012-04, 2013-08, and 2014-05 from November 2020. Key elements include: - Prohibition on shark finning: The 5% fin to body weight ratio requirement is removed. Instead, CCMs are required to ensure vessels land sharks with fins naturally attached, OR: • Each individual shark carcass and its corresponding fins are stored in the same bag, preferably biodegradable one; • Each individual shark carcass is bound to the corresponding fins using rope or wire;

CMM	Key points
	• Identical and uniquely numbered tags are attached to each shark carcass and its corresponding fins in a manner that inspectors can easily identify the matching of the carcass and fins at any time; • Any other measures subject to approval by the TCC; • Information on measures to be reported on in annual Part 2 reports. - Includes requirement to adhere to Shark Safe Release Guidelines to maximize the survival of sharks that are caught and are not to be retained (adopted at WCPFC15) – this is with the exception of whale sharks and mantas/mobulids (note that guidelines for whale shark and mantas have been previously and separately agreed: https://www.wcpfc.int/file/123961/download?token=XR8ywgal and https://www.wcpfc.int/file/227059/download?token=oVs47f7K) - Includes measures to aid in species identification by observers or electronic monitoring. - For oceanic whitetip and silky shark, includes measures to prevent any accidentally caught specimen to be sold. - For whale shark, includes requirement to adhere to the WCPFC Guidelines for the Safe Release of Encircled Whale Sharks (WCPFC Key Document SC-10). - CCMs shall as appropriate, support research and development of strategies for the avoidance of unwanted shark captures, safe release guidelines, biology and ecology of sharks, identification of nursery grounds, gear selectivity, assessment methods and other priorities listed under the WCPFC Shark Research Plan. - The SC shall periodically provide advice on the stock status of key shark species for assessment and maintain a WCPFC Shark Research Plan for the assessment of the status of these stocks. - Implementation and effectiveness to be reviewed in 2023.
CMM 2019-05 (all Mobulidae spp.) – in force from January 2021	- CCMs shall prohibit their vessels from targeted fishing or intentional setting on mobulid rays, including from retaining on board, transhipping, or landing any part or whole carcass of mobulid rays caught in the Convention Area. - Fishing vessels to promptly release alive and unharmed, to the extent practicable, mobulid rays as soon as possible, and to do so in a manner that will result in the least possible harm to the individuals captured while adhering to the handling best practice detailed in the CMM. - Includes measures to prevent any accidentally caught specimen to be sold. - Sets out annual reporting requirements for Part 2 reports. - CCMs are encouraged to investigate at-vessel and post-release mortality in mobulids. - Collection of biological data by observers to support research activities approved by SC.

Finally, at UoA level, both companies prohibit the targeting of sharks and the practice of shark finning through explicit policies. Compliance with these measures is verified through the observer data.

Prior to drafting of the ACDR, the team received confirmation from FSM's NORMA that no violations against shark finning had been recorded over the past 2 years for the UoA fishery.

The above measures, together with the high level of observer coverage (see Table 12), constitute a strategy, designed to minimise mortality on elasmobranchs so that **SG60 and SG80 are met** for the ETP elasmobranch species identified. **SG100 is not met**, however, because even for those species with a stock assessment (e.g. oceanic whitetip shark), it cannot be said that this is a tested strategy made up of linked monitoring, analyses, and management measures and responses.

Cetaceans (UoAs 1, 3, 5: 6 species; UoAs 2, 4, 6: 11 species – see 2.3.1b): at UoA level, both companies participate in the Earth Island Institute's Dolphin Safe Programme and apply the ISSF guide on safe handling and release practices. DYS for example systematically inspects the set with a diver before deploying the purse seine. At regional level, CMM 2011-03 to address the Impact of Purse Seine Activity on Cetaceans, prohibits vessels from setting a purse seine net on a school of tuna associated with a cetacean in the high seas and exclusive economic zones of the Convention Area, if the animal is sighted prior to commencement of the set. In the event that a cetacean is unintentionally encircled in the purse seine net, the master of the vessel shall: (a) ensure that all reasonable steps are taken to ensure its safe release, (b) report the incident to the relevant authority of the flag State. The CMM also sets out annual reporting requirements for any cetaceans that do get caught. These measures, combined with the more general measures on observer coverage and use of lesser entangling nets (in the case of UoAs 2, 4, 6), constitute a strategy to manage the UoA's impact on the cetacean species identified, including measures to minimise mortality. **SG60 and SG80 are met. SG100 is not met** because this is not a tested strategy made up of linked monitoring, analyses, and management measures and responses.

Sea turtles (UoAs 1, 3, 5: 1 species; UoAs 2, 4, 6: 5 species – see 2.3.1b): At regional level, CMM 2018-04:

- Requires CCMs to implement the FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations and to ensure the safe handling of all captured sea turtles, in order to improve their survival.

- Includes annual reporting requirements on the implementation of the CMM (as part of Part 2 reports) and any fishery interactions with sea turtles.

- Requires fishermen on vessels targeting species covered by the Convention to bring aboard, if practicable, any captured hard-shell sea turtle that is comatose or inactive as soon as possible and foster its recovery, including giving it resuscitation, before returning it to the water.

- For purse seine vessels in particular, operators should avoid encirclement of sea turtles, and if a sea turtle is encircled or entangled, take practicable measures to safely release the turtle. To the extent practicable, release all sea turtles observed entangled in fish aggregating devices (FADs) or other fishing gear, carry and employ dip nets, when appropriate, to handle turtles.

- Requires CCMs to ensure that fishermen are aware of and use proper mitigation and handling techniques, as described in the WCPFC best practice guidelines.

- The SC and TCC will annually review the information reported by CCMs pursuant to this measure. Where necessary an updated suite of mitigation measures, specifications for mitigation measures, or recommendations for their application will be developed by these committees and provided to the Commission for its consideration and review.

These measures, combined with the more general measures on observer coverage and use of lesser entangling nets (in the case of UoAs 2, 4, 6), constitute a strategy to manage the UoA's impact on the sea turtle species identified, including measures to minimise mortality. **SG60 and SG80 are met. SG100 is not met** because this is not a tested strategy made up of linked monitoring, analyses, and management measures and responses.

Seabirds (blackfooted albatross, Antarctic giant petrel – UoAs 2, 4, 6 only): At regional level, CMM 2018-03 includes a suite of measures which apply to longline fisheries and are therefore not relevant here. The CMM does set out annual reporting requirements on seabird interactions in CCM fisheries, and states that the SC and TCC will annually review any new information on new or existing mitigation measures or on seabird interactions from observer or other monitoring programmes. Where necessary, an updated

suite of mitigation measures, specifications for mitigation measures, or recommendations for areas of application will then be provided to the Commission for its consideration and review as appropriate. The intersessional working group for the regional observer programme (IWG-ROP) will furthermore take into account the need to obtain detailed information on seabird interactions to allow analysis of the effects of fisheries on seabirds and evaluation of the effectiveness of bycatch mitigation measures. These requirements are not restricted to longline fisheries and therefore data on seabird interactions, including in purse seine fisheries, continue to be collected with a provision for management measures to be revised as appropriate. It is noted in this context that as part of the Eighth Meeting of the Seabird Bycatch Working Group, Suazo et al. (2018) concluded that seabird bycatch in purse seine fisheries occurs on a global scale with some threats identified for industrial and small-scale fisheries and that initiatives to mitigate bycatch and other threats to seabirds are necessary. In the context of this fishery, however, it is clear from the observer data that interactions are extremely rare (note that both individuals were released in healthy condition according to the observer data), indicating that the use of best practice handling and release practices may be sufficient to mitigate any adverse impacts from the UoA on seabird species. The use of lower-risk entanglement FAD designs further reduces the risk of mortality through entanglement. It can therefore be concluded that these measures, in combination with the high level of observer coverage (Table 12), constitute a strategy to manage the UoA's impact on the seabird species identified, including measures to minimise mortality. **SG60 and SG80 are met. SG100 is not met** because this is not a tested strategy made up of linked monitoring, analyses, and management measures and responses.

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.
	All UoAs	N/a	N/a	N/a

Rationale

This scoring issue is only scored where there are no requirements for protection and rebuilding provided through national ETP legislation or international agreements. This is therefore not relevant here.

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.
	All UoAs	All species – Yes	All species – Yes	All species – No

Rationale

According to the UoA observer programme, of which coverage is well above 50% for all years (see Table 12), interaction levels remain within acceptable bounds as explained in 2.3.1. This provides an objective basis for confidence that the various measures at UoA, national and regional level, combined with the implementation of best practice release techniques and use of lower-entanglement risk FADs, are working. **SG60 and SG80 are met.** No quantitative analyses have, however, been carried out that provide high confidence that the strategy will work. Furthermore, for the associated UoAs in particular (UoAs 2, 4, 6) although there are data on interaction levels and the fate of species upon release, exact estimates of ETP species entanglement rates are lacking and are instead inferred from data on FAD types and FAD buoy deployment. **SG100 is not met.**

d	Management strategy implementation			
	Guide post		There is some **evidence** that the measures/strategy is being implemented successfully.	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).**
	UoAs 1, 3, 5		All species – Yes	All species – Yes
	UoAs 2, 4, 6		All species – Yes	All species – No

Rationale

Non-compliance with any of the measures listed above is not thought to be a problem based on observer data and site visit interviews. These vessels are also listed as fully compliant on the ISSF Proactive Vessel Register which verifies compliance with sustainable practices (including on FAD design) by third-party auditors. **SG80 is met**.

For the unassociated UoA set types (UoAs 1, 3, 5), the comprehensive observer coverage with species-specific data on observed catch quantities, fate and condition upon release provide clear evidence that the strategy is being implemented successfully and is achieving its objective, as detailed in PI 2.3.1. **SG100 is met** for those UoAs.

For the associated UoAs (UoAs 2, 4, 6) although there are data on interaction levels and the fate of species upon release, exact estimates of ETP species entanglement rates are lacking and are instead inferred from data on FAD types and FAD buoy deployment. **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.
	All UoAs	All species – Yes	All species – Yes	All species – No

Rationale

Crew members of both companies routinely participate in ISSF skipper workshops which are participatory sessions between fishers and scientists to share ideas and information on best practices to reduce bycatch (iss-foundation.org), including on best practice and release techniques for all ETP species, FAD design and adoption of biodegradable materials. By way of example, CFC is currently involved in a joint project with ISSF conducting BIO-FAD tests with 2 different FAD type designs, both of which are non-entangling. One consists of steps of canvas and the other is a box made of bamboo and canvas that is hoisted to about 40-60 meters in depth. Trials thus far have identified some issues as the materials used are not sufficiently durable; however, CFC are planning on deploying 27 more biodegradable FADs with new specifications in the first half of 2021. Overall, ISSF have conducted over 100 of these workshops as shown in https://iss-foundation.org/knowledge-tools/technical-and-meetingreports/download-info/issf-2020-01-issf-skippers-workshops-round-9/ and https://iss-foundation.org/knowledge-tools/technical-and-meetingreports/download-info/issf-2018-19a-workshop-for-the-reduction-of-theimpact-of-fish-aggregating-devices-structure-on-the-ecosystem/.

NORMA biologist, Jamel James, is currently Chair of the WCPFC Intersessional working group on FAD management options, which this year took place remotely. Some of the topics covered include *inter alia* scientific studies which provide advice on potential limits on FAD deployments/sets and/or the current active FAD/buoy limits, in relation to management objectives; systematic monitoring and reporting procedures on the number of active FADs/buoys in the WCPFC Convention Area; FAD management objectives to guide research, data collection, and the development of effective conservation measures; and consideration by the Commission of experiences delivered by the aforementioned ISSF workshops, with development of a mechanism for regular exchange of scientific information and stakeholder knowledge across t-RFMOs. In relation to mitigating negative impacts on coastal habitats and marine ecosystems and endangered, threatened and protected species by FADs, the working group recommended to WCPFC15 the minimum guidelines on FAD design as per ISSF (ISSF, 2019); and when designing FADs, the use of non-plastic and biodegradable materials should be prioritised (FADMOIWG-04, 2020).

Finally, the WCPFC's Scientific Committee convenes annually to consider the most recent best available science on fisheries ecosystem impacts and bycatch mitigation. Relevant submissions for the sixteenth regular session in 2020 (held remotely) included a multidisciplinary approach to build new designs of biodegradable FADs, which summarises ongoing research by ISSF on the reduction of the impacts of dFAD structure on the ecosystem, particularly on the use of biodegradable DFADs (Moreno, Salvador, et al., 2020), and the 2021-2025 Shark Research Plan (SRP) which summarises the available data, the current stock status; and presents report cards that summarise the assessment information and research requirements for each WCPFC key shark species. In addition, the SRP sets out projects to "Provide advice on mitigation of sharks with non-retention policies and unwanted elasmobranchs" and "Provide advice on safe release methods and assess release survival of WCPFC key sharks" (Brouwer and Hamer, 2020).

Overall, the team concludes that 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**. SG60 and SG80 are met**. **SG100 is not met** because not all ETP species are reviewed on a biennial basis.

References

Suazo et al. (2018), WCPFC (2020b), Brouwer and Hamer (2020), FADMOIWG-04 (2020) and Moreno, Salvador, et al. (2020)

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

Draft scoring range	<60 (more information needed)
Information gap indicator	More information sought: - details on observer coverage, or logbook data to determine a scale factor - further information on the review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and whether they are implemented as appropriate. - further information on control of implementation of CMMs in relation to ETP species

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

Overall Performance Indicator score	UoAs 1, 3, 5 – 85 UoAs 2, 4, 6 – 80
Condition number (if relevant)	N/a

Scoring table 27. PI 2.3.3 – ETP species information

Note: In response to the Covid-19 pandemic, the requirements for observer coverage on purse seine vessels were suspended from April 2020 until 15 February 2021 (https://www.wcpfc.int/doc/circ-2020-125/commission-decision-extend-decisions-response-covid-19-until-15-february-2021). The implications of the reduced observer coverage cannot not yet be assessed at the time of assessment as in many cases observer coverage will have reduced gradually rather than immediately following the derogation, with observers completing trips during the derogation period or staying in rotation. Any scoring implications will therefore be considered as and when observer data for this period becomes available – this will likely be at the next available opportunity (e.g. surveillance), pending the successful outcome of this assessment.

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.
	UoAs 1, 3, 5	All species – Yes	All species – Yes	All species – No
	UoAs 2, 4, 6	All species – Yes	All species – No	All species – No

Rationale

Information on ETP species encounters in all UoA set types stems from the observer data. As a WCPFC CCM, FSM 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 (now superseded by CMM 2018-05) entered into force on 15 February 2008 and provided the basis of the rules and development of the WCPFC ROP. All purse seine vessels operating in the High Seas and national EEZs between 20°S and 20°N are required to carry observers. The requirements for this are set out in paragraphs 34 and 35 of CMM 2018-01 (superseded by CMM 2020-01). Comparison between the logbook reported catch (Table 10, Table 11) and observed catch (Table 14, Table 15) for the three main target species provides evidence of high observer coverage levels, exceeding 50% for all years based on target species catch (Table 12). In some years, the coverage appears to exceed 100%, which is likely due to the biases in the logbook data. Some quantitative information is therefore adequate to assess the UoA related observed mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. **SG60 and SG80 are met** for the unassociated UoAs (UoAs 1, 3, 5). **SG100 is not met** because although there are data on interaction levels and the fate of species upon release, stock assessments or population estimates for many of the species involved are lacking.

For the associated set types (UoAs 2, 4, 6), although the observer data provide quantitative data on UoA related observed mortality, impacts related to unobserved mortality (caused by entanglement in dFADs) are estimated based on FAD design and FAD buoy deployment (see 2.3.1b). Therefore, although this qualitative information is adequate to estimate the UoA related mortality on ETP species (and **SG60 is therefore met**), quantitative data on this type of unobserved mortality are lacking. **SG80 is not met**.

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.
	UoAs 1, 3, 5	All species – Yes	All species – Yes	All species – Yes
	UoAs 2, 4, 6	All species – Yes	All species – Yes	All species – No

Rationale

The observer coverage levels shown in Table 12 with data on observed quantities, fate and condition upon release for each species covering a five-year period for each UoA set type are adequate to measure trends and support a strategy to manage impacts on ETP species. **SG60 and SG80 are met**.

For the unassociated set UoAs (UoAs 1, 3, 5), although a comprehensive strategy is not in place (se PI2.3.2), the team concludes that the information is available and adequate to support one and to evaluate with a high degree of certainty whether it is achieving its objectives. **SG100 is met**.

For the associated set UoAs (UoAs 2, 4, 6), although the likelihood of ETP species entanglement can be inferred from FAD design and data on FAD buoy deployments and can therefore inform on trends in risk of entanglement (**SG60 and SG80 are met**), the available data are not sufficiently comprehensive to determine with a high degree of certainty whether the strategy is achieving its objectives. **SG100 is not met** for those UoAs.

References

UoA observer data – Section 6.2.4.2

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

Draft scoring range	<60 (more information needed)
Information gap indicator	More information sought: - details on observer coverage, or logbook data to determine a scale factor

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

Overall Performance Indicator score	UoAs 1, 3, 5 – 90 UoAs 2, 4, 6 – 70
Condition number (if relevant)	7

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.
	All UoAs	Yes	Yes	No

Rationale

All UoAs: The purse seine gear in this fishery is strictly pelagic, and therefore the fishing operation itself does not impact on benthic habitats. The gear impact on the water column (considered here as the commonly encountered habitat, in line with MSC interpretation https://mscportal.force.com/interpret/s/article/pelagic-habitats-and-gear-Box-GSA7-1527262009346) is considered negligible. Furthermore, fishing is not permitted within at least 24nm from all coasts in FSM waters which further reduces the likelihood of interactions with any benthic habitat types. Considering the significant cost of the gear, the size of the operation, the make-up and configuration of the gear (with the net attached to two parts of the boat), the loss of the purse seine is considered unlikely. This was confirmed by the client group during the site visit who indicated most gear damage occurs when the net tears and which can be repaired onboard the vessel. Between trips, gear condition is also checked and maintained to prevent such incidents from occurring. On that basis, the UoAs are highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm through use of the purse seine itself. **SG60 and SG80 are met**. However, there is no concrete evidence that this is the case so **SG100 is not met**.

Units of Assessment 2, 4 and 6 all involve purse seine sets on floating objects, amongst which drifting FADs form an important component, with impacts potentially resulting from the FADs themselves when they are abandoned, lost or discarded. Key impacts include entanglement of Primary, Secondary or ETP species through ghost fishing (as already discussed under PIs 2.1.1, 2.2.1 and 2.3.1), and benthic habitat impacts as the FADs become stranded, particularly on coral reefs of Pacific Island Countries (e.g. Escalle et al. (2019)) including localised marine pollution or litter when beached FADs are made of synthetic materials (Zudaire et al., 2018). In the context of this assessment, the team considered the commonly encountered habitat to be the water column which is already assessed in relation to purse seine loss. The consequences of FAD beachings

on coral reefs (with associated localised pollution) were considered under VMEs below. A number of minor habitats have also been identified, as discussed under scoring issue c.

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.
	UoAs 1, 3, 5	N/a	N/a	N/a
	UoAs 2, 4, 6	Yes	No	No

Rationale

As explained in scoring issue a, interactions between the purse seine gear and VMEs are not considered to be an issue as this is a strictly pelagic fishery taking place in deep waters at least 24 nm from any FSM coastline. Furthermore, the nature of the operations is such that any gear loss would be highly unlikely to lead to serious or irreversible harm on VME habitats (see scoring issue a).

UoAs 1, 3 and 5 involve unassociated sets only and do not interact with any VME features. This scoring issue is therefore not relevant.

UoAs 2, 4 and 6: For the FAD component of the fishery, the risk of lost or abandoned drifting FADs beaching onto coastlines and causing damage to coral reefs VMEs (Habitat type: solid reef of biogenic origin – high relief – large erect biota) has been acknowledged (Leroy et al., 2013; Maufroy et al., 2015; Davies et al., 2017; Escalle et al., 2019).

An analysis by Escalle et al. (2019) on the connectivity between dFAD deployment zones in PNA waters and projected beaching events is discussed in detail in the background section of this report (Section 6.7.4). The study was based on 22,620 observed dFAD trajectories between Jan 2016– Dec 2017[15], as well as Lagrangian particle simulations of over 1.5 million virtual dFADs. The authors estimate that 5.8% of all dFAD trajectories (1,320) were projected to have beached, with three "beaching regions" defined: (i) the southwest area comprising the EEZs of Papua New Guinea and Solomon Islands (and any other areas west of 175°E), with the highest number of beaching events per single cell and per EEZ; (ii) the southeast area comprising mostly the EEZs of Nauru, Kiribati Gilbert Islands and Tuvalu, with relatively high numbers of beaching events by cell; and

[15] The findings by Escalle et al. (2019) reflect beaching conditions under specific oceanographic conditions. In particular, early 2016 corresponded to the decay phase of a strong El Niño, which was followed by neutral conditions throughout 2017. Beaching patterns and connectivity are likely to change under different ENSO phases (Escalle et al., 2019).

(iii) the north area comprising mostly Federated States of Micronesia and Republic of the Marshall Islands EEZs, which presented a lower number of beaching events (Escalle et al., 2019). Three types of 'notable' beaching locations, i.e. those with particularly high or low numbers of beaching events relative to their local dFAD density, were also identified, none of which were located in the northern EEZs (including FSM) – see Figure 22 in background section. According to the authors, broad-scale connectivity between beaching areas and deployment zones, based on both observed and simulated dFADs were comparable. In particular, there was limited cross-equatorial connection for dFADs. In the north area, there was no dominant direction for dFAD movement, with FSM and the Republic of the Marshall Islands experiencing relatively low levels of beaching, from dFADs deployed in the northern hemisphere and influenced by ocean circulation (Escalle et al., 2019). Of the total coastal areas, Banks and Zaharia (2020) assess the impact as having affected cumulatively between 4 and 6 km^2 of coral reef habitat per year. It is highly likely that none of the corals survived the impact. Note that this estimate does not account for cumulative impacts between years (which would occur where stranded FADs are not recovered).

The likelihood and severity of beaching events can be mitigated through limiting FAD deployments, simplifying FAD structure, avoiding FAD deployment areas that imply high risk of stranding, using FADs that remain in the fishing area (e.g. FADs with navigation capability, FADs that could be sunk, anchored FADs), recover FADs at sea, and recover FADs from the coast (Davies et al., 2017). In this context, the Client fishery has been taking a number of steps to reduce the likelihood and severity of beaching events, which are detailed in Section 6.7.4 and summarised here:

- Non-entangling FAD and biodegradable FADs: all drifting FADs used in this fishery are designed in accordance with ISSF best practice, and lower-entanglement risk FADs are used as verified by observers through Gen-5 form (under FAD materials and attachments), through periodic audits by an independent, third-party auditor pursuant to the current ISSF PVR Audit Protocols , and via photographic evidence provided to the audit team. Within the client group, CFC have also been testing biodegradable FADs in the context of ISSF's Guide to Non-entangling and Biodegradable FADs (ISSF, 2019) and activities to support the conservation work of the WCPFC. At regional level, CMM 2018-01 (and its successor CMM 2020-01) requires that FADs are designed in accordance with ISSF guidelines on lower-risk entanglement FADs (ISSF, 2019) and encourages the use of non-plastic and biodegradable materials in the construction of FADs. The CMM also requires research results on the use of non-entangling and biodegradable material on FADs to be reviewed by the SC and recommendations to be provided to the Commission as appropriate;
- While there is no formal company policy that limits FAD deployment, for both companies combined approximately 1,400 FADs were deployed in 2020 based on buoy data (which equates to approximately 140 buoys per UoA vessel per year); the level of UoA FAD deployments is therefore well below the regionally set limits as per CMM 2018-01 and its successor CMM 2020-01 (350 instrumented FAD buoys per CPC vessel at any one time). FAD deployments are further limited in time through a 3-month closure in all WCPFC waters and an additional 2-month closure in the High Seas (CMM 2018-01/2020-01). The CMM includes a provision for the limit of FAD buoys to be reviewed based on the findings by the FAD Management Options Intersessional Working Group.
- All FADs in the UoA are tracked through the dFAD-tracking programme which was initiated in January 2016 by the PNAO. In addition, FAD deployments recorded by observers since 2011 (the first year of full observer coverage requirement) provides further information on vessel-level patterns in the WCPO (Escalle et al., 2018). These data are now being used in the context of FAD impact management, particularly as it relates to beaching events (see for example Escalle et al. (2019)).
- There is no formal FAD recovery project in the WCPO. However, according to Escalle et al. (2019), such a programme would be more complicated for the WCPO given (i) the large geographic spread of dFADs; (ii) the number of small remote islands; (iii) the size of the purse seine fleet; and (iv) the number of dFADs

deployed. The authors comment that switching to a different management regime or designing specific measures to limit marine pollution and beaching may be more appropriate for this region, including requirements on FAD limits and trajectory reporting.

The team therefore concludes that it is unlikely that at the scale of the associated UoAs (2, 4, 6), the fishery would reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm (**SG60 is met**). This conclusion is supported by the fact that 1) the impacts of FADs on coral reefs are highly localised, with a small footprint, and once stranded, they are unlikely to move. 2) Coral reefs in the WCPO form a relatively well-connected network, with strong evidence that island stepping-stones are important for gene flow between remote Pacific reefs. The Coral Triangle in particular is thought to supply larvae to Micronesia, where some species display genetic connectivity over thousands of kilometres using Micronesian islands as stepping stones, and these in turn serve as a source for the central Pacific via the North Equatorial Counter Current (Davies et al. (2015) and references therein). 3) As explained above, Escalle et al. (2019) estimated a 5.8% beaching rate (increased to ~7% in a more recent update by Escalle et al. (2020a)),with FSM waters located in both a low-risk area for beaching events (Figure 22, Section 6.7.4) and an area of low FAD occurrence compared to the rest of the PNA (Figure 25 in PI 2.5.1). On that basis, the team concludes that the UoA is unlikely to lead to reductions in habitat structure and function of coral reef habitat in the WCPO below 80% of the unimpacted level (i.e. 'serious or irreversible harm' as per SA3.13.4.1) and **SG60 is met**.

In relation to scoring of SG80, the team identified the following issues:

- In the context of the Seychelles FAD Watch programme, Balderson and Martin (2015) found that 37% of dFADs had corals entangled in the structure and 100% of these were using nets as the aggregator. 46% of dFADs using sausage nets (i.e. those used by the UoA) were found with corals entangled in the nets. Although considered as lower-entanglement risk FADs, the risk of entanglement and habitat damage of these FAD types increases as the sausage nets begin to unravel. ISSF (2012) also noted that the problem of drifting FADs encountering islands and coral reefs was much more significant when non-biodegradable materials such as nylon netting and rope are used in the FAD construction. In their review of FAD designs for the PNAO, MRAG_Asia_Pacific (2018) found that the main components are typically made from petroleum products such as nylon netting, plastic and PVC which degrade slowly and, if not retrieved, will accumulate in the environment as marine debris. The use of biodegradable materials (apart from natural attachments such as coconut fronds) appears to be very limited. According to Moreno, Murua, et al. (2020), until a 100% biodegradable FAD structure is found, a progressive replacement of some plastic components, such as the submerged appendage, would still be a significant step to decrease the FAD impacts on the marine habitat. Although work on developing biodegradable FAD materials is ongoing in the UoA (see Section 6.7.4), the fact remains that nearly all FADs in use today by the UoA are made of synthetic materials.

- With 7.4% of UoA FADs projected to beach per annum (Escalle et al. (2020a) estimate) and without any measures for recovery in place, even at a local level, the cumulative effects of FAD beaching events over several years are likely to increase the severity of impacts on coral reefs within FSM and other WCPO Pacific Island states. It is important to add that Escalle et al. (2020a) estimate that 43.4% of buoys are unmonitored within PNA waters with an unquantified amount ending up stranded. Although a FAD tracking programme is in place at PNA level, the PNAO state that compliance (albeit voluntary for the moment) is not complete, with data being provided with a 60-day lag as well as being geo-fenced (where they have their satellite buoy service provider report positional data only when they are in the EEZs of PNA member countries, and not when they are on the high seas). This limits the programme's ability to contribute to risk mitigation in terms of tracking of lost or abandoned FADs and develop associated management responses (e.g. through recovery).

Overall, the team therefore concludes that evidence to demonstrate that the UoA is highly unlikely to lead to reductions in habitat structure and function of coral reef habitat in the WCPO below 80% of the unimpacted level is lacking and that **SG80 is not met** for UoAs 2, 4 and 6.

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.
	All UoAs		No

Rationale

UoAs 1, 3, 5: Minor habitats include deepwater habitats such as seamounts and abyssal plains where interactions may occur, including following gear loss. In the absence of UoA-specific data on these events, it cannot be considered that there is evidence about impacts on minor habitats. This scoring issue is not met.

UoAs 2, 4, 6: According to Banks and Zaharia (2020), the majority (92%) of the identified beaching events were likely to have occurred on coral reef habitat. The remaining events occurred either on seagrass habitat, mangroves or sandy beaches, and these would qualify as minor habitats in the context of this assessment. Abandoned, lost or discarded dFADs may also sink in deep water if they are not retrieved and do not beach on a coastline. Deepwater habitats including seamounts and abyssal plains are considered to be minor habitats in this regard. Other interactions with these minor habitats may include interactions with the gear, including following gear loss. In the absence of UoA -specific data on these events, it cannot be considered that there is evidence about impacts on minor habitats. **SG100 is not met**.

References

Balderson and Martin (2015), Davies et al. (2015), Davies et al. (2017), Escalle et al. (2018), Escalle et al. (2019), ISSF (2012, 2019), Leroy et al. (2013), Maufroy et al. (2015), Moreno, Murua, et al. (2020), Escalle et al. (2020a)

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

Draft scoring range	UoAs 1, 3, 5: ≥80 UoAs 2, 4, 6: 60 - 79
Information gap indicator	More information sought on PNA dFAD tracking programme and associated management responses (e.g. recovery)

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

Overall Performance Indicator score	UoAs 1, 3, 5: 80 UoAs 2, 4, 6: 70
Condition number (if relevant)	8

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.
	UoAs 1, 3, 5	Yes	Yes	No
	UoAs 2, 4, 6	Yes	Yes	No

Rationale

UoAs 1, 3 and 5: Considering that the free-school fishery is extremely unlikely to impact benthic habitats or the water column, the term 'if necessary' applies here and management measures should not be required. **SG60 and 80 are therefore met by default**. It cannot be said, however, that there is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. **SG100 is not met**.

UoAs 2, 4 and 6: Measures to reduce the likelihood and severity of beaching events and associated impacts on coral reefs resulting from the FAD fishery, are explained in detail in Section 6.7.4 and include:

At WCPFC level, CMM 2018-01 (superseded by CMM 2020-01) sets out:

- Requirements on FAD design, to be in accordance with lower-entanglement risk FAD designs (ISSF, 2019) and use of natural or biodegradable materials is encouraged, with associated review of research into non-entangling biodegradable materials to be carried out by the SC and recommendations on management measures to be provided to the Commission;
- Limitations on FAD deployment through seasonal closures (3 months in all WCPFC waters, 2 additional months in the High Seas), plus the number of instrumented FAD buoys that can be deployed per vessel at any one time is limited at 350. This is the equivalent of approximately 518 deployments per vessel, (Escalle et al., 2018 cited in Banks and Zaharia (2020)). There are provisions for this number to be reviewed as deemed appropriate by the FAD Management Options Intersessional Working Group. The CMM also includes requirements on an increase in VMS polling frequency during the FAD closure periods for compliance monitoring;

- Requirements for all purse seine vessels operating in the High Seas and national EEZs between 20oS and 20oN to carry observers16 which have been in force since 2011. Through this observer scheme, information on the types of FADs deployed is obtained.

At PNA level, a dFAD-tracking programme was initiated in January 2016 by the PNA Office (PNAO). This programme requires fishing companies to report data from satellite buoys deployed on dFADs to the PNA via the satellite service provider. Transmissions start when the buoy is activated, which can be a few hours to several days before deployment, and continue until deactivation (e.g. dFAD lost, retrieved, beached or outside the productive area that each vessel operates in) (Escalle et al., 2019). Data from the FAD tracking programme have already led to studies estimating the magnitude of FAD deployment and active FADs and exploring the links between FAD deployment and beaching events in PNA waters (e.g. Escalle et al. (2018) and Escalle et al. (2019)).

At national level, the FSM FAD management plan represents the policy of the FSM Government and does not have legal effect in its own right. The plan sets out an annual limit of 100 FADs per FSM flagged vessel in both the FSM EEZ and High Seas, and 50 per foreign flagged vessel in the FSM EEZ. However, interviews carried out during the site visit indicate that FAD or FAD buoy deployments are not currently being monitored by NORMA and this measure is not being enforced.

At UoA level:

- All drifting FADs used in this fishery are designed in accordance with ISSF best practice, and lower-entanglement risk FADs are used (as verified through various mechanisms – see Section 6.2.1). Within the client group, CFC have also been testing biodegradable FADs in the context of ISSF's Guide to Non-entangling and Biodegradable FADs (ISSF, 2019) and activities to support the conservation work of the WCPFC – see Section 6.7.4 for further detail.
- While there is no formal company policy that limits FAD deployment, for both companies combined approximately 1,400 FADs were deployed in 2020 based on buoy data; the level of UoA FAD deployments per vessel is therefore well below the regionally set limits as per CMM 2018-01 (and its successor CMM 2020-01).

According to MSC, *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.* The team considered that combined, these policies and activities constitute a partial strategy which aims to ensure that lost or abandoned dFADs are highly unlikely to cause serious or irreversible harm to commonly encountered habitats or to VMEs. On that basis, **SG60 and SG80 are met**. It is, however, not a full strategy in the sense that it is not 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*. **SG100 is not met**.

Note on scoring: SA3.14.2.2 requires that in scoring issue (a) at the SG80 level, the "partial strategy" for a UoA that encounters VMEs shall include, at least, the following points: a. Requirements to comply with management measures to protect VMEs (e.g., designation of closed areas), or b. Implementation by the UoA of precautionary measures to avoid encounters with VMEs, such as scientifically based, gear- and habitat-specific move-on rules or local area closures to avoid potential serious or irreversible

[16] In response to the Covid-19 pandemic, the requirements for observer coverage on purse seine vessels set out in paragraphs 34 and 35 of CMM 2018-01 and CMM 2018-05 were suspended until 31 May 2020 (https://www.wcpfc.int/doc/circ-2020-24/commission-decision-response-covid-19-regarding-suspension-requirement-purse-seine). The implications of the reduced observer coverage could not yet be assessed at the time of this assessment, but will be considered when observer data for this time period become available to the assessment team.

harm on VMEs. The team argues that neither move-on rules nor closed areas apply to the issue of lost or abandoned FADs which passively drift with ocean currents and are not under the control of any fishing operators. The risk of a drifting FAD beaching event occurring is determined by the number of drifting FADs in the ocean, the deployment location, dispersal patterns, the extent of efforts to prevent beaching events from occurring and FAD design. The likelihood and severity of beaching events can be mitigated through limiting FAD deployments, simplifying FAD structure, avoiding FAD deployment areas that imply high risk of stranding, using FADs that remain in the fishing area (e.g. FADs with navigation capability, FADs that could be sunk, anchored FADs), recover FADs at sea, and recover FADs from the coast (Davies et al., 2017). Some of these measures are currently being implemented, including limits on FAD deployment, seasonal closures and requirements on FAD design. Note that in November 2020, the MSC issued a derogation which implies that if a fishery has a partial management strategy in place that protects and avoids vulnerable marine ecosystems (VMEs) and potential VMEs, then commonly accepted move-on rules are not required (at the SG60 level)[17].

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.
	UoAs 1, 3, 5	Yes	Yes	Yes
	UoAs 2, 4, 6	Yes	No	No

Rationale

UoAs 1, 3, 5: The 'partial strategy' is the nature of the free-school fishery (pelagic only, without reliance on floating objects); there is therefore high confidence that it works, based on information directly about the gear type and deployment. **SG60, SG80 and SG100 are met.**

UoAs 2, 4, 6: As already mentioned, the risk of a drifting FAD beaching event occurring is determined by the number of drifting FADs in the ocean, the deployment location, dispersal patterns, the extent of efforts to prevent beaching events from occurring and FAD design. The likelihood and severity of beaching events can be mitigated through limiting FAD deployments, simplifying FAD structure, avoiding FAD deployment areas that imply high risk of stranding, using FADs that remain in the fishing area (e.g. FADs with navigation capability, FADs that could be sunk, anchored FADs), recover FADs at sea, and recover FADs from the coast (Davies et al., 2017). As has already been explained in scoring issue a and in Section 6.7.4, the Client fishery in combination with the regional (WCPFC and PNA) management system is implementing or striving towards implementation of a number of these measures as part of their partial strategy, including deployment of FAD numbers well below regional limits, changing FAD design towards biodegradable and non-entangling FADs and monitoring FAD trajectories with associated beaching event risk analysis (Escalle et al., 2018, 2019). This provides

[17] https://mscportal.force.com/interpret/s/article/Move-On-Rules-derogation-November-2020

plausible argument that the partial strategy will work. **SG60 is met**. However, in relation to **SG80**, the team concludes that an objective basis for confidence that the partial strategy will work is lacking on the basis of the following:

- The low number of FAD deployments at UoA level appears to be done on a voluntary basis and it is not clear that the current legally binding limits on buoy numbers (350 per vessel at any one time as per CMM 2018-01/2020-01) go far enough to ensure an **SG80** outcome score for VMEs. There is particular concern that the 350 buoy limit may in fact lead to an increase in the number of FADs being deployed in the WCPO. In this context, the team was provided with the following statement by the PNAO:

  PNA does not support FAD limits since were vessels to apply 350 FADs, it actually caters for a significant increase in FAD deployments. PNA's focus on FAD management is explicitly to follow the recommendations in Banks and Zaharia to transition to Non Entangling FADs, and thereafter to biodegradable FADs. These would most likely reduce the impact of coastal and benthic habitats, and eliminate the impact of FADs on unobserved catch. ;

- While a dFAD tracking programme is in place at PNA level, the PNAO state that compliance (albeit voluntary for the moment) is not complete, with data being provided with a 60-day lag as well as being geo-fenced (where they have their satellite buoy service provider report positional data only when they are in the EEZs of PNA member countries, and not when they are on the high seas). This limits the programme's ability to contribute to risk mitigation in terms of tracking of lost or abandoned FADs and develop associated management responses (e.g. through recovery). The discrepancy between the dFAD PNAO tracking data for UoA vessels and the UoA buoy deployment data (Section 6.2.1) also needs to be investigated;

- The UoA fishery is using lower-entanglement risk FADs rather than fully non-entangling FADs, with use of biodegradable materials still in its testing phase;

- Other than generic conditions under MARPOL Annex V, which makes discharge of fishing gear into the water where there is no intention to retrieve it an offence, there are no specific requirements obliging vessel operators to retrieve all FADs or pay costs associated with environmental remediation. In practice this means little 'discipline' is imposed on vessel operators with respect to the number of FADs deployed (MRAG_Asia_Pacific, 2018);

- According to Escalle et al. (2020a), the number of buoys with an uncertain fate (i.e. final position at-sea and within the main purse seine fishing grounds) increased over the four years studied (from 35% in 2016 to 46% in 2019). In contrast, the number of buoys recovered or abandoned decreased. This may be due to earlier deactivation of buoys by fishing companies when buoys are no longer considered usable by their vessels (i.e. having drifted far from their fishing grounds), but could also be linked to the implementation of the WCPFC limit in the number of active buoys per vessel at any given time of 350 in 2018 (CMM-2018-01). To avoid exceeding this limit, vessels or fishing companies may therefore tend to deactivate buoys sooner than they did previously and then deploy new FADs back in their main fishing grounds (Escalle et al., 2020a), potentially leading to an increase in FAD deployments overall.

SG80 is not 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).
	UoAs 1, 3, 5	Yes	Yes
	UoAs 2, 4, 6	No	No

Rationale

UoAs 1, 3 and 5: Quantitative evidence such as VMS tracks and compliance with the 24nm exclusion zones as evidenced by NORMA, as well as information on gear use demonstrate no impact on benthic or pelagic habitats. **SG80 and SG100 are met**.

UoAs 2, 4 and 6: FAD design is monitored via the observer Gen 5 forms, however monitoring of FAD deployments is partial. Although there is the PNA tracking programme, the UoA data are submitted with a 60-day lag which prevents any mitigating measures to be put in place such as recovery. The discrepancy between the dFAD PNAO tracking data for UoA vessels and the UoA buoy deployment data (Section 6.2.1) is also a concern. Furthermore, FAD buoy data are not necessarily an accurate representation of actual FAD deployments. Observer anecdotal information indicates that no markings of 'ownership' or identification are applied to the FAD structure (raft or appendages) by most companies. This is likely driven by the high level of buoy exchange between FADs and makes tracking the full 'life history' of the FAD difficult (MRAG_Asia_Pacific, 2018). Industry concerns over maintaining the confidentiality of data on the recent positions of their dFADs, which might reveal the location of good fishing grounds to competitors, is an incentive for non-compliance (FAO, 2018). For example, the systematic modification of buoy transmissions to PNA with information outside PNA EEZs being removed prior to data transmissions (i.e. "geo-fenced" FADs) occurred throughout the whole 2016–2020 period in the Escalle et al. (2020a) study. Although PNA Members have agreed to require all FAD buoys to be registered and transmit regular position data to the PNA while a vessel is licensed to a PNA Member, including transmitting data from high seas areas between 20° North and 20° South of the WCPFC convention area (Escalle et al., 2020a), this was not in force at the time of the assessment. Overall, the team concludes that quantitative evidence that the partial strategy is being implemented successfully is lacking. **SG80 is not 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.
	UoAs 1, 3, 5	N/a	N/a	N/a

UoAs 2, 4, 6	Yes	Yes	Yes

Rationale

UoAs 1, 3, 5: In the absence of interactions with VMEs in the free-school fishery (see PI 2.4.1), this issue is not relevant.

UoAs 2, 4, 6: Commercial purse seining is excluded from within 24nm of any landmass in the FSM EEZ. There are no VME protection measures in place for the High Seas, where the risk of interaction with benthic features is minimal. The fishery is not subject to any other protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries. Compliance with the FSM exclusion areas is verified on a continual basis by the authorities involved via VMS data, providing 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. **SG60, SG80 and SG100 are met**.

References

Davies et al. (2017), Escalle et al. (2018), Escalle et al. (2019), ISSF (2019), WCPFC (2020b), Escalle et al. (2020a), Banks and Zaharia (2020), FAO (2018) and MRAG_Asia_Pacific (2018)

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

Draft scoring range	UoAs 1, 3, 5: ≥80 UoAs 2, 4, 6: 60 - 79
Information gap indicator	More information is needed on how FAD deployments and FAD design are monitored at UoA and FSM level to provide some quantitative evidence that the partial strategy is being implemented successfully.

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

Overall Performance Indicator score	UoAs 1, 3, 5: 95 UoAs 2, 4, 6: 70
Condition number (if relevant)	9

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.
	All UoAs	Yes	Yes	No

Rationale

UoAs 1, 3, 5: The commonly encountered habitat impacted by the fishery is the water column on which the effect of a pelagic purse seine 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'.

UoAs 2, 4, 6: Coral reefs in the WCPO are extensively studied and monitored. Under the Global Coral Reef Monitoring Network (GCRMN), a coral reef status report for the Pacific was produced in 2018 (Moritz et al., 2018), focusing on the Pacific Island region, north and south, from the Republic of Palau to the Pitcairn Islands (Figure 24) and describing the present status and long-term trends of coral reefs, and documenting trends of corals and associated fauna and flora. It can therefore be concluded that the nature, distribution and vulnerability of coral reefs in the UoA area are known at a level of detail sufficient to the scale and intensity of the UoA. **SG60 and SG80 are met**. At the scale of the WCPO, however, it is difficult to ascertain that the distribution of all habitats is known, particularly for the minor habitats identified under 2.4.1c. **SG100 is not met**.

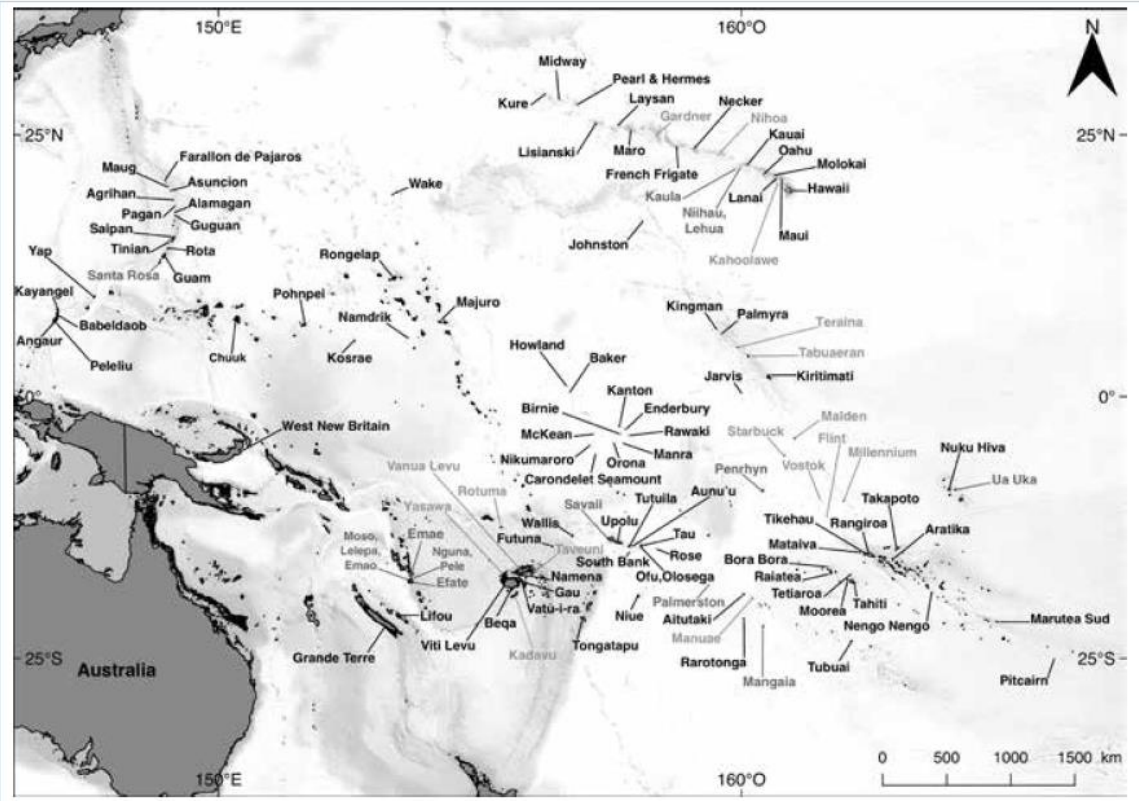


Figure 24. Location of the 129 islands and reef structures analysed by Moritz et al. (2018)**.**

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. OR If CSA is used to score PI 2.4.1 for the UoA:	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. OR	The physical impacts of the gear on all habitats have been quantified fully.

		Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	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.	
	UoAs 1, 3, 5	Yes	Yes	No
	UoAs 2, 4, 6	Yes	No	No

Rationale

UoAs 1, 3 and 5: 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 purse seines do not affect the water column.

UoAs 2, 4 and 6: FAD design is monitored via the observer Gen 5 forms and modelling and simulations of dFAD beaching events in PNA waters (Escalle et al., 2019) provide a broad understanding of the most likely coastal zones to be impacted and how these beaching events may affect coral reef habitat (e.g. Balderson and Martin (2015)). **SG60 is met**. There is, however, a lack of understanding about the exact scale of the problem for the UoA: i.e. how many FADs are used by the fishery - including appropriated FADs, how many FADs are lost/abandoned or discarded, how many of those beach or sink and in turn how many of those impact on coral reef habitat and in which areas. Furthermore, although the PNA FAD tracking programme is beginning to provide valuable data on FAD use, the data are still incomplete, with portions of trajectories outside PNA waters removed by buoy companies ("geofencing") prior to submission to PNA (Escalle et al., 2020a). Therefore, although information is adequate to allow for identification of the main impacts of the UoA on the main habitats, reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear is lacking. **SG80 is not met**.

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.
	All UoAs		Yes	No

Rationale

UoAs 1, 3 and 5: The only commonly encountered habitat is the water column. VMS data and compliance with the 24nm FSM 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.

UoAs 2, 4 and 6: The status of coral reef habitat in the WCPO is monitored over time (see Moritz et al. (2018)). For the UoA, any increased risk of FAD beaching would be most likely related to an increase in fishing effort (i.e. increased deployment of FADs and FAD buoys) which is monitored through the PNA FAD tracking programme, supported by client data on FAD buoy purchases. Because no beaching event can be attributed to a single UoA, the risk to main habitats (in particular VMEs) has to be derived from a combination of the aforementioned UoA-specific information, FAD trajectory modelling (see Escalle et al papers) and local data collection programmes which will inform on *in situ* beaching rates. In the context of the latter, Escalle et al. (2020b) have outlined a series of data collection programmes that are currently underway: these include programmes that have commenced earlier in 2020 in the Cook Islands and Wallis and Futuna, along with the distribution of local communication support. Reports include dFADs and satellite buoys newly beached or drifting in coastal waters, but also an inventory of dFADs and buoys previously picked up by the public. The development of a data collection awareness programme was also due to commence in 2020 in the Federated States of Micronesia (FSM) and the Republic of Marshall Islands (RMI), but the onset of COVID-19 has slowed progress. In addition to an English version, posters have already been translated into 5 languages in FSM and into Marshallese in RMI. They will be printed in the coming months for distribution, followed by the start of data collection soon thereafter. Outer island communities regularly find FADs and keep satellite buoys. One potential initiative for these isolated communities is to associate the data collection programme with learning ways of re-using and recycling FAD and buoy materials for their own use. French Polynesia has also started a large project to quantify the number of dFADs drifting within its EEZ, including the number of beached dFADs and their ecosystem impacts. Finally, at Palmyra Atoll, The Nature Conservancy (TNC) and the U.S. Fish and Wildlife Service (USFWS) have been collecting data on dFAD strandings since 2009 and a dFAD Watch type program (e.g. see Zudaire et al. (2018)) is also currently under development at Palmyra Atoll. This would involve fishing companies alerting local partners if a dFAD comes close to Palmyra Atoll's shores, so that it can be picked up before causing any environmental damages. Overall, the data collected will allow comparison with existing dFAD-related databases in the WCPO (e.g., observer data, PNA dFAD tracking data), but also in the EPO as currents usually bring dFADs East to West. This could help identify the origin (deploying vessel) and life history of dFADs (area and date of deployment, drift and/or fishing performed on dFADs). In addition, this would complement data already collected on beaching events (i.e. PNA FAD tracking data, see Escalle et al. (2020a)) (Escalle et al., 2020b). Overall, the team concludes that adequate information continues to be collected to detect any increase in risk to the main habitats. **SG80 is met**. Not all changes in all habitat distributions over time are measured however, so **SG100 is not met**.

References

Balderson and Martin (2015), Escalle et al. (2019), Moritz et al. (2018), Escalle et al. (2020a and b)

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

Draft scoring range	UoAs 1, 3, 5: ≥80 UoAs 2, 4, 6: 60 - 79
Information gap indicator	More information is needed on how FAD deployments are monitored at UoA level.

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

Overall Performance Indicator score	UoAs 1, 3, 5: 80 UoAs 2, 4, 6: 75
Condition number (if relevant)	10

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.
	UoAs 1, 3, 5	Yes	Yes	Yes
	UoAs 2, 4, 6	Yes	Yes	No

Rationale

To score this PI, the assessment team considered the ecosystem-level impacts of the tuna fishery itself; i.e. any ecosystem impacts caused by the removal by the UoAs of skipjack, yellowfin and bigeye (the main target species), and ecosystem-level impacts associated with the use of FADs (relevant to UoAs 2, 4 and 6).

Ecosystem effect of removals (all UoAs)

Skipjack, yellowfin and bigeye tuna are high-trophic level species and considered 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, 2009). Harvesting will also almost inevitably lead to changes in the age and size structure of populations, with a large change in the size structure of top predators also potentially having ecosystem ramifications since diet and size range of prey may vary with size (Polacheck, 2006). Trophic structure, together with top predator size structure, were therefore considered as the key ecosystem elements in this assessment (as per SA3.16.3).

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 fisheries' impacts 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 (2009) 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 (2009)).

For the Warm Pool pelagic ecosystem specifically (which concerns the fishery under assessment – see Figure 23), Allain et al. (2012) constructed a trophic mass-balance ecosystem model using Ecopath with Ecosim software[18]. 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 biomass of groups in both higher and lower trophic levels, and thus change the overall integrity of the ecosystem structure. Applying the same software, a Warm Pool ecosystem model was simulated by Griffiths et al. (2019), with the objective to explore the potential effects of FAD fishing on ecosystem structure and the biomass of individual target, bycatch and forage species. Fishing impacts were simulated by increasing or decreasing FAD effort by either 50% or 100% in 2016, or by transferring FAD effort to the more traditional purse seine fishery that sets on unassociated free schools, and observing the ecosystem and biomass responses 30 years later in 2046. According to the study, although the Warm Pool ecosystem has undergone a significant change in structure since 1980 from heavy exploitation of high-trophic level target and non-target species, the ecosystem appeared resistant to simulated fishing perturbations, with only modest changes (<10%) in the biomass of most groups (although some less productive shark bycatch species decreased by up to 43%, which had a subsequent positive effect on the prey species of those sharks). In the case of the Warm Pool ecosystem, it is thought that because the upper trophic levels consist of a high diversity of highly productive groups that are generally opportunistic predators and consume a wide variety of prey, the effects on the biomass of directly impacted groups of perturbations caused by these simulated fishing perturbations can be tempered by small changes in the biomass of a wide range of opportunistic and biologically productive predators. As a result, there were no trophic cascades that reached lower trophic levels (TL < 3), with only a 3% change in the biomass of any of these lower functional groups over 30 years. Griffiths et al. (2019) further reinforced the hypothesis by Allain et al. (2012) in that the majority of high-level predators in the Warm Pool appear to be exerting only weak top-down regulation of the tropical Warm Pool ecosystem, with ecosystem structure most sensitive

[18] Ecopath trophic models provide a static representation of energy flows in a food web that balances a group's net production with all sources of mortality and migration. Ecosim is a dynamic extension of Ecopath that allows forecasting of ecosystem responses to specific perturbations through time by accounting for changes in predator consumption rates and the proportion of the prey that exist in a vulnerable state (Griffiths et al., 2019).

to changes in the biomass of mid-trophic-level forage groups (e.g. mesopelagic fish and crustaceans), suggesting the ecosystem is dominated by "wasp-waist" control rather than bottom-up or top-down processes. Finally, the authors concluded that reduction of FAD effort by at least 50% was predicted to increase the biomass of tuna species and sharks and return the ecosystem structure to a pre-industrial-fishing state within 10 years (Griffiths et al., 2019).

It is clear that any fishing activity will potentially have ecosystem effects and the magnitude of the ecosystem effects will depend both on the functional role of the fish being harvested and the magnitude of the removals from the system (Polacheck, 2006). In this context it is important to consider that none of the main target species in this fishery are currently below (or near) their respective points of recruitment impairment, as discussed in Principle 1. Current total removals for the WCPO for these three species are in excess of 2.6 million mt (WCPFC, 2019a), with the UoAs combined accounting for *ca*. 1% of these total estimated removals. This, combined with the studies listed above (particularly Griffiths et al. (2019)) provides evidence that the UoA – through fishery removals - 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. **SG60, SG80 and 100 are met**.

Ecosystem effects associated with use of FADs (UoAs 2, 4, 6)

FADs may modify both tuna behaviour and condition, which has been hypothesized as a significant ecosystem impact; i.e. when an animal settles preferentially in a habitat within which it does poorly relative to other available habitats, it is said to have been caught in an "ecological trap" (Robertson and Hutto, 2006; Leroy et al., 2013). Because tropical tunas are known to aggregate around floating objects, it has been suggested that the large number dFADs deployed by purse seiners could act as an 'ecological trap'. This hypothesis states that these networks of drifting FADs could take fish to areas where they would not normally go or retain them in places that they would otherwise leave (Dagorn et al., 2010). The aggregation of juvenile tuna around FADs also makes them more susceptible to predation from both larger tuna and other predators (Delmendo 1991; Bromhead et al. 2003 in Morgan (2011)). If FADs drive the associated fauna to biologically poor areas (a change in their migration routes), this could have detrimental effects on their biology. Other effects include modifications in school composition, fragmented tuna schools and reduced residence times of schools under individual FOBs (MRAG_Asia_Pacific (2018) and references therein). These hypothetical effects of the density and distribution of dFADs on tuna behaviour and biology may affect fishing efficiency, where above some threshold, the higher the density of FADs, the lower the mean size of tuna schools aggregating at the FADs (Hall and Roman, 2017 in FAO (2018)). According to Dagorn et al. (2013), this hypothesis is mainly based on the idea that FADs occupy areas where natural FADs such as logs are not found. In this context it is important to consider that the deployment of FADs could modify the oceanic environment in two ways. First, FADs can be deployed in or drift into areas where there previously were no logs (i.e. naturally occurring floating objects that were already part of the habitat). In this way FADs can create new areas with floating objects. Second, FAD deployment can increase the number of floating objects in areas that already had logs (Dagorn et al., 2013) with fish aggregations already occurring naturally. In this latter scenario, there would likely be limited changes to natural migration patterns. In the Indian Ocean, Dagorn et al. (2013) carried out a comparison of the distributions and numbers of logs and FADs and found that at a spatial scale larger than quadrats of 2° by 2°, there were no areas occupied by FADs but free of logs, whereas the study did find that FADs increased the number of floating objects in any given area. Therefore, should FADs indeed drive tunas to less suitable environments, this would occur at scales smaller than 2° by 2. Tunas are known to travel long distances and their habitat largely exceeds 2° by 2° areas. Therefore, one could consider that the ecological consequences of tunas being driven to areas where they would not have been, at the scale of 2° by 2°, are minor (Dagorn et al., 2013). While such a study has not been carried out for the WCPO, it is reasonable to assume that with its 600 islands, the occurrence of naturally floating objects in the FSM EEZ is likely to be significant.

In order to quantify and manage the number of dFADs deployed in and drifting through the EEZs of PNA members (including FSM), a dFAD-tracking programme was initiated in January 2016, with data consisting of a location and time stamp recorded periodically by the dFAD buoy (Escalle et al., 2019). These data were used by Escalle et al (2019, 2020a) to investigate dFAD deployments and drift tracks between 2016 and 2020. The trajectories of 84,419 buoys were simulated over the WCPO tuna purse seine fishing

grounds using a passive Lagrangian particle simulator, and estimated from observed trajectories. Figure 25 shows three main deployment hotspots, based on 95th percentile of the data: (i) east of the Papua New Guinea EEZ (Hotspot 1); (ii) a large hotspot in the centre of the WCPO mostly covering Kiribati Gilbert Islands, Nauru, north of Tuvalu and international waters (Hotspot 2); and (iii) east of Kiribati Phoenix Islands (Hotspot 3). The FSM EEZ is clearly located in an area of low FAD density compared to the rest of the WCPO, with inter-FAD distances generally higher than in the other EEZs, varying from less than 10 km to 652 km. In contrast, in the areas with high FAD density, the median of the distance between FADs was estimated at less than 20 km (Escalle et al., 2020a). According to the same authors, in PNA countries where almost half of all FADs are less than 12km from each other, this may have significant effects on the behaviour and vulnerability of tropical tunas. The direct effect of FADs on these species is believed to occur at around this distance (Moreno et al., 2007 cited in Escalle et al. (2020a)), with directed movements towards FAD-aggregated schools identified from 10km away in electronic tagging studies (Girard et al., 2004 cited in Escalle et al. (2020a)).

Finally, according to Escalle et al. (2020c), an estimated 30,000–40,000 FADs are deployed/redeployed annually in the WCPO between 2011 and 2019. Based on 2020 buoy data, both UoA companies combined account for ca. 3.5 – 4.5% of this. This, together with the evidence presented above, means that the UoA is highly unlikely to disrupt the key elements (i.e. tuna behaviour and condition) underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. For this reason, **SG60 and SG80 are met**. In the absence of clear evidence that this is the case, however, **SG100 is not met**.

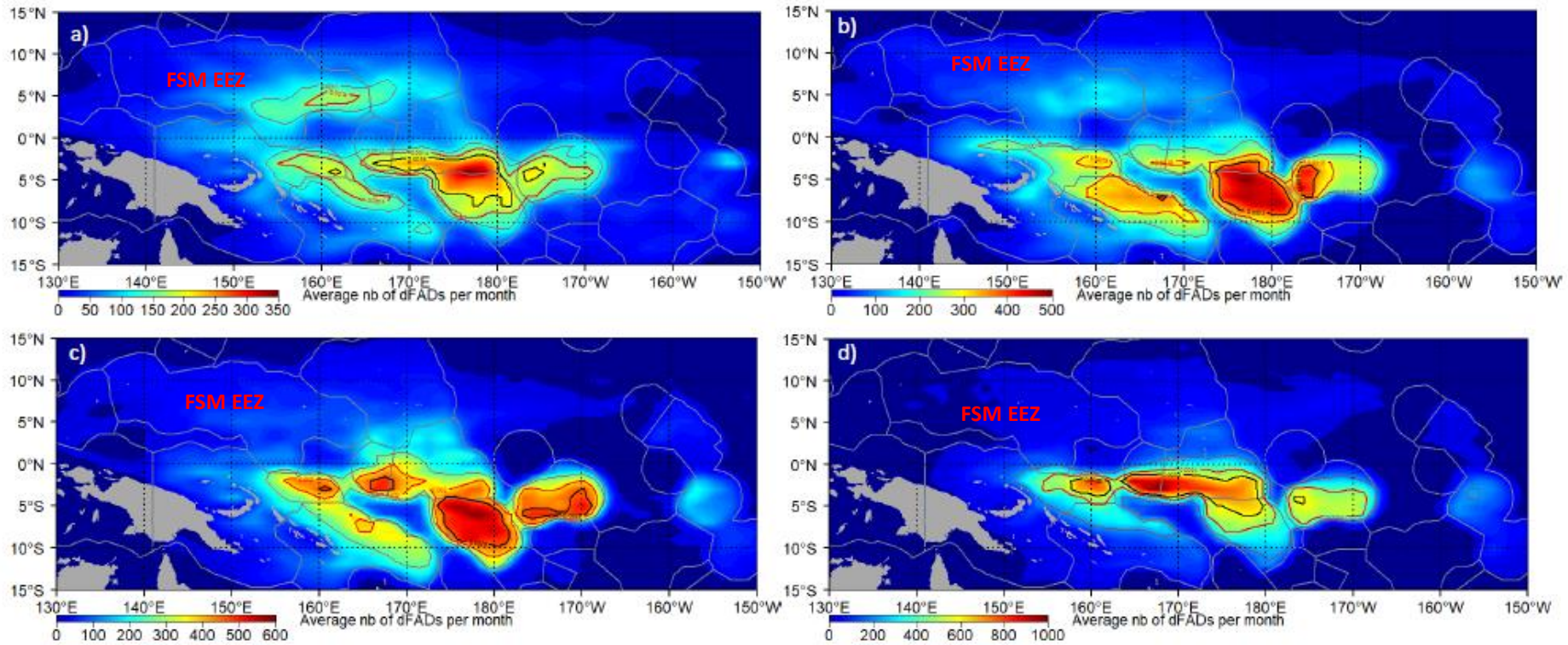


Figure 25. Smoothed kernel density of the average number (nb) of FAD satellite buoys transmitting at least once per month and per 1° grid cell during a) 2016, b) 2017, c) 2018, and d) 2019. Red lines correspond to the 95th quantile. Colour scale corresponds to the average number of buoys transmitting per 1° cell per month. Note that the scales are different on each plot. From Escalle et al. (2020a).

References

Allain et al. (2012), Kitchell et al. (2006), Ward and Myers (2005), Kitchell et al. (1999), Baum and Worm (2009), Polacheck (2006), Schindler et al. (2002), Sibert et al. (2006), Griffiths et al. (2019), WCPFC (2019a), Dagorn et al. (2013), FAO (2018), Leroy et al. (2013), Morgan (2011), MRAGAsiaPacific (2016), Robertson and Hutto (2006), Dagorn et al. (2010) and Escalle et al. (2019), Escalle et al. (2020a and c)

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	UoAs 1, 3, 5: 100 UoAs 2, 4, 6: 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.
	All UoAs	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 all CMMs as they apply to WCPFC fisheries in general (e.g. CMM 2004-03, 2013-04, 208-06 for WCPFC vessel markings, identifiers and the WCPFC record of fishing vessels and authorisation to fish; CMM 2006-07 and 2018-05 for the Regional Observer Programme; CMM 2013-05 on daily catch and effort reporting), specific species and taxa (e.g. tunas, billfish, sharks, cetaceans and sea turtles) and the following CMMs which are relevant to the purse seine fishery in particular:

- CMM 2009-02 on the application of High Seas FAD closures (in line with CMM 2018-01/2020-01) and catch retention, setting out limitations on slipping and discarding in purse seine fisheries;
- CMM 2009-10 to Monitor Landings of Purse Seiners at Ports so as to Ensure Reliable Catch Data by Species;
- CMM 2018-01 (superseded by CMM 2020-01) for bigeye, yellowfin and skipjack tuna in the Western and Central Pacific Ocean which includes provisions on:

- FAD set management (3-month closure on FAD deployment/setting between 20ºN and 20ºS from July to September, additional 2-month closure on FAD deployment/setting in the High Seas);
- Non-entangling FADs: from 1 January 2020, CCMs shall ensure that the design and construction of any FAD conforms to lower entanglement risk FAD designs (as per ISSF (2019)), with the use of non-plastic and biodegradable materials encouraged;
- Instrumented buoys: A flag CCM shall ensure that each of its purse seine vessels shall have deployed at sea, at any one time, no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys (note that FAD deployments in the UoAs are well below this number – Section 6.2);
- Zone-based purse seine effort control : in-zone effort limits on purse seining which for FSM is managed through the PNA VDS;
- High seas purse seine effort control although this does not apply to FSM which is a SIDS
- Catch retention: discard ban on bigeye, skipjack, and yellowfin tuna with some exceptions;
- Monitoring and Control; VMS requirements, observer coverage
- Purse Seine Vessel Limits although this does not apply to FSM which is a SIDS;

The team considered that the above CMMs in conjunction with the national legislation at flag state (FSM) level and UoA-level management (shark finning policies, FAD design, ISSF training and best practice release techniques) constitute 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			
	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.
	All UoAs	Yes	Yes	No

Rationale

UoAs 1, 3 and 5: 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 high observer coverage (Section 6.2.4.2), the low level of UoA catches of the main target species (albacore, yellowfin and bigeye) compared to the overall catches of these stocks (see 2.5.1), as well as the low impacts on Principle 2 components and associated implementation of WCPFC CMMs, precautionary national management with regards to shark finning and UoA-level policies (ban on shark finning and best practice handling and release practices) provide some objective

basis for confidence that the partial strategy will work. Overall, the team concludes that **SG60 and SG80 are met**. Testing at UoA level has not been carried out, however, so **SG100 is not met**.

UoAs 2, 4 and 6: As for the free-school fishery, 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 high observer coverage (Section 6.2.4.2), the low level of UoA catches of the main target species (albacore, yellowfin and bigeye) compared to the overall catches of these stocks (see 2.5.1), as well as the low impacts on Principle 2 components and associated implementation of WCPFC CMMs, precautionary national management with regards to shark finning and UoA-level policies (ban on shark finning and best practice handling and release practices) provide some objective basis for confidence that the partial strategy will work. Although deficiencies have been identified in terms of all habitat performance indicators for the FAD sets, any impacts are likely to be localised without ecosystem-level effects. While UoA FAD deployments remain at a relatively low level (according to Escalle et al. (2020c), an estimated 30,000–40,000 FADs are deployed/redeployed annually in the WCPO between 2011 and 2019. Based on 2020 buoy data, both UoA companies combined account for ca. 3.5 – 4.5% of this), the team believes that this supports the objective basis for confidence that the partial strategy will work at the UoA level. **SG60 and SG80 are 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).
	All UoAs	Yes	No

Rationale

At regional level, the partial strategy has so far succeeded in maintaining target species above PRI level (see Sections 6.4.2, 0 and 0) and at UoA level, the fishery's impacts are considered highly unlikely to hinder recovery of any of the ecosystem components considered. Compliance at FSM level and with FAD closures is reported to be good with no major infractions reported for the UoA. There is therefore some evidence that the partial strategy is being implemented successfully. **SG80 is met**. Clear evidence that the strategy is achieving its objective is lacking, however. **SG100 is not met**.

References

Griffiths et al. (2019) and WCPFC (2020b)

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

Draft scoring range	60-79 (scoring not complete)
Information gap indicator	More information sought on implementation of and compliance with CMM 2018-01 at flag state level.

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

Overall Performance Indicator score	All UoAs: 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.	
	All UoAs	Yes	Yes	

Rationale

All UoAs: 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 programmes (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). Furthermore, the Western Pacific Warm Pool ecosystem has been modelled using Ecopath by Allain et al. (2012) and Griffiths et al. (2019) (see discussion in 2.5.1). This information is thought to be adequate to identify (SG60) and broadly understand (SG80) 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**.
	All UoAs	Yes	Yes	No

Rationale

UoAs 1, 3 and 5: Trophic structure and top predator size structure of pelagic ecosystems in the Pacific, including the WCPO, has been characterised using Ecopath and Ecosim models based on diet data (Allain et al., 2012; Griffiths et al., 2019). 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). Griffiths et al. (2019) simulated three ecosystem indicators for the Warm Pool province, including the mean trophic level of the catch (MTLc), fishing-in-balance (FIB) index (which relates catches and the mean trophic level of the catch in a given year to a reference year, to determine whether the change is compatible with the transfer efficiency between trophic levels) and Kempton's Q index adapted for ecosystem models as a diversity measure. Fisheries included in the model were pelagic longline, pole-and-line and purse seine, with free-school sets differentiated from FAD sets. On that basis, the main interactions between the UoA and these ecosystem elements can be inferred from existing information (SG60 is met), and some have been investigated in detail (SG80 is met). SG60 and SG80 are met for the unassociated sets.

UoAs 2, 4 and 6: In addition to the above arguments, for the UoAs that involve FAD sets, it is clear that the Griffiths et al. (2019) study investigated some of the main impacts of the UoA on key ecosystem elements, particularly as it relates to trophic structure; however the model and simulation do not consider any potential effects of FADs on tuna movements and condition. While research into this topic is ongoing, is important to bear in mind the scale of the UoA fishery, with both UoA companies combined deploying approximately 140 buoys per vessel per annum. In order to quantify and manage the number of dFADs deployed in and drifting through the EEZs of PNA members (including FSM), a dFAD-tracking programme was initiated in January 2016, with data consisting of a location and time stamp recorded periodically by the dFAD buoy (Escalle et al., 2019). These data were used by Escalle et al. (2019) to investigate dFAD deployments and drift tracks between 1 January 2016 and 31 December 2017. The trajectories of 26,921 buoys were simulated over the WCPO tuna purse seine fishing grounds using a passive Lagrangian particle simulator, and estimated from observed trajectories. Figure 25 in PI 2.5.1 shows three main deployment hotspots, based on 95th percentile of the data: (i) east of the Papua New Guinea EEZ (Hotspot 1); (ii) a large hotspot in the centre of the WCPO mostly covering Kiribati Gilbert Islands, Nauru, north of Tuvalu and international waters (Hotspot 2); and (iii) east of Kiribati Phoenix Islands (Hotspot 3). The FSM EEZ is clearly located in an area of low FAD occurrence compared to the rest of the WCPO. This information, combined with the relatively low number of FAD deployments in the UoA, means that the main impacts of the UoA on key ecosystem elements, i.e. tuna behaviour and condition, can be inferred. Therefore, the main interactions between the UoA and the ecosystem elements can be inferred from existing information (SG60 is met), and some have been investigated in detail as discussed under UoAs 1, 3 and 5 (SG80 is met). SG60 and SG80 are met for the associated sets.

For these reasons, **SG60 and SG80 are met** for all UoAs.

SG100 is not met for any of the UoAs as not all main interactions between the UoAs and key ecosystem elements have been investigated.

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**.

	All UoAs	Yes	Yes

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 impacts of purse seine FAD fisheries on VME habitats (coral reefs) in the UoA area have also been investigated (see Escalle et al. (2019)) with the main functions of these habitat types in the ecosystem well understood (e.g. Williams et al. (2019)). Furthermore, with the high UoA observer coverage (as discussed in Section 6.2.4.2), the team considered that 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. **SG80 and SG100 are 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.
	All UoAs	Yes	Yes

Rationale

As explained in scoring issue c, 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 impacts of purse seine FAD fisheries on VME habitats (coral reefs) in the UoA area have also been investigated (see Escalle et al. (2019)) and enable the main consequences for the ecosystem, in terms of removal effects and modification of tuna behaviour and condition, to be inferred. **SG80 and SG100 are met**.

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.
	All UoAs		Yes	Yes

Rationale

Logbook and observer data are sufficient to detect any changes which might have ecosystem impacts. This, combined with the PNA dFAD-tracking programme, means that the available information is adequate to detect any increase in risk level and to support the development of strategies to manage ecosystem impacts (even if a full strategy is not in place). **SG80 and SG100 are met.**

References

Allain et al. (2012), Escalle et al. (2019), Fitzsimmons (2011), Griffiths et al. (2019), Williams et al. (2019), Lehodey et al. (2013)

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

Draft scoring range	≥80
Information gap indicator	More information needed on UoA observer coverage

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

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

6.8 Principle 3

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.

At the sub-regional level, there are three key organisations relevant to this fishery – the Parties to Nauru Agreement (PNA) (which includes the Federated States of Micronesia (FSM)), the Pacific Community (SPC) and the Forum Fisheries Agency (FFA).

At the national level, FSM is responsible for the management of the fisheries where the UoA fishery operates in its Exclusive Economic Zone (EEZ).

The common thread throughout the P3 assessment is the overarching regional management framework of the WCPFC and the associated commitments of the PNA members (States) to the management of the WCPO fisheries. Similarly, the sovereignty of FSM within its own EEZ also plays an important role in the management of fisheries in the region.

6.8.1 Jurisdiction

The Pelagic Purse Seine Fishery under consideration operates within the FSM EEZ. The fishery targets mainly skipjack, in addition to yellowfin and bigeye, all of which are highly migratory fish stocks, located both in the FSM EEZ and the Western Pacific Ocean (WCPO), which is under the jurisdiction of the WCPFC. The development and management of the marine resources within FSM falls under the jurisdiction of the National Oceanic Resources Management Authority (NORMA). NORMA works under Title 24. Marine Resources of the Code of FSM (revised 2014), which establishes a comprehensive framework for fisheries management. Title 18 of the FSM Code establishes NORMA's jurisdiction over the territorial sea from 12nm from the island baselines and the FSM 200nm EEZ, the outer limit of which is measured from the same baselines. The Marine Resources Department has jurisdiction over the territorial sea from the high-water mark to 12nm in the States of Pohnpei, Kosrae, Chuuk and Yap. NORMA's rights and authority regarding fish and fishery resources in Title 24 relevant to the pelagic purse seine fishery are outlined in Sections 101-124, 201-211, 301-303, 401-407, 501-504, 601-611 801-808 and 901-920. The National Fisheries Corporation works with NORMA in promoting the development of pelagic fisheries and related industries. The Board of Directors (also referred to as the Micronesia Fisheries Authority) of NORMA, comprised of five members (one representative from each state appointed by the President and one at large member appointed by the President), established under Title 24 is responsible for adopting fisheries regulations, concluding domestic and foreign fishing agreements and issuing domestic, domestic-based and foreign fishing permits. FSM is a party to the United Nations Convention on the Law of the Sea (UNCLOS) and Fish Stocks Agreement (UNFSA). It is also a member of the FFA, PNA, SPC and WCPFC and must therefore adopt WCPFC CMMs.

The WCPFC, is the RFMO responsible for the management of albacore, yellowfin, bigeye and skipjack as well as addressing the impacts of fishing on the wider ecosystem of the WCPO. FSM has signed the WCPFC Convention which is consistent with the principles and provisions of UNCLOS and UNFSA. The FSM was present at the 1995 FAO Conference, during which the FAO Code was unanimously adopted, including the Compliance Agreement. These treaties/ agreements are consistent with the current international fisheries law and standards for the management of highly migratory species and ecosystems. The Commission seeks input from recognized international law experts to ensure that decision-making is informed in relation to compliance with international law and protocols. As a member of WCPFC and party to the Convention, FSM is legally bound to apply the precautionary approach for the sustainable management of highly migratory fish stocks and biodiversity

conservation. FSM has adopted the WCPFC Conservation and Management Measure for bigeye, yellowfin, and skipjack tuna (CMM 2020-01 and CMM 2018-01).

6.8.2 Legal basis and management set-up

The national development and management of the marine resources within FSM falls under the jurisdiction of NORMA. NORMA works under Title 24. Marine Resources of the Code of FSM (revised 2014), which establishes a comprehensive framework for fisheries management. Title 24 contains 11 Chapters that NORMA must follow when developing and implementing management measures. The chapters and subsections' management measures that are most relevant to the purse seine fishery include:

- Chapter 1. General Provisions: commercial and non-commercial fishing permits, access agreements required, fisheries management agreements, multilateral access agreements, application for permits;
- Chapter 2. Management Authority: authority, regulations, duties and functions, executive director, Fisheries Management and Surveillance Working Group;
- Chapter 3. Permits for Fishing on the High Seas or in an Area Designated by a Fisheries Management Agreement by Flag Vessels: permits for flagged vessels, registration fee for flag fishing vessel and fishing by flag fishing vessels on the high seas or in an area designated by a fisheries management agreement;
- Chapter 4. Access Agreements for Foreign Fishing and related activities: negotiation of access agreements, foreign fishing agreements, fees;
- Chapter 5. Conservation, Management and Sustainable Use of Fisheries Resources: conservation, management and sustainable use of the fishery resources, allocation of allowable fishing between domestic fishing vessels, allowable fishing between foreign fishing vessels;
- Chapter 6. Enforcement: enforcement responsibility, appointment of authorized officers, powers of authorized officers, appointment of authorized observers, access granted to authorized observers, duties owed to authorized officers and observers; and
- Chapter 9. Violations and Penalties for Prohibited Acts: prohibited acts, civil penalties, criminal penalties, liability of operators, fishing without a valid permit, unauthorized fishing in waters under national jurisdiction of a foreign state, fishing on or near submerged reefs or fish aggregating devices, possession, handling and sale of fish unlawfully taken, contamination of the exclusive economic zone.

The functions, roles and responsibilities of NORMA and its staff are well defined under Title 24, Chapter 2 Management Authority. The duties and functions of NORMA include providing technical assistance in the delimitation of the EEZ and to negotiate domestic-based and foreign fishing agreements. Activities undertaken by NORMA are reported on an annual basis to the President of FSM, the Speaker of Congress of FSM and each State governor, maintaining transparency with regard to number of permits and licenses issued, fines, forfeitures and estimates on current fishing effort in the EEZ. The National Fisheries Corporation works with NORMA in promoting the development of pelagic fisheries and related industries. The Board of Directors of NORMA with members of each State appointed by the President, is the management system's decision-making body and its primary roles are to adopt regulations for the conservation, management and exploitation of fish in the EEZ, conclude fishing agreements, issue fishing permits, and participate in the planning and execution of

programmes relating to fisheries. Under Title 24. Chapter 5 Sub-section 502 NORMA and its Board of Directors are required to ensure that management measures are based on the best scientific evidence available and designed to maintain or restore stocks at levels capable of producing maximum sustainable yield. Decision-making by the Board of Directors with support from NORMA is made through the gathering of information from various sources including the vessel day scheme (VDS), vessel monitoring system (VMS), components of the integrated Fisheries Information Management Systems (iFIMS) and by analyzing catch and effort data from the fishery. Attendance at WCPFC meetings (including the SC and TCC) and through regional cooperation at FFC has expanded FSM's understanding of the functions, roles and responsibilities of national jurisdictions and WCPFC and the components of the management structure.

Other sections of the FSM Code (revised 2014) that are relevant to the management system include the following:

Title 19. Admiralty and Maritime outlines the obligations and qualifications for vessel registration and penalties for non-compliance. Sub-section 301 Obligation to Register stipulates that:

(1) All vessels 12 meters and over which are wholly owned by Qualified Persons, if not registered under the laws of nation, shall be registered in the Federated States of Micronesia.

(2) All vessels 12 meters and over entering or operating within the waters of FSM shall be duly registered either in accordance with the laws of FSM or another nation.

(3) An owner or master of any vessel who knowingly allows the vessel to enter the waters of FSM or operate in such waters, unless the vessel is duly registered in accordance with the laws of the FSM or another nation, commits a civil offense and shall be liable to a fine not exceeding $50,000. The burden of proof shall lie on the owner or master of the vessel to demonstrate that the vessel is duly registered.

Sub-section 302. Qualifications for vessel registration stipulates that:

(1) For the purposes of this Title, a Qualified Person is:

    (a) A person(s) who is a citizen of FSM, or a corporation which is established in accordance with the laws of FSM or any States, wholly owned by citizens, whose principal place of business is FSM;

    (b) A person holding a current and valid foreign investment permit duly issued by the National Government to operate a vessel in interstate or international commerce who or which has its principal place of business in FSM;

    (c) The National and State Governments of FSM and their instrumentalities.

(2) Every vessel which is owned by a Qualified Person as defined under subsection (1)(b) of this section shall only be registered in FSM if it operates from and the majority of its voyages begin or end in FSM.

Title 23. Resource Conservation Chapter 1 Sub-section 101 prohibits the use of explosives, poisons, chemicals etc. to catch any fish or other marine life. Subsection 115 stipulates that no marine mammal shall be taken or killed by a commercial fishing party or for commercial purposes but may be killed for traditional purposes. Chapter 2. Endangered Species Act Subsection 306 states that it is prohibited for any person to take, engage in a commercial activity with, hold possession of, or export any threatened or endangered species of plant or animal.

Title 24. Chapter 5 Sub-section 502 stipulates that the Board of Directors is required to apply the precautionary approach in the adoption of management measures that are consistent with and no less stringent than the criteria set forth in the United Nations Agreement or any other relevant agreement or fisheries management agreement to which FSM is a party. This approach is reflected in Paragraph 7 of Fishing Access Agreements for Domestic Based Foreign Fishing Fleets, that provides powers to NORMA in the event it determines, through consultations with competent regional scientific authorities, that there is a serious threat to a stock, it can take precautionary measures to preserve the stocks by limiting or closing access to the FSM EEZ or portions thereof.

FSM is one of the nine members of the Parties to the Nauru Agreement (PNA) that developed the Palau Arrangement to manage tuna fishing effort in the Western and Central Pacific. Pursuant of the Palau Arrangement the PNA implemented a zone-based arrangement to limit purse seine fishing effort based on a VDS in December 2007. The PNA Purse Seine VDS outlines the terms and conditions for the management of tuna purse seine vessels operating within the waters of the Parties to the Palau Arrangement. The objective of the scheme is to enhance the management of purse seine fishing vessel effort in the waters of the Parties by encouraging collaboration between all Parties. Through the VDS Management Scheme, the Parties are required to limit the level of fishing by purse seine vessels in their waters to the levels of total allowable effort (TAE) agreed by the Parties. The Parties meet annually to set the TAE for the VDS Management Year and may set the TAE for up to three years in advance. The TAE is set using the best scientific, economic, management and other relevant advice and information. At the 22nd Annual Meeting in Majuro, Marshall Islands in April 2017, the Parties of the Palau Arrangement agreed to the following for the purse seine fishery:

- The 2018 PNA TAE be set at 44,033 days and,
- The TAE of 44,033 days be adopted as the provisional PNA TAE for 2019 -2021. The TAE of 44,033 days will be adopted as the provisional PNA TAE for 2022 and 2023.

With the addition of the Tokelau TAE of 972 days for 2018-2021, the total was:

- 45,005 days provisionally for 2019 to 2021.

The TAE is allocated amongst the Parties as their Party Allowable Effort (PAE) in a manner agreed to by the Parties. Each Party is required to ensure the number of fishing days by purse seine vessels in its waters does not exceed the Parties' PAE or adjusted PAE in any Management Year. A Party may transfer unused days to another Party as long as it is less than 100% of its PAE. All necessary measures must be taken by the Parties to ensure that every purse seine vessel licensed to fish in its waters, and every purse seine vessel that is entitled to fly its flag, comply with the requirements of the Management Scheme and that if a Party exceeds its PAE for a Management Year, the Party's PAE for the following Management Year will be adjusted by deducting:

- If the excess is less than 100 days of the PAE – the amount of the excess:
- If the excess is 100 days of the PAE or more – 120% of the excess.

The Purse Seine VDS Management Scheme is administered by NORMA's VDS Administrator who is responsible for monitoring and tracking the use of FSM's vessel days allocated from its PAE.

The Management Plan on Tuna Fisheries for the Federated States of Micronesia (TMP) 2015 serves as a guide to NORMA and tuna stakeholders to ensure the sustainable development, conservation and use of tuna resources in the FSM exclusive economic zone. For the FSM purse seine and longline

fisheries the focus of the TMP is to achieve long-term ecosystem based fisheries and rights-based management outcomes through sustainable fishing ensuring economic efficiency and minimizing fishing impacts on bycatch in the marine environment. The TMP outlines management measures that will deliver the most efficient and cost-effective results for the FSM tuna fishery. It includes specific responsibilities for implementation of contingency strategies, performance measures and monitoring for the tuna fishery.

The TMP stipulates that the FSM purse seine fishery is managed under the PNA VDS. Specific details of this management scheme for the purse seine fishery include:

- All domestic and foreign operators and companies interested to participate in the FSM purse seine fishery must purchase fishing days in order to have their license application considered and if successful granted;
- FSM's PAE will be allocated according to strict guidelines that include an allocation formula, transferability of day, price, and use of a fishing day, valid period, application details and other relevant terms and conditions or "business rules";
- Fee structure under the scheme includes a minimum price of USD8,000 per day, subject to periodic reviews and updates. The fees and allocation of fishing days guarantee participatory right to engage in actual fishing. Other standard fees additional to a set fishing price include access fees, observer and VMS fees, application and processing fees etc.;
- The allocation of access and priority rights shall be given to domestic and locally based fishing vessels and companies, while second priority shall be given to FSM fishing management agreements or partnership agreements and the remaining balance to foreign fishing vessels; and
- The scheme will ensure the primary objectives of maximizing economic benefits and ensuring stock sustainability are achieved.

In addition, FSM will implement technical limits for the purposes of managing tuna fisheries, which include *inter alia*:

- Commercial tuna fishing is prohibited in territorial areas unless the States indicate otherwise;
- Other prohibited areas declared by States and Federal governments; and
- Full compliance for all measures specified under the PNA VDS and related initiatives including time and area closures, catch retention and FAD closures.

In 2009, FSM developed and implemented a Management Plan for the Regulation of Fish Aggregation Devices (FADs). The Plan sets out the mechanisms and procedures to regulate the use of FADs for various purposes including to limit the mortality of vulnerable species such as juvenile bigeye and yellowfin tuna. Elements of the Plan apply to FSM flagged purse seine vessels operating on the High Seas and other jurisdictions and all purse seine vessels operating in the FSM EEZ under license. The Plan represents the policy of the FSM government and does not have legal effect in its own right. The main provisions that will be enacted via conditions of licensing permits issued to relevant vessels include:

- FAD closure for a 2-month period (July-August) in 2009 and a 3 month (July-September) each year from 2010 thereafter pursuant to the *Fish Licencing Regulations 2009.* Note:

this is not in line with CMM 2020-01 and 2018-01 for bigeye, yellowfin and skipjack tuna. NORMA clarified that FSM follows the WCPFC CMM 2018-01 as the Management Plan for the Regulation of Fish Aggregating Devices (FADs) is only a policy and is not legally binding.

- To discourage fishing practices that result in a high level of small fish bycatch, all bigeye, skipjack and yellowfin tuna taken by a fishing vessel shall be retained on board and then landed or transshipped;
- Each FSM flagged vessel will deploy a total of 100 deployed drifting FADs for both the High Seas and within the FSM EEZ (note that the FSM FAD limit is more stringent than the WCPFC limit of 350; this is aligned with PNA's position that WCPFC's FAD limit actually caters for a significant increase in FAD deployments); and
- Deployed drifting FADs must be clearly marked with the name of the vessel that has deployed it. A FAD number is to be assigned by the vessel master and shall be the first three letters of the vessel name followed by a two-digit number.

To date, NORMA has not maintained a register of FAD deployments as these have been considerably below the WCPFC 350 limit. The Plan is under continual review and can be amended at any time.

A Strategic Plan and Corporate Plan for NORMA were adopted in 2018 and are now being implemented. Through the Strategic Plan, a Corporate Division was established to be responsible for all administrative tasks and functions of the various divisions within NORMA. Also, a Monitoring and Compliance Strategy was drafted and finalized in 2019.

FSM has agreed to abide by a range of international legally binding and non-binding treaties concerning fisheries, which influence the domestic management framework. These include the binding *United Nations Convention on the Law of the Sea, 1982 (UNCLOS), Food and Agriculture Organization (FAO) Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas 1993 (FAO Compliance Agreement, the United Nations Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks 1995 (Fish Stocks Agreement)* and the signed but not ratified *FAO Agreement of Port State Measures to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing 2009.* Other non-binding treaties include the FAO Code of Conduct for Responsible Fisheries and International Plans of Action to: prevent, deter and eliminate illegal, unreported and unregulated fishing; reduce fishing over capacity; reduce the incidental catch of seabirds, and conserve and manage sharks. Consistent with its obligations under Article 118 of the UNCLOS and Part III of the Fish Stocks Agreement, FSM cooperates in the management of highly migratory species through regional fisheries management organisations (RFMOs) which have allowed the development and implementation of sustainable management arrangements for some species as required under the obligations of UNCLOS Article 63(2), 64, 118, 119 and the Fish Stock Agreement Article 5.

FSM also cooperates in the development and recommendations for management of highly migratory stocks with regional and international fisheries organisations including SPC and WCPFC through the collection and sharing of catch and effort data, provision of scientific and compliance advice, and monitoring, control and surveillance initiatives (regional monitoring system (VMS), record of fishing vessels and high seas boarding and inspection register). FSM is a party to all decisions at WCPFC level and participates in the Scientific Committee and Commission meetings where final decisions are made at a regional level. Additionally, national legislation must take into account regulations set by WCPFC.

There is a mechanism in place in the FSM Code to resolve disputes concerning infractions and penalties awarded for non-compliance to regulations concerning the fishery. Title 6. Judicial Procedure Chapter

9. Section 902 stipulates that "*any appeal authorized by law may be taken by filing a notice of appeal with the presiding judge of the Supreme Court of FSM from which the appeal is taken, or with the clerk of the court for the District in which the court was held, within 30 days after the imposition of the sentence or entry of the judgment, order, or decree appealed from, or within such longer time as may be prescribed by rules of procedure adopted by the Chief Justice."* Any infractions beyond administrative penalties are the responsibility of the Department of Justice. Most infractions are settled out of court for efficiency reasons as court cases tend to be lengthy.

The customary right for people to fish for food and livelihood is explicate in the FSM Bill of Rights Chapter 1. Sub-section 114 that states *"due recognition shall be given to local customs in providing a system of law and nothing in this chapter shall be construed to limit or invalidate any part of the existing customary law, except as otherwise provided by law."* The FSM Code also provides provisions for the rights of small-scale fishers and domestic fishers. Title 24. Specifically, states that the State Government has powers "*to establish and support programmes to promote, support and guide fishing cooperative associations".* Chapter 5 Subsection 503 of Title 24 stipulates that NORMA required to take into account the extent to which each vessel or vessel operator has historically fished in a particular area, has historically fished a particular regulated species and has traditional rights to fishing in the area when determining the portion of the total allowable catch allocated to domestic vessels if it determines that unrestricted fishing by domestic fishing vessels results in a catch level exceeding the optimum sustainable yield. Also, the 24nm contiguous zone was implemented to safeguard indigenous livelihoods and subsistence fishers.

NORMA regularly meets and consults with its tuna fisheries advisory boards, committees and stakeholders, which include the NORMA Board of Directors, Fisheries Management and Surveillance Working Group, WCPFC and Scientific Committee, SPC, FFA, and PNA. NORMA collaborates with PNA to address issues concerning the purse seine and longline VDS schemes. In 2019, NORMA met with tuna fishery operators to provide information concerning WCPFC management measures, observer coverage and electronic monitoring. An Electronic Monitoring (EM) Symposium was held to develop a risk analysis and a strategic plan for the EM programme. Also, a national EM workshop was conducted to develop an EM roadmap for 2020 and draft EM standard operating procedures. Meetings were held with FSM state leaders to provide information concerning the tuna fisheries monitoring systems that have been implemented to deter IUU fishing and promote FSM ports as destinations for foreign tuna vessels to tranship their catches.

Information about FSM fishery licensing, key documents, and projects is publicly available on the NORMA website: www.norma.fm. New regulations and amendments to regulations are gazetted in local newspapers and public notices. NORMA's Youth Ambassador visits the States regularly to promote fisheries issues and the World Tuna Day and Fisheries Symposium provide information to raise public awareness of the tuna fishery. Also, the FSM Office of the National Public Auditor provides information concerning FSM fishery performance from its reports on its publicly available website: www.fsmopa.fm. The FSM Supreme Court website contains information concerning decisions, rules, calendar and other information of the Court at www.fsmsupremecourt.org. FSM is required to submit annual reports to WCPFC concerning research, statistics and the status of their fisheries. Information submitted in these reports includes fleet composition, effort, interactions with ETP species and independent data from observer coverage or port sampling programmes. This information is publicly available on the WCPFC website.

At the regional level, the WCPFC Convention (WCPFC 2000) is consistent with the principles of the UNCLOS and Fish Stock Agreement, specifically:

- The objective of ensuring the long-term conservation and sustainable use of highly migratory stocks (Article 2);
- The general principles in Article 2 of the Fish Stocks Agreement, including the application of the precautionary approach, incorporating the UNSFA 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 8);
- Application of the dispute settlement provisions of the 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 on their food and livelihoods on tuna resources (Article 30).

The Commission takes input and advice from a number of subsidiary bodies (e.g. Scientific Committee), before making decisions, including the adoption of conservation and management measures (CMMs). The Commission also seeks input from recognized international law experts to ensure that decision-making is informed in relation to compliance with international law and protocols. All WCPFC members, including FSM, are legally bound to apply the precautionary approach as parties to the WCPFC Convention when developing and implementing management measures for the tuna fishery. FSM has adopted all the WCPFC Conservation and Management Measures relevant to the purse seine fishery. Commission decision-making processes are based on Scientific Committee (SC) reports concerning the status of target and non-target species and respond to serious issues, such as overfishing, and suspected overfished stocks.

Commission decision-making processes are based on Scientific Committee (SC) reports concerning the status of target and non-target species and respond to serious issues, such as overfishing, and suspected overfished. WCPFC adopted a CMM on a target reference point for WCPO skipjack tuna (CMM 2015-06). The target reference point for the WCPO skipjack tuna stock was initially set to be 50 per cent of the estimated recent average spawning biomass in the absence of fishing and could be reviewed at any time that relevant information is made available. A stock assessment for skipjack has not been conducted since SC12 in 2016, therefore it was concluded by SC14 in 2018 that the advice from SC12 should be maintained to achieve the objectives set in CMM-2017-01, pending a new assessment or other new information. SC12 noted that the skipjack assessment showed that the stock was moderately exploited and the fishing mortality level was sustainable. Some models indicated that the stock was under the TRP. However, it was concluded that fishing was having a significant impact on stock size and could be expected to affect catch rates. The stock distribution was also influenced by changes in oceanographic conditions associated with El Niño and La Niña events, which impact catch rates and stock size. Additional purse-seine effort would yield only modest gains in long-term skipjack tuna catches and could result in a corresponding increase in fishing mortality for bigeye and yellowfin tunas. SC12 recommended that the Commission take action to keep the spawning biomass near the TRP and also advocated for the adoption of harvest control rules based on the information provided. In order to maintain the quality of stock assessments for this important stock, SC12 recommended that 1) continued work on developing an index of abundance based on purse seine data; and 2) regular large scale tagging cruises and complementary tagging work continue to be undertaken in a way that provides the best possible data for stock assessment purposes.

Based on stock status assessments for bigeye and yellowfin in 2017, the SC14 concluded that the bigeye stock appears to not be experiencing overfishing and it appears the stock was not in an

overfished condition. It was recommended that as a precautionary approach the fishing mortality on the bigeye stock should not be increased from the current level to maintain current or increased spawning biomass until the Commission was able to agree on an appropriate target reference point (TRP); and that future work was required to improve the assessment and reduce uncertainty. The yellowfin stock appeared to not to be experiencing overfishing and it appeared that the stock was not in an overfished condition. It was recommended that WCPFC could consider measures to reduce fishing mortality from fisheries that take juveniles; and measures should be implemented to maintain current spawning biomass levels until the Commission was able to agree on an appropriate target reference point (TRP). Due to the recommendations of the SC14 and based on the results of the stock assessments for bigeye, yellowfin and skipjack CMM 2017-01 was adopted by WCPFC.

Decision-making at the WCPFC is open and by consensus, with a provision for a two-chambered voting process requiring a 75% majority in both chambers if all efforts to reach a decision by consensus have been exhausted. To date no decisions have been made by vote. There are also provisions under Article 31 and Annex II of the Convention for a decision by the Commission to be reconsidered by a review panel at the request of a member. The WCPFC Convention also recognizes the interests of small-scale and artisanal fishers under Article 5 (h), which specifies that the Commission shall "take into account the interests of artisanal and subsistence fishers". Under Article 30, which states that "the Commission shall give full recognition to the special requirements of developing State parties to this Convention, 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.

6.8.3 Objectives

Long-term objectives

The long-term objectives at the national level, consistent with the MSC fisheries standard, are clearly specified in Title 24. Chapter 1 Sub-section 101. The key objective is *to ensure the sustainable development, conservation and use of the marine resources in the exclusive economic zone by promoting the development of, and investment in, fishing and related activities in the context of effective stewardship.* Decision-making in the development of the Tuna Management Plan 2015, the adoption of the Purse Seine VDS and WCPFC CMMs are guided by this long-term objective.

At the regional level, the WCPFC is responsible for decision-making for key management measures, which affect the albacore, bigeye, yellowfin and skipjack stocks, bycatch species and ecosystem. 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 FSA respectively)*". Article 5 of the Convention 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 through the application of the guidelines set out in Annex II of the FSA. Article 10 of the Convention is consistent with MSC principles and objectives 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.

Fishery-specific objectives

The FSM Tuna Management Plan (2015) includes the following short- and long-term objectives consistent with the MSC Principles 1 and 2:

- To ensure that the nation's tuna resources are used in a sustainable way;
- To obtain maximum sustainable economic benefits from the nation's tuna resources; and
- To promote economic security for the nation through the use of tuna resources.

The plan focuses on areas where NORMA has direct control, which is primarily the use of FSM's EEZ by commercial fishing for tuna and tuna-like species and how it will pursue its legislative objectives and requirements to deliver services with regard to the effective and sustainable management of tuna resources under an ecosystem-approach to fisheries management framework. The main indicators and objectives for NORMA to deliver these services are outlined in Table 37 below.

Table 37. FSM Tuna Management Plan effective indicators and objectives

Indicator	Objectives
Species sustainability	FSM EEZ's contribution to: (i) keeping biomass levels above limit reference points throughout range of stocks; (ii) continue to promote sustainable fishing in FSM EEZ; (iii) collect accurate/ timely data from all tuna fisheries in FSM (incl. bycatch); and, (iv) fewer fish species/ stocks are assessed as being subject to overfishing.
Species viability	To avoid extinction for a species (i.e. $B_{CURRENT} < B_{MSY} > B_{EXTINCT}$).
Ecosystem & general environment	Ecosystem and biodiversity maintenance; waste minimization; reduction in the quantity of bycatch; collect accurate data from all tuna fisheries in FSM (incl. bycatch, etc.).
Economic benefits	To optimize economic benefits to the community; promote private sector/ domestic development; provide export-oriented income; promote domestic development aspirations (including gradual reduction of foreign fishing access); positive contribution by NORMA to productivity trends in FSM tuna fisheries.
Social benefits	To optimize social benefits to the community; employment & income generating opportunities; ensure consistency/ compatibility of all fisheries developments with local legislations/ international agreements.
Administration/ governance	Cost effective regulation of the fishing industry; control of IUU fishing in FSM national waters.
Food security	To maintain access to sufficient resources to enable survival; ensure sufficient food consumption.

The Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine VDS objectives are to enhance the management of purse seine vessel effort in the waters of the Parties (including FSM) by encouraging the collaboration between all Parties and:

- Promote optimal utilization, conservation and management of tuna resources;
- Maximize economic returns, employment generation and export earnings from sustainable harvesting of tuna resources;
- Support the development of domestic locally based tuna fishing industries;
- Secure an equitable share of fishing opportunities and equitable participation in the tropical tuna fisheries for the Parties;

- Increase control of the tropical tuna fisheries for the Parties;
- Enhance data collection and monitoring for the fishery; and
- Provide effective and efficient administration, management and compliance.

At the regional level, there are clear objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach in the WCPF Convention (Art. 2). The Commission's CMM 2018-01 for bigeye, yellowfin and skipjack has the following explicit objectives: 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; bigeye: pending an agreement on a target reference point the spawning biomass ratio ($SB/SB_{F=0}$) is to be maintained at or above the average $SB/SB_{F=0}$ for 2012 - 2015 and yellowfin: pending an agreement on a target reference point the spawning biomass ratio ($SB/SB_{F=0}$)is to be maintained at or above the average $SB/SB_{F=0}$ for 2012 -2015. (Note: at the Commission's Seventeenth Regular Session in December 2020, the Commission adopted CMM 2020-01 in accordance with Article 10 of the Convention; this CMM stipulates that with respect to bigeye, yellowfin and skipjack tuna the Commission will continue to implement the measures set out in CMM 2018-01, until 15 February 2022).

The Commission has also adopted a number of measures to protect the unintentional catch of marine mammals and other non-target species that include: CMM for Sharks (CMM 2019-04), CMM on Mobulid Rays Caught in Association with Fisheries in the WCPFC Convention Area (CMM 2019-05), CMM of Sea Turtles (2018-04), CMM for Mitigate the Impact of Fishing of Highly Migratory fish Stocks on Seabirds (CMM 2018-03), CMM on Marine Pollution (2017-04), CMM for Sharks (CMM 2014-05), CMM for the Protection of Whale Sharks (CMM 2012-04) CMM for Oceanic Whitetip Sharks (2011-04) and CMM for Silky Sharks (CMM 2013-08). These regional level objectives and the requirements of the CMMs are incorporated into the FSM fishery management system.

Commission reports indicate that explicit action is being undertaken through CMMs to support the achievement of objectives, however, this is yet to result in target reference points being formulated for all managed stocks. 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.

6.8.4 Stakeholders

6.8.4.1 Regional and sub-regional

Western and Central Pacific Fisheries Commission (WCPFC)

The Western and Central Pacific Fisheries Commission (WCPFC) was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention).The WCPFC Convention draws on many of the provisions of the UN Fish Stocks Agreement (UNFSA) while reflecting the special political, socio-economic, geographical and environmental characteristics of the western and central Pacific Ocean Region. The WCPFC Convention seeks to address the problems with the management of the high seas fisheries resulting from illegal, unregulated and reported fishing, over-fishing, fishing vessel controls, and insufficient multilateral cooperation in respect to conservation and management of highly migratory fish stocks.

The WCPFC Convention Articles 9-11 and 23-24 provide information on the functions, roles and responsibilities of the 26 member states and committees formed under Commission control. The Commission and its associated committees have clear operating procedures, terms of reference and

the roles and responsibilities for members and non-members which are clearly defined in the Convention Rules of Procedure and in relevant CMMs.

The WCPFC Convention follows closely the provisions of the UNFSA, that include:

a. The objective of ensuring the long-term conservation and sustainable use of highly migratory fish stocks (Article 2);
b. 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);
c. 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);
d. Compatibility of measures established for the high seas and those adopted for areas under national jurisdiction (Article 8);
e. Application of the dispute settlement provisions of the UN Fish Stocks Agreement to disputes between WCPFC Members (Article 31); and
f. 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 Commission and its subsidiary bodies are regularly reviewed, and the overall findings considered at Plenary meetings of the Commission (WCPFC10, Performance review of the Commission WCPFC10-2013-14, 25 November 2013, 70 pp., WCPFC11-2014-IP07, 5 November 2014, 86 pp.) using FAO criteria. These reviews resulted in a significant number of recommendations, many of which have now been addressed. The Executive Director also reports annually to the Commission (WCPFC16, December 2019) on progress in addressing outstanding recommendations of the reviews. An independent review of the Commission's science structure and functions was conducted in 2009 (MRAG, 2009), resulting in overhauling of the operation of the Scientific Committee, and adoption of a peer review process and changes to the data and science functions. SC13 endorsed a process for a multi-year schedule for independent review of stock assessments.

The subsidiary bodies of the Commission provide extensive, detailed reports to the Commission (see WCPFC 16, December 2019, SC15, August 2019, and TCC15, September 2019 Summary reports), which include recommendations for Commission consideration. Decision-making is open, with the process, outcomes and basis for decisions recorded in detail in the 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 included in the established decision-making process, as described in Article 20 of the Convention. If a vote is invoked by the Chair, participating Territories are prohibited from participating.

The roles and responsibilities of WCPFC members are clearly described in Articles 23 and 24 of the Convention, the Commission Rules of Procedure, CMMs, 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. The WCPFC allows participation of non-members and territories (Article 44), with opportunities for CNMs and observers to participate in meetings of the Commission and its subsidiary bodies, including the Scientific Committee, the Technical and Compliance Committee 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.).

The WCPFC Convention requires the Scientific Committee 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". The WCPFC Strategic Research Plan (SRP) 2017–2019 was adopted by the Scientific Committee (SC12) and approved by consensus at the WCPFC in 2016, pending funding availability. The Plan is directed towards providing information to enable the Commission to avoid overfishing or depletion of targeted stocks and the application of an ecosystem approach. The implementation process of 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.

The WCPFC recognises and uses information from its subsidiary bodies, members and observers before implementing decisions, including the adoption of conservation and management measures. These bodies include the FFA and the SPC.

Parties to the Nauru Agreement (PNA)

The Parties to the Nauru Agreement (PNA) is an alliance of Pacific Island states whose national waters collectively account for a significant proportion of the WCPO tuna catch and about half of the purse seine catch. The Nauru Agreement is a sub-regional agreement made to facilitate cooperation in the management of fisheries resources of common interest.

The Nauru Agreement is a binding Treaty-level instrument considered to be a sub-regional or regional fisheries management arrangement for the purpose of the UNFSA and the WCPFC Convention. The PNA countries (FSM, Solomon Islands, Tuvalu, Kiribati, Marshall Islands, Papua New Guinea, Nauru and Palau; also Tokelau since 2012), have worked collaboratively since 1982 to manage the tuna stocks within their national waters through the Agreement. The PNA operates its secretariat from Majuro in the Marshall Islands. Its objectives are to enhance regional solidarity and to promote economic control and participatory rights over the tuna resources in PNA waters. The primary focus of the PNA is to:

- Develop strategic fisheries conservation and management initiatives;
- Develop initiatives to maximize the sustained direct and indirect economic benefits to the Parties; and
- Maximize the profitability of the fishery and ancillary industries within the PNA.

The PNA coordinates the implementation of management measures with a view to enhancing economic benefits from the fishery, including harmonizing the terms and conditions of access for distant water fishing vessels/fleets and granting preferential access to vessels of the Parties in order to encourage domestic participation in the fishing industry. This includes operating an access and management regime, which optimizes revenue collection for the parties, as well as promoting the development of the Parties' indigenous fishery sector.

The Nauru Agreement is implemented through binding Implementing Arrangements and associated Arrangements, which include:

- The 1st Implementing Arrangement, 1983, setting minimum licensing standards, including reporting, inspection and on-board observation, vessel identification and "good standing" on the FFA regional register;
- The 2nd Implementing Arrangement, 1990, adding additional conditions relating to VMS, high seas reporting and a prohibition on transshipment at sea;
- The Palau Arrangement, 1995, limiting the purse seine fishery, initially by limiting vessel numbers, but now through the Vessel Day Scheme (VDS);
- The FSM Arrangement: 1994, establishing arrangements for preferential access among the parties for vessels meeting certain standards for the provision of domestic economic benefits; and
- The 3rd Implementing Arrangement (3IA) 2008, applying a FAD closure, 100% observer coverage and catch retention/no tuna discards in PNA EEZs, and prohibition of fishing in high seas pockets for licensed vessels.

PNA members have legal, institutional and policy frameworks, including tuna management plans, in place to manage the purse seine and longline fisheries in PNA waters and to implement the requirements of WCPFC, the PNA Agreement and the VDS.

The PNA has driven much of the management reform in the purse seine and longline fisheries, including the introduction of an input control system based on vessel day limits (the VDS), closures of High Seas pockets, seasonal bans on use of drifting FADs, satellite tracking of boats, in-port trans-shipment, observer coverage of all purse seine vessels, closed areas for conservation, mesh size regulations, tuna catch retention requirements, hard limits on fishing effort, prohibitions against targeting whale sharks, shark action plans, and other conservation measures to protect the marine ecosystem.

The Pacific Community (SPC)

Based in Noumea, New Caledonia, the SPC 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 Islands, 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 FSM and the other 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:

- 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;
- 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; and

- Stock Assessment and Modelling: including regional stock assessments for the WCPFC, development of tuna movement and simulation models, bio economic 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.

Forum Fisheries Agency

FFA is based in Honiara, Solomon Islands, and has 18 members, including Cook Islands. Other members are: Australia, Federated States of Micronesia, Fiji, French Polynesia (PIF membership granted September 2016), Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. FFA was established to help countries sustainably manage and develop the fishery resources that fall within their 200nm EEZs. FFA is an advisory body providing expertise, technical assistance and other support to its members who make sovereign decisions about their tuna resources and participate in regional decision-making on tuna management through agencies such as the WCPFC and has two major programmes of relevance to the management framework under consideration:

- Fisheries management – providing policy and legal frameworks for the sustainable management of tuna;
- Fisheries operations – supporting monitoring, control and surveillance of fisheries as well as treaty administration, information technology and vessel registration and monitoring.

These programmes provide 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, governance of fisheries administrations, 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 including the provision of support services including a vessel regional register, VMS and observer programmes; and
- The development of regional co-operation in fisheries management;

FFA also services regional fisheries treaties and arrangements and provides capacity building in the area of fisheries management. The governing body of FFA, the Forum Fisheries Committee (FFC) provides a valuable forum for the discussion of matters of common interest. FFC (and FFC sub-group) outcomes and subsequent inputs into WCPFC have been instrumental in many of the key conservation and management initiatives agreed in that forum.

6.8.4.2 National

Department of Resources and Development

The FSM Department of Resources and Development is responsible for supporting and managing the development of the nation's economy and utilization of its natural resources in a sustainable manner. It is also responsible for assisting/coordinating with the States of Chuuk, Kosrae, Pohnpei and Yap to develop their economics by focusing on the four priority sectors of Agriculture, Energy, Fisheries and Tourism. The duties and functions that are relevant to the fisheries sector are:

- Develop national fisheries, aquaculture, and mariculture development and conservation policies, plan institutional structure and coordinate the roles of the private, public and fisheries agencies, including maintaining a close working relationship with the State and National fisheries agencies, and private sector fishing activities;
- Coordinate the implementation of FSM's fisheries development plans;
- Provide technical, advisory, and support services to the States and National Government on request in their inshore fisheries related development programmes;
- In coordination with the Department of Foreign Affairs and fisheries agencies, maintain liaison with foreign and international fisheries bodies, public and private, with a view to exchanging information and cooperation in training, research and marketing;
- Conduct and/or license inshore fisheries research and development projects; and
- In coordination with NORMA, monitor the exploitation of the Nation's marine resources, propose policies for effective management of resources, maintain a database of fishing statistics within the EEZ and coordinate the implementation of fisheries policies, programme assistance and data assessments with the States.

Department of Justice

The FSM Department of Justice is responsible for the enforcement of law and administration of justice in FSM. It is the highest legal office of the executive branch of the FSM National Government mandated to enforce all national laws of the nation. It is divided into five divisions: Division of Law, Litigation, Immigration, National Police and Registrar of Corporation. The functions and duties of Divisions relevant to fisheries include:

- Division of Litigation: prosecute violation of national law
- Division of National Police: investigate violation of national laws and regulations; maritime surveillance of FSM EEZ and marine jurisdiction, enforce fisheries and maritime laws and coordinate and conduct search and rescue operations.

Department of Transport, Communications and Infrastructure

The FSM Maritime Division of the Department of Transport, Communications and Infrastructure is responsible for interstate and international sea transportation and for the operation of vessels belonging to or controlled by FSM. It is tasked with enforcement of transport regulations and providing inter-state domestic shipping services using national vessels. The Division also provides technical support to state port authorities or agencies responsible for managing the ports and other maritime affairs and regulates tariffs under its concession agreement with the Pohnpei Stevedoring Company.

FSM States Port Authorities (Pohnpei, Kosrae, Chuuk and Yap)

The FSM States Port Authorities are responsible for the development, management, operation and maintenance of the States ports and facilities. As mandated by State Law, the Port Authority is responsible for regulating seaports. The Seaport regulations most relevant for fishing operations include: Chapter 2 Section 230: Discharge of Refuse, Chapter 6 Section 607 (b) Vessel Identity, Ownership and Contact Information, Chapter 7 Section 702. Removal of Garbage, Section 703. Pollution from Vessel and Section 704. Pollutants Other Than Oil.

National Office of the Public Auditor

The National Office of the Public Auditor (NOPA) is responsible for ensuring the effective administration and management of public funds and programmes. The office endeavours to provide independent, accurate, and timely assessments of the Government of FSM's financial and operating activities in accordance with generally accepted government auditing standards.

Department of Foreign Affairs

The Department of Foreign Affairs, under the direction of the Secretary of Foreign Affairs and subject to the ultimate authority of the President, is responsible for the conduct of relations of FSM with foreign governments, governmental regional and international organisations and quasi-governmental organisations in accordance with applicable laws, treaties, regulations and orders; and for advertising policies to be observed towards such governments and organizations.

Non-Government Organisations (NGOs)

There is an active environmental NGO community within the Western and Central Pacific Region that includes World Wildlife Fund for Nature (WWF), Greenpeace, Birdlife international, TRAFFIC, The Nature Conservancy, International Seafood Sustainability Foundation (ISSF) and Pew Charitable Trusts. FSM has a number of local NGOs that have implemented marine conservation initiatives. These NGOs include Conservation Society of Pohnpei, Chuuk Conservation Society, Kosrae Conservation and Safety Organization, Micronesia Island Nature Alliance, Micronesia Shark Foundation, Marine Environment Research Institute of Pohnpei (MERIP) and The Micronesia Challenge.

6.8.5 Consultation processes

NORMA attends annual regional meetings held by the WCPFC and Scientific Committee and sub-regional meetings held by PNA. NGOs, International-Governmental Organisations (IGOs) and industry are integral to these consultative discussions and provide contracting parties with information on coastal and distant water fishing states as well as scientific information. Both NORMA and the national fisheries section of the Department of External Affairs (DEA) maintain direct contact on technical issues with regional and international bodies relating to fisheries (FAO, 2012). Although there are no formal consultation processes in place in FSM, stakeholders are invited to participate in applicable management activities. The Board of Directors of NORMA consult with relevant stakeholders such as Congress, Department of Justice, Department of Resources and Development, and State representatives (as required) when adopting regulations for the conservation, management and exploitation of fish in the EEZ and when negotiating foreign and domestic-based fishing agreements (E. Pangelinan, pers. comm. 16th February, 2018). NORMA also consults with the States and NGOs at annual Fisheries Symposium workshops about fisheries management regulations and agreements. The FSM Tuna Management Plan (TMP) 2015 was developed through multiple consultations with stakeholders and workshops based on the EAFM framework. NORMA established a Fisheries

Management and Surveillance Working Group to formulate and implement national fisheries management and surveillance strategies. The working group consists of appropriate representatives from NORMA and the Department of Justice as well as representatives from relevant National and State departments and divisions. The working group meets every quarter to discuss the management of the tuna fishery resources and Monitoring, Control and Surveillance (MCS) issues. In 2019 NORMA met with tuna fishing operators to provide information concerning WCPFC management measures, observer coverage and electronic monitoring. Also, NORMA conducted consultative meetings with relevant state agencies from Kosrae, Pohnpei and Yap to define the roles and responsibilities of ports where tuna catches are offloaded and transhipped.

The Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine VDS requires the Parties to consult with distant water fishing nations, fishing parties, fishing organisations, and other relevant organisations at annual meetings. An annual meeting of the parties is required by the Nauru Agreement; there are PNA rules governing preparation of the agenda, circulation, reporting and who can attend. A record of proceedings is distributed to the Parties and Industry representatives that often form part of the Delegation. Generally, the outputs from internal PNA deliberations are included in their reporting. Other materials and documents prepared by the PNA as well as generic reports are freely available on their website. The PNA has an intensive consultative process among Members at technical, official and Ministerial level meetings and the annual Leader-level meeting. Member delegations at meetings typically include industry participants. PNA and its Members also consult collectively with other WCPFC Members in WCPFC decision-making processes, and FFA Members in FFA decision-making processes. Although, the fishing industry and other stakeholders are not permitted to participate in annual meetings of the parties, ad hoc consultations are held with most major fishing partners concerning issues that include the management of the VDS in particular.

At the regional level, the WCPFC Convention provides information on the function, roles and responsibilities of the member states and committees formed under the Commission (SC and TCC) in relation to consultative processes. 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 uses information from the fishery and its member states in order 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.

Attendance at Commission and related meetings is comprehensive. Logistic and financial support is provided to cooperating non-members to ensure attendance and meaningful involvement and interaction in the cooperative management of fisheries in the Western and Central Pacific Ocean (WCPO). Attendance at these meetings has facilitated a greater understanding of WCPFC and member states responsibilities, and has provided opportunities for consultation between FSM and other Pacific Island countries in the management of skipjack, albacore, bigeye and yellowfin and other tuna fisheries related species.

6.8.6 Compliance and enforcement

A monitoring control and surveillance (MCS) mechanism is in place in the FSM. As a Member State of the WCPFC Convention, FSM is required to comply with regulations set by the WCPFC. The MCS Division of NORMA, comprised of 5 officers, is responsible for the collection and entry of fishing vessel logsheet data as required the FSM Code Title 24 that sets out the conditions and terms of the fishing

permits and foreign fishing agreements. The reporting requirements of fishing licences include daily vessel positions, details on sets and gear specifications, information on species retained and discarded. The MCS Division is also responsible for ensuring that licensed fishing vessels are listed on the WCPFC Record of Fishing Vessels and the FFA Regional Register of Good Standing and that licensed vessels have been fitted with VMS as required by the Commission. A summary of this information is presented to the WCPFC on an annual basis in a two-part report. NORMA established a Fisheries Management and Surveillance Working Group to formulate and implement national fisheries management and surveillance strategies. The working group meets every quarter to discuss areas requiring improvement and strategies to address issues concerning the fisheries management system and MCS system for the tuna fishery.

A person who is found by the Supreme Court of FSM to have committed an act prohibited in Title 24 Chapter 9 Violations and Penalties for Prohibited Acts is subject to a civil penalty. In determining the amount of the penalty, the Supreme Court of FSM takes into account the nature, circumstances, extent and gravity of the prohibited acts committed and, with respect to the violator, the degree of culpability, any history of prior offenses, whether there are multiple violations which together constitute a serious disregard of conservation and management measures.

Prohibited acts under Chapter 9 of Title 24 include:

- Violations of any provision, condition or requirement of a fishing permit or license or access agreement, serious misreporting of catch, fishing in a closed area, fishing after attaining quota, directed fishing for a prohibited stock, using prohibited fishing gear or falsifying or concealing markings, identity, or registration of a fishing vessel is subject to a civil penalty of not less than $100,000 and not more than $500,000;
- Fishing without a valid fishing permit is subject to a civil penalty of not less than $100,000 and not more than $1,000,000;
- Unauthorized fishing in waters under the national jurisdiction of a foreign state is subject to a civil penalty of not less than $50,000 and not more than $1,000,000;
- Violation of marine space is subject to a civil penalty of not less than $50,000 and not more than $500,000;
- Fishing on or near submerged reefs or fish aggregating devices is subject to a civil penalty of not less than $50,000 and not more than $250,000;
- Possession, handling and sale of fish unlawfully taken is subject to a civil penalty of not less than $50,000 and not more than $250,000; and
- Contamination of the exclusive economic zone is subject to a civil penalty of not less than $50,000 and not more than $500,000.

Enforcement responsibilities sit primarily with the Maritime Police, under the Department of Justice and the Office of the Attorney General, which is given power to penalize parties in breach of compliance to regulations stipulated in Title 24 of the FSM Code. The Maritime Police's responsibilities include maritime surveillance of FSM's EEZ and enforcement of fisheries and maritime laws. Four patrol boats conduct surveillance activities in areas of fishing operations within the FSM EEZ. During these operations both tuna purse seine and longline vessels are boarded to determine whether the vessels are compliant with the licensing and fishing regulations of FSM. Data from 2016-2020 concerning the number of Marine Wing patrols within the FSM EEZ and High Seas, number of boardings of purse seine vessels, and infractions identified are listed in Table 38 below.

Table 38. Data for Marine Wing Patrols, boardings of purse seine vessels and infractions. Source: NORMA.

Activities	2016	2017	2018	2019	2020
No. of Sea Patrols in FSM EEZ	22 Patrols	27 patrols	16 patrols	36 patrols	16 patrols
No. of Sea Patrols in High Seas	None	None	None	None	None
No. of at-sea boardings	78	122	57	48	0 due to Covid-19
Infractions identified	12	8	1	0	1

FSM has adopted the WCPFC CMM 2017-02 on Minimum Standards for Port State Measures. Port Authorities for the States, currently Pohnpei and Kosrae, where UoA purse seine vessels offload their catches are required to follow the measures outlined in CMM 2017-02. Also, regular dockside inspections are conducted on commercial fishing vessels entering into ports to determine whether the vessels are compliant with the regulations. UoA vessels also periodically offload catches in the ports of Tuvalu, Samoa, Taiwan, Republic of Marshall Islands, Philippines, Solomon Islands and Kiribati. As members of WCPFC these countries have also adopted CMM 2017-02 which requires each CCM to designate ports for the purposes of inspection through the provision of a list of its designated ports to WCPFC, ensure that fisheries inspections are undertaken by Government authorized inspectors and carry out inspections on any foreign longline, purse seine or carrier vessel that enters their designated ports. Furthermore, when a CCM has reasonable grounds to believe that a vessel has engaged in IUU fishing or fishing related activities in support of IUU fishing and is seeking entry into or is in the designated port of another CCM, it may request that CCM to inspect the vessel or take other measures consistent with the CCM's port state measures. Where, following a port inspection, a flag CCM receives an inspection report indicating that there are clear grounds to believe that its flagged vessel has engaged in IUU fishing or fishing activities in support of IUU fishing, it is required to immediately investigate the matter in accordance with Article 25 of the Convention. A National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing was developed by FSM with assistance from FFA and approved in 2013. The Plan outlines actions that can be taken to enhance the objective of eradicating IUU fishing through fishing vessel licensing restrictions, monitoring, control and surveillance, sanctions, and reporting activities. NORMA conducts regular compliance workshops with fishing industry representatives and fishing vessel captains to discuss new regulations and fishing vessel licensing and registration requirements. In 2019 NORMA met with tuna fishing operators to provide information concerning WCPFC management measures, observer coverage and electronic monitoring.

The FSM National Fisheries Observer Programme (NFOP) has been operating since 1979 with over 50 observers contracted from the FSM states. The NFOP was reviewed and authorized by the WCPFC Regional Observer Program (ROP) in May 2009. The WCPFC Conservation and Management Measure for the Observer Programme (CMM 2006-07) requires that all purse seine vessels carry observers. Pohnpei and Kosrae are transshipment ports for FSM, and are required to comply with the strict measures outlined in the WCPFC Conservation and Management Measure on Regulation of Transhipment (CMM 2009-06). NORMA organizes quarterly training workshops for observers to keep them informed of new regulations, reporting requirements etc. Observer data are mostly managed through the NORMA integrated Fisheries Information Management System (iFIMS). This system integrates fishing industry reporting of catch, vessel position and activity data generated by the VMS and fisheries observer information. Through the industry database, companies can see their own boats and catch information and apply electronically for licences through their portal, with licence application information that the system automatically delivers to the PNA office. Also, data related to catch and vessel activity, in particular in EEZs, can be viewed through iFIMS by individual PNA parties. iFIMS includes an Android application (eForms) which allows purse seine vessel operators to report their effort and catch data electronically on a daily basis. E-logs are securely lodged to PNAO's iFIMS

database and are then forwarded to SPC's TUFMAN2 database system. Although observer coverage has been temporarily suspended during the Covid-19 pandemic, it was reported that PNA member countries have managed to maintain an average of 35% observer coverage on their purse seine vessels in 2020 (per. comm. Banks R., and Brownjohn M., 9 Nov. 2020).

At the international level, WCPFC aims to ensure compliance through VMS, IUU vessel listing, port state controls, observers, logbooks and transhipment monitoring. A wide range of CMMs have been agreed to, and implemented at the national level that include:

- Specifications for the Marking and Identification of Fishing Vessels (CMM 2004-03);
- Centralized Vessel Monitoring System (Commission VMS) (CMM 2011-02);
- Regional Observer Program (ROP) CMM (2007-01);
- WCPFC IUU List (CMM 2010-06);
- Compliance Monitoring Scheme (CMM 2013-02);
- Standards, Specifications and Procedures for the Record of Fishing Vessels (CMM 2013-03);
- CMM for WVPFC implementation of a Unique Vessel Identifier (CMM 2013-04); and
- CMM for Minimum Standards for Port State Measures (CMM 2017-02).

The WCPFC has instituted a comprehensive fishery information e-reporting system as well as observer coverage for all vessels in their purse seine fleet. The information system is electronic and provides near real-time monitoring of the purse seine fleet, and data can be filtered by day, location/zone, catch and real time observer reporting. In addition to these data sources, landings are permitted only at designated landing sites, and independent monitors are required to be present for landings and are responsible for checking and tallying landing data. These various reports (from observers, skipper declarations and landings) serve as progressive filters providing cross checks. Observer data bases have cross checks that verify vessel positions, species identification, and catch weights to check for consistency.

Observers are an integral part of most aspects concerning the management of the WCPO fishery. Guidelines are provided for observers in most CMMs. Examples of CMMs with specific observer instructions include:

- Resolution 2005-03: Observers are asked to record all species caught in the WCPO and all discards in accordance with the minimum standard;
- CMM 2008-03: Observers collect the standard data fields, and report on the mitigation devices and their use by an operator when handling hooked or entangled turtles;
- CMM 2009-02: FADS - Observers are asked to record all tuna discards and their condition on discarding, and to record carefully all FAD sets, on the WCPFC FAD information form or the SPC/FFA Form Gen-5 when operating in the WCPO;
- CMM 2009-06: 100% observer monitoring required where transshipment at sea is allowed, generally on the carrier vessel (paragraph 13) observers allocated to carry out duties on carriers wishing to transship on the high seas must note the obligations under this CMM, especially paragraphs 13-15. Observers are asked to report all transshipment events in accordance with the minimum data fields and on the Commission transshipment forms. Observers must monitor implementation of the CMM and that quantities transshipped are consistent with quantities declared by the operator of the vessel;

- CMM 2010-06: Observers are asked to record information on vessel sightings to help to identify vessels who may be undertaking IUU fishing;
- CMM 2011-03: Observers are asked to complete all the necessary data fields noting that sets involving cetaceans should be a priority when reporting; if caught in the net deliberately or accidently, the life status on being caught and released (dead or alive) must be recorded by observers;
- CMM 2011-04 Observers are asked to record the number of releases of oceanic whitetip sharks caught in the Convention Area, including the life status on being caught and the status upon release (dead or alive) etc.;
- CMM 2012-04: prohibits purse seine vessel operators from setting on a school of tuna associated with a whale shark. This CMM explains what procedures must be carried out when a whale shark is caught by a purse seine vessel and requires countries to annually report on all instances where whale sharks have been encircled by purse seine nets. Observers are asked to record all the necessary details when a whale shark is caught or sighted in a set;
- CMM 2013-05: Observers have the right to inspect this daily vessel log, to get information required for ROP forms. Observers are asked to note whether the vessel operator maintains this log on a daily basis;
- CMM 2013-08: Observers are asked to record the number of releases of silky sharks caught in the Convention Area, including the life status on being caught and the status upon release (dead or alive);
- CMM 2017-03: Observers are asked to record all mitigation measures used, including photos of mitigation structures, and especially important photos of any bird species caught. Observer data will be used to assist CCM's in filling out their part 1 reports to the Commission.

6.8.7 Management performance evaluation

At the national level, there are mechanisms in place to evaluate key parts of the management system. The FSM Code (revised 2014) Title 24. Marine Resources is the main document for managing fisheries resources. Many of the provisions of Title 24 have been repealed and reenacted since it was published in 1982 and currently there are amendments and inclusions being considered by NORMA to submit to Congress for approval. The National Tuna Management Plan 2015 states that *"the plan will be reviewed at least every two years, if necessary, to factor in priority policy changes on tuna fisheries in consideration of new information and decisions taken by the Board of Directors, including decisions emerging from sub-regional and international agreements where FSM is a signatory."* A review of the original TMP 2000 was conducted in 2011 and identified gaps in the management system. A revised TMP was published in 2015 that addresses issues raised in the 2011 review concerning the lack of guidelines for NORMA to manage the tuna resources. The Fisheries Management and Surveillance Working Group meets quarterly to review and evaluate the effectiveness the fisheries management and surveillance systems. Recommendations from the working group for improving these systems are given to the Board of Directors for consideration. The Pacific Islands Regional Oceanscape Program (PROP) of the World Bank in 2015 conducted a review of the NORMA fisheries management system to assess the need to improve and strengthen enforcement, enhance safety of seafood exports through the establishment of a seafood hygiene competent authority, build capacity through the training of observers and enforcement officers and update monitoring equipment, strengthen fisheries management through capacity building of NORMA systems, institution and staff, and assess

coastal fisheries that may be viable for further development in partnership with local communities. A review of the FSM fisheries legislation and seafood safety management system was conducted in February 2018 by the European Union to identify gaps in the sanitary controls for seafood products to be exported to the European Union countries. An evaluation of the FSM fisheries Monitoring, Control, and Surveillance system was conducted by IUU Watch in April 2018 as part of a global evaluation of MCS systems in 84 countries (Pramod, 2018).

At the sub-regional level, the Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine VDS annual meetings consider matters relating to the administration and operation of the Purse Seine VDS. The Parties meet at the end of each Management Year to set the TAE for the subsequent Management Year and calculate the Parties' PAEs and investigate whether each Party has taken all necessary measures to ensure that the number of fishing days by purse seine vessels in its waters do not exceed the Party's PAE or Adjusted PAE during the Management Year. An independent review of the PNA purse seine Vessel Day Scheme (VDS) was conducted in 2014 (S.F., 2014).

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. Stock assessments undertaken by SPC are also subject to peer-review and external review to ensure that the scientific processes remain robust.

WCPFC does not have a regular programme of external reviews. However, an independent performance review was undertaken in 2008 and completed in 2011. To address the recommendations of the review a schedule of responses and actions were developed and considered by WCPFC in 2012. Also, an Independent Review of the Commission's Transitional Science Structure and Functions was conducted and there was a recommendation for periodic external reviews of the stock assessments, which was adopted by WCPFC9. In 2017, there was an independent review of the Compliance Monitoring Scheme. The review assessed CCM's 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 issues through remedial options.

6.8.8 Principle 3 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

At the national level, the development and management of the marine resources within the FSM falls under the jurisdiction of the National Oceanic Resources Management Authority (NORMA). NORMA works under Title 24. Marine Resources of the Code of FSM, Fisheries Act 2002, which establishes a comprehensive framework for fisheries management. Title 18 of the FSM Code establishes the jurisdiction of NORMA as the territorial sea from 12nm from the island baselines and FSM 200nm EEZ, the outer limit of which is measured from the same baselines. The Marine Resources Department in each state, Chuuk, Pohnpei, Kosrae, and Yap, has jurisdiction over the territorial sea from the high-water mark to 12nm. A 24nm zone from the islands and atolls of FSM is recognized as a contiguous zone. NORMA rights and authority regarding fish and fishery resources in Title 24 relevant to the pelagic longline fishery are outlined in Sections 101-124, 201-211, 301-303, 401-407, 501-504, 601-61, 801-808 and 901-920. The National Fisheries Corporation works with NORMA in promoting the development of pelagic fisheries and related industries. The Board of Directors of NORMA, comprised of five members (one representative from each state appointed by the President and one at-large member appointed by the President of FSM), established under Title 24 is responsible for adopting fisheries regulations, concluding domestic and foreign fishing agreements and issuing domestic, domestic-based and foreign fishing permits. FSM is

a Party of the Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine Vessel Day Scheme (VDS). It is also a member of the FFA, PNA, SPC and WCPFC and must therefore adopt WCPFC CMMs.

FSM has agreed to abide by a range of international legally binding and non-binding treaties concerning fisheries, which influence the domestic management framework. These include the binding *United Nations Convention on the Law of the Sea, 1982 (UNCLOS), Food and Agriculture Organization (FAO) Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas 1993 (FAO Compliance Agreement, the United Nations Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks 1995 (Fish Stocks Agreement)* and the signed but not ratified *FAO Agreement of Port State Measures to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing 2009.* Other non-binding treaties include the FAO Code of Conduct for Responsible Fisheries and International Plans of Action to: prevent, deter and eliminate illegal, unreported and unregulated fishing; reduce fishing over capacity; reduce the incidental catch of seabirds, and conserve and manage sharks.

Consistent with its obligations under Article 118 of the UNCLOS and Part III of the Fish Stocks Agreement, the FSM cooperates in the management of highly migratory species through regional fisheries management organisations (RFMOs) which have allowed the development and implementation of sustainable management arrangements for some species as required under the obligations of UNCLOS Article 63(2), 64, 118, 119 and the Fish Stock Agreement Article 5.

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).

Further cooperation in the management of fisheries resources of common interest is afforded through the Nauru Agreement. This is a 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 Tokelau 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 the implementation of management measures for tuna fisheries that are compatible with decisions on stock management and ecosystem-based management implemented by the PNA and WCPFC respectively. There is effective cooperation to deliver management outcomes consistent with MSC Principles 1 and 2 as further evidenced by the 3rd Implementing Arrangement of the Nauru Agreement. This 3rd Arrangement presents arguments for the effectiveness of measures implemented to reduce 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, that are not PNA members. There is organised and effective cooperation among parties, witnessed by participation of the FFA and PNA states.

Effective regional cooperation occurs via SPC and directly via FFA and PNA. Through the SPC, regionally (and sub-regionally), 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 WCPF Commission; and
- Regional MCS initiatives, including the regional VMS, VDS and vessel register.

While providing for the development of cooperative and compatible regional fisheries management approaches, this framework of cooperation also effectively addresses the capacity and resource constraints facing some Pacific Island Countries and territories' national fisheries management authorities. Cooperation through SPC and the WCPFC has allowed for the development and 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 framework for cooperation as required under UNSFA Article 10 (in reference to RFMOs).

On the basis of the above, there is an effective national level system, with organised and effective cooperation with other parties to deliver management outcomes consistent with MSC Principles 1 and 2. There are 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	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

			most issues and that is appropriate to the context of the UoA.	of the fishery and has been **tested and proven to be effective.**
	Met?	Yes	Yes	No

Rationale

At the national level, there is a mechanism in place in the FSM Code to resolve disputes concerning infractions and penalties awarded for non-compliance to regulations concerning the tuna fishery. Title 6. Judicial Procedure Chapter 9. Section 902 stipulates that "*any appeal authorized by law may be taken by filing a notice of appeal with the presiding judge of the Supreme Court of FSM from which the appeal is taken, or with the clerk of the court for the District in which the court was held, within 30 days after the imposition of the sentence or entry of the judgment, order, or decree appealed from, or within such longer time as may be prescribed by rules of procedure adopted by the Chief Justice."* Any infractions beyond administrative penalties are the responsibility of the Department of Justice. Most fisheries infractions are settled out of court for efficiency reasons as court cases tend to be lengthy.

At the sub-regional level, PNA has transparent dispute mechanisms in place to manage the Purse Seine and Longline Vessel Day Schemes, for example how the VDS days are allocated. Article 8.2 of the Palau Agreement provides a mechanism to address disagreements and resolution processes between parties, which is considered to be effective in dealing with most issues, however, the dispute mechanism has not been tested.

There are three mechanisms for dealing with legal disputes at the regional 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 other RFMOs, the first two mechanisms should preferentially be used before invoking the third alternative. It should be noted that the WCPFC has not been subject to any court challenges as of 2020.

The WCPFC dispute settlement mechanism is set out under Article 31 of the Convention. Annex II of the Convention establishes the authority to form a panel to review decisions made by the Commission and to settle disputes among members of the Commission. The dispute settlement mechanism outlined in the Convention allows for a transparent process to occur. 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 threatened at WCPFC12 (2016) over the 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, consensus was eventually achieved.

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 NGOs 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. Observers can attend these meetings but are not be able to participate in all sessions.

While the mechanisms for dispute resolution are transparent and considered to be effective in dealing with most issues at the national, sub-regional and regional level, they have only been tested and proven to be effective at a national level, so only **SG60 and SG80 are considered met**. **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	No

Rationale

At the national level, the customary right for people to fish for food and livelihood is explicit in the FSM Bill of Rights Chapter 1. Sub-section 114 which states *"due recognition shall be given to local customs in providing a system of law and nothing in this chapter shall be construed to limit or invalidate any part of the existing customary law, except as otherwise provided by law."* The FSM Code also provides for small-scale fishers and domestic fishers. Title 24 specifically states that the State Government has powers "*to establish and support programmes to promote, support and guide fishing cooperative associations".* To support the livelihoods of local fishers NORMA allocates a portion of the optimum sustainable yield to domestic fishing vessels. Also, the 24nm contiguous zone was implemented to safeguard indigenous livelihoods and subsistence fishers.

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. 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. WCPFC has an intention and has a management system that observes the legal rights that are created explicitly or established by custom for people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. Therefore, the regional management system **meets SG60 and SG80**. However, although the WCPFC considers common allocation principles such as historical participation, the rights of coastal States, and the rights of developing States, these are not formally part of the allocation process (Akroyd et al., 2020). On this basis, **SG100 is not met**.

On the basis of the above, the team concludes that the national management system has mechanisms that formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood, but the regional management system does not have these formal mechanisms in place. Therefore, **SG60 and SG80 are met** but **SG100 is not met**.

References

Federated States of Micronesia Code Title 18, Title 24 Sections 103-120, 301-306, and 502-510

Federated States of Micronesia Bill of Rights Chapter 1

Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995)

Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (1993)

Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention)

WCPFC CMM 2018-01 Conservation and Management Measure for big eye, yellowfin and skipjack tuna in the Western and Central Pacific Ocean.

Akroyd et al. (2020)

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 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	No

Rationale

At the national level, the development and management of the marine resources within the FSM falls under the jurisdiction of the National Oceanic Resources Management Authority (NORMA). NORMA works under Title 24. Marine Resources of the Code of FSM, - Fisheries Act 2002, which establishes a comprehensive framework for fisheries management. NORMA rights and authority regarding fish and fishery resources in Title 24 relevant to the pelagic longline fishery are outlined in Sections 101-124, 201-211, 301-303, 401-407, 501-504, 601-611, 801-808 and 901-920. The functions, roles and responsibilities of NORMA and its staff are well defined under Title 24, Chapter 3 (Management Authority). The National Fisheries Corporation works with NORMA in promoting the development of pelagic fisheries and related industries. NORMA remains representative of the FSM as a whole, with members of each State, appointed by the President of the Federated States of Micronesia, holding a position on the Board of Directors. Duties and functions of NORMA are explicitly described in the Chapter 3 of Title 24 and include providing technical assistance in the delimitation of the exclusive economic zone and to negotiate domestic-based and foreign fishing agreements. Activities undertaken by NORMA are reported on an annual basis to the President of the FSM, the Speaker of Congress of the FSM and each State governor, maintaining transparency with regard to number of permits and licences issued, fines, forfeitures and estimates on current fishing effort in the EEZ. The Board of Directors of NORMA is the management system's decision-making body and its primary roles are to adopt regulations for the conservation, management and exploitation of fish in the EEZ, conclude fishing agreements, issue fishing permits, and participate in the planning and execution of programmes relating to fisheries. Under Title 24. Chapter 5 Sub-section 502 the Board of Directors is required to ensure that management measures are based on the best scientific evidence available and designed to maintain or restore stocks at levels capable of producing maximum sustainable yield. Decision-making by the Board of Directors with the support of NORMA is made through the gathering of information from various sources including the VDS, VMS, components of integrated Fisheries

Information Management Systems (iFIMS) and by analysing catch and effort data from the fishery. Attendance at WCPFC meetings (including the SC and TCC) and through regional cooperation at FFC has expanded NORMA's understanding of the functions, roles and responsibilities of national jurisdictions and WCPF Commission and the components of the management structure.

The PNA countries (FSM, Solomon Islands, Tuvalu, Kiribati, Marshall Islands, Papua New Guinea, Nauru and Palau; also Tokelau since 2012), have worked collaboratively since 1982 to manage the tuna stocks within their national waters through the Nauru Agreement. The Nauru Agreement is a binding Treaty-level instrument considered to be a sub-regional or regional fisheries management arrangement for the purpose of the UNFSA and the WCPFC Convention. The Nauru Agreement is implemented through binding Implementing Arrangements and associated Arrangements, which include:

- The 1st Implementing Arrangement, 1983, setting minimum licensing standards, including reporting, inspection and on-board observation, vessel identification and "good standing" on the FFA regional register;
- The 2nd Implementing Arrangement, 1990, adding additional conditions relating to VMS, high seas reporting and a prohibition on transshipment at sea;
- The Palau Arrangement, 1995, limiting the purse seine fishery, initially by limiting vessel numbers, but now through the Vessel Day Scheme (VDS);
- The FSM Arrangement: 1994, establishing arrangements for preferential access among the parties for vessels meeting certain standards for the provision of domestic economic benefits; and
- The 3rd Implementing Arrangement (3IA) 2008, applying a FAD closure, 100% observer coverage and catch retention/no tuna discards in PNA EEZs, and prohibition of fishing in high seas pockets for licensed vessels.

The Oceanic Programme (OFP) of SPC provides FSM and other Pacific Island members with scientific information and advice to manage the region's tuna, billfish and other related species. SPC is the scientific service provider for WCPFC and is mainly responsible for the compilation of catch and effort data, statistical analysis, analysis of biological parameters and environmental processes that influence the productivity of tuna and billfish populations, regional stock assessments and bio-economic modelling.

The FFA is an advisory body that provides expertise and technical assistance to FSM and Pacific Island members in the development of fisheries management policy and legal frameworks for the sustainable management of tuna resources and supports the monitoring, control and surveillance of fisheries as well as treaty administration, information technology and vessel registration and monitoring.

At the regional level, the WCPF Convention in Articles 9-16 and 23-24 provide information on the functions, roles and responsibilities of member states 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. The FSM is an active member of the WCPFC and its committees. WCPFC has encountered problems with flag states that have not applied appropriate controls for all their vessels and not all vessels understand their responsibilities. In some cases, there appear to be conflicts between the requirements for confidentiality and the responsibility to provide information necessary for management. This includes Commission members not submitting data in a timely manner. WCPFC CMMs outline the responsibilities of the vessel masters and CCMs for the recording and provision of data in Conservation and Management Measure on Daily Catch and Effort Reporting (CMM 2013-05) which stipulates that the master of each vessel flying its flag in the Convention Area provides an accurate and unaltered original or copy of the required information

to its national authority within 15 days of the end of the trip; and Conservation and Management Measure for Bigeye, Yellowfin and Skipjack (CMM 2020-01) which states that CCMs whose vessel fish in EEZs and high seas north of 20N are required to provide aggregated data to the Commission. The ROP, despite being overall effective, has received reports of inappropriate behaviour of vessel crews towards observers, suggesting those conducting fishing operations do not fully understand or comply with their responsibilities. Although most data are available to the SPC-OFP not all of this data have been entered and made available to the Commission. The Scientific Committee noted that the incomplete submission of data increases uncertainty in stock assessments and has encouraged members to provide data in accordance with WCPFC data rules (Akroyd et al., 2020)

On the basis of the above, the functions, roles and responsibilities are explicitly defined and well understood for the national and sub-regional management systems but not for the regional management system. Therefore, **SG60 and SG80 are met** but **SG100 is not 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

At regional level, among the PNA countries there is an explicit consultation process to seek and accept information from extensive sources. For example, consultation has been conducted on the VDS system, effort allocation, national and PNA observer activities and the Fishery Information Systems (FIMs) via reporting, where stakeholders may include, but are not limited to national PNA members, industry, SPC, the TCC and the FFA. The consultation process provides the opportunity for stakeholder involvement and there are not any impediments for parties intending to be involved: VMS, VDS reporting and observer reports are made available to the RFMO at TCC meetings (https://meetings.wcpfc.int/meetings/type/12) and observers are permitted at PNA meetings, however, PNA meeting reports are not made freely available and only upon request. The justification for such meeting reports not being made publicly available is that they may contain confidential or financially sensitive information. At WCPFC level, there are extensive formal and informal consultation processes (including *ad hoc* inter-sessional Working Groups for specific issues) that regularly seek and accept information from CCMs and CNMs. 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 the SPC. The WCPFC also actively uses information from the fishery and its member states in order to develop fisheries management decisions and to formulate CMMs. This is demonstrated through reports and outcomes of WCPFC meetings, which detail the decision-making process and are readily accessible online. Although much of this information can be accessed from various sources, it is not necessarily clear how different sources of information are

used or not used in decision-making (Medley and Gascoigne, 2017). PNA and its members meet annually to address issues that concern the allocation of effort days, changes to the VDS as required, etc. The industry and other stakeholders are allowed to participate and provide information that is used in updating the VDS. Also, for WCPFC they have three major annual meetings that include members, stakeholders, industry etc. At these meetings NGOs, industry etc. have the opportunity to present papers, discuss concerns etc. This information has been used in the adoption of CMMs. **SG60 and SG80 are considered met** at regional level, on the basis that the PNA and WCPFC consultation processes regularly seek and accept relevant information and the management systems have demonstrated consideration of this information through the adoption of WCPFC CMMs and the PNA VDS. The WCPFC and PNA management systems demonstrate consideration of information obtained and scientific reports indicate what information is being used, how it is used and justification is provided for information which is rejected. However, information used by WCPFC and PNA management, other than scientific information, is not clearly reported and it is not clear how different sources of information are weighed (Akroyd et al., 2020). Thus, **SG100 is not met**.

At the national level, NORMA attends annual regional meetings held by the WCPFC and Scientific Committee and sub-regional meetings held by PNA. Non-Governmental Organisations (NGOs), International-Governmental Organisations (IGOs) and industry are integral to these consultative discussions and provide contracting parties with information on coastal and distant water fishing states as well as scientific information. Both NORMA and the national fisheries section of the Department of External Affairs (DEA) maintain direct contact on technical issues with regional and international bodies relating to fisheries (FAO, 2002). Although there are no formal consultation processes in place in FSM, stakeholders are invited to participate in applicable management activities. The Board of Directors and NORMA consult with relevant stakeholders such as Congress, Department of Justice, Department of Resources and Development, and State representatives (as required) when adopting regulations for the conservation, management and exploitation of fish in the EEZ and when negotiating foreign and domestic-based fishing agreements (Sieben et al., 2018). The Fisheries Management and Surveillance Working Group as mandated under Title 24 Section 207 meets every quarter to address FSM fisheries management and MCS issues. NORMA also consults with the States and NGOs at annual Fisheries Symposium workshops about fisheries management regulations and agreements. The FSM Tuna Management Plan (TMP) developed in early 2011 was followed by stakeholder consultations in Pohnpei in October 2011. The objective of the consultations, following earlier workshops on the EAFM framework, was to update the FSM TMP adopted in 2000 and consider its associated amendments to the Marine Resources Act 2002. Further consultations were held with stakeholders on the development of the amended TMP 2015. NORMA conducted consultative meetings in 2019 with relevant state agencies from Kosrae, Pohnpei and Yap to define the roles and responsibilities of ports where tuna catches are offloaded and transhipped. The management system therefore includes consultation processes that regularly seek and accept relevant information, including local knowledge. However, it is not clear how the information is used or not used. On this basis **SG60 and SG80 are met** but **SG100 is not met**.

On the basis of the above**, SG60 and SG80 are met** at the national and regional levels but **SG100 is not 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	Yes

Rationale

The national management system provides opportunities for stakeholder groups to provide input to the management of the fishery. NORMA attends meetings with regional bodies, for example those held annually by the WCPFC and Scientific Committee. Non-Governmental Organisations (NGOs), International-Governmental Organisations (IGOs) and industry are integral to these consultative discussions and provide contracting parties with information on coastal and distant water fishing states as well as scientific information. Both NORMA and the national fisheries section of the Department of External Affairs (DEA) maintain direct contact on technical issues with regional and international bodies relating to fisheries (FAO, 2002). Although there are no formal consultation processes in place for obtaining relevant information from main affected parties, stakeholders can be invited to participate in applicable management activities (Sieben et al., 2018). The formation of the TMP 2015 was developed through a comprehensive consultative process with tuna fisheries stakeholders. NORMA established a Fisheries Management and Surveillance Working Group to formulate and implement national fisheries management and surveillance strategies. The working group consists of appropriate representatives from NORMA and the Department of Justice as well as representatives from relevant National and State departments and divisions. The working group meets every quarter to discuss the management of the tuna fishery resources and Monitoring, Control and Surveillance (MCS) issues and provide recommendations to the Board of Directors for consideration. In 2019 NORMA met with tuna fishing operators to provide information and discuss issues concerning WCPFC management measures, observer coverage and electronic monitoring. On the basis of the above, the team determined that NORMA's consultation process provide the opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement, therefore, SG60, SG80 and SG100 are met.

Sub-regional logistical services are provided to member States for convening meetings held by FFA, SPC and PNA. All interested parties have the opportunity and are encouraged to participate in consultation processes for the VDS system, effort allocation, national and PNA observer activities and the Fishery Information Systems (FIMs: for example, meetings are open to Nauru Agreement members and observers such as NGOs or industry parties (with meetings publicised and access via their website: https://www.pnatuna.com/). Based on the above, SG60, SG80 and SG100 are met.

At the regional level, the WCPFC Secretariat facilitates effective engagement by stakeholders. Attendance at Commission and related meetings is comprehensive with logistic and 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. Registered NGOs and eNGOs (within limits for the number of delegates) are able to attend meetings as observers and may make verbal presentations and/or written statements, which are included in the official record. Thus, WCPFC's consultation processes meet the requirements for SG60, SG80 and SG100.

The team determined that there is sufficient evidence that at the regional, sub-regional and national levels, consultation processes provide opportunity and encouragement for all interested and affected parties to be involved, and facilitate their effective engagement. **SG60**, **SG80 and SG100 are met**.

References

Federated States of Micronesia Code Title 24 Chapters 1, 3 and 5

Federated States of Micronesia Tuna Management Plan 2015

Office of the National Public Auditor NORMA report 2012

WCPFC, SC and TCC meeting records

WCPFC Rules of Procedure

WCPFC website http://www.wcpfc.int

Blyth-Skyrme et al. (2018), Medley and Gascoigne (2017), Sieben et al. (2018), FAO (2002), Akroyd et al. (2020)

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

Draft scoring range	60-79 (more information needed)
Information gap indicator	More information sought on the regularity of consultation processes and to what extent the FSM management system demonstrates consideration of the information obtained

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	Partial

Rationale

The long-term objectives at the national level, consistent with the MSC fisheries standard, are clearly specified in Title 24. Chapter 1 Sub-section 101. The key objective is *to ensure the sustainable development, conservation and use of the marine resources in the exclusive economic zone by promoting the development of, and investment in, fishing and related activities in the context of effective stewardship*. NORMA has developed and implemented Tuna Management Plan (TMP) 2015 to meet the key objective outlined in Title 24. The TMP provides a framework under which NORMA manages tuna fishery resources within its EEZ and specifies the integration and implementation of ecosystem approaches into the management system. The ecosystem approach of the TMP is consistent with the MSC Principles and Criteria and application of the precautionary approach. The FSM framework requires clear management plans to be developed with explicit objectives constituent with the legislation. On the basis of the above, SG60, SG80 and SG100 are met.

PNA follows the MSC Fisheries Standard in that decision making is guided by objectives that concern fisheries conservation and management i.e. with the determination of annual TAE. A specific example where this is seen is in the Palau Agreement, which restricts the total number of vessel licences (and therefore effort) awarded in the fishery. This is further supported by the national laws and management policies of the individual PNA fishing nations. The precautionary approach is followed by default as all PNA parties must comply with all CMMs set by the RFMO. **SG60 and SG80 are met**. However, as the Nauru Agreement, the main PNA instrument, does not explicitly require objectives consistent with the precautionary approach and other important principles required to be applied by the WCPFC Convention, **SG100 is not met in its entirety**.

The WCPFC is responsible for decision-making for key management measures which affect the skipjack, albacore, bigeye and yellowfin stocks, the bycatch species and ecosystem (P2). 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 FSA 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 FSA. Article 10 of the Convention is consistent with MSC principles and objectives 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. Commission reports also indicate that explicit action is being undertaken through CMMs to support achievement of objectives; however, this is yet to result in target reference points being formulated for all managed stocks. 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. Additionally, the guidelines set out in Annex II of the SFA provide additional objectives to guide decision-making that include the use of target reference points to meet the management objectives and the adoption of fisheries management strategies to ensure that target reference points are not exceeded. Evidence that the objectives are guiding decision-making is provided in various reports of the Commission and indicates that explicit action is being undertaken to develop and implement management arrangements that support achievement of the objectives, thus SG60 and SG80 are met. However, it is not clear that a precautionary approach is applied in practice across all policies for all stocks (Akroyd et al., 2020). Evidence of this is that that WCPFC has not established HCRs for yellowfin and bigeye. Therefore, **SG100 is not met** at the regional level.

Based on the above, the team considered that SG60 and SG80 are met for the national, sub-regional and regional management systems, SG100 is not met in its entirety for the sub-regional system and SG100 is not met for the regional system. Therefore, the overall score is 90.

References

Federated States of Micronesia Code Title 23 and 24

Federated States of Micronesia Tuna Management Plan 2015

Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine Vessel Day Scheme

WCPFC Convention

WCPFC website http://www.wcpfc.int

Akroyd et al. (2020)

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 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

NORMA has adopted a number of short- and long-term objectives to improve its abilities to realize the goals of Title 24 and the TMP 2015 through the incorporation of ecosystem science and principles. The TMP 2015 objectives: FSM contribution to: (i) keeping biomass levels above limit reference points throughout range of stocks; (ii) continue to promote sustainable fishing in FSM EEZ; (iii) collect accurate/ timely data from all tuna fisheries in FSM (incl. bycatch); and, (iv) fewer fish species/ stocks are assessed as being subject to overfishing and to avoid extinction for a species (i.e. $B_{CURRENT} < B_{MSY} > B_{EXTINCT}$) are consistent with MSC's Principle 1. Under Title 24 and the TMP 2015 NORMA has taken a series of management actions to conserve pelagic species caught in the Western Pacific region. Evidence of management measures taken to meet these objectives include the purse seine and longline VDS schemes and closure of waters within 24 nm of FSM islands and atolls to commercial fishing by vessels. FSM has also adopted CMMs agreed at the WCPF Commission for skipjack, yellowfin and bigeye, specifically for bigeye, yellowfin and skipjack (CMM 2020-01 and CMM 2018-01). The Purse Seine VDS made pursuant to the Palau Arrangement for the Management of the Western Pacific Tuna Fishery's relevant objectives are to promote optimal utilization, conservation and management of tuna resources and maximize economic returns, employment generation and export earnings from sustainable harvesting of tuna resources.

NORMA adopted an ecosystem approach in the development of the Tuna Management Plan 2015. The objectives of the TMP relevant to Principle 2 (ecosystem & biodiversity maintenance; waste minimisation; reduction in the quantity of bycatch; collect accurate data from all tuna fisheries in FSM, including bycatch) are consistent with MSC's Principle 2. The measures contained in FSM Code 2002 are consistent with the MSA's National Standards and other applicable laws. Measures that address issues concerning marine species preservation and protection of endangered species are outlined Title 23. Resource Conservation. Chapter 1 Marine-Species Preservation prohibits the use of

explosives, poisons, chemicals etc., and outlines limitations on the taking of turtles and marine mammals and penalties are given for persons violating any of the Chapter provisions. Chapter 3. Endangered Species Act prohibits any person to take, engage in commercial activity with, hold, have possession of, or export any threatened or endangered species of plant or animal and penalties are given for persons violating any of the provisions of this Chapter. On the basis of the above, there are 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, thus **SG60, SG80 and SG100 are met at the national level.**

The Purse Seine VDS made pursuant to the Palau Arrangement for the Management of the Western Pacific Tuna Fishery's relevant objectives are to promote optimal utilization, conservation and management of tuna resources and maximize economic returns, employment generation and export earnings from sustainable harvesting of tuna resources. These long-term and short-term objectives are explicit and are considered to be clearly defined and measurable, and thus **SG60, SG80 and SG100 are met**.

At the regional level, 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. 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 2020-01, CMM 2018-01, CMM 2017-01; 2015-02; CMM 2015-06), and non-target species: CMM for Sharks (CMM 2019-04), CMM on Mobilid Rays Caught in Association with Fisheries in the WCPFC Convention Area (CMM 2019-05), CMM of Sea Turtles (2018-04), CMM for Mitigate the Impact of Fishing of Highly Migratory fish Stocks on Seabirds (CMM 2018-03), CMM on Marine Pollution (2017-04), CMM for Sharks (CMM 2014-05), CMM for the Protection of Whale Sharks (CMM 2012-04) CMM for Oceanic Whitetip Sharks (2011-04) and CMM for Silky Sharks (CMM 2013-08). 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, a adopted in accordance with CMM 2015-06 and bigeye: 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. At the Commission's Seventeenth Regular Session in December 2020, the Commission adopted CMM 2020-1 in accordance with Article 10 of the Convention, this CMM stipulates that with respect to bigeye, yellowfin and skipjack tuna the Commission will continue to implement the measures set out in CMM 2018-01 until 15 February 2022. WCPFC also provides supplementary information on CMMs that include Guidelines for Handling Sea Turtles and Guidelines for the Safe Release of Encircled Animals including whale sharks. In most cases the objectives in these CMMs are not well defined or measurable. Although commission reports indicate that explicit action is being undertaken through CMMs to support the achievement of objectives, this is yet to result in target reference points being formulated for all managed stocks. 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. Therefore, **SG60 and SG80 are met** but **SG100 is not met**.

On the basis of the above, SG60 and SG80 are met at the national and sub-regional levels, SG100 is met for FSM and PNA but not the regional (WPFC) subsystem. Based on partial scoring at the SG100 level, the overall score is 90.

References

Federated States of Micronesia Code Title 23 and 24

Federated States of Micronesia Tuna Management Plan 2015

Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine Vessel Day Scheme

WCPFC Convention

WCPFC website http://www.wcpfc.int

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

Draft scoring range	≥80
Information gap indicator	More information sought / 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 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

The Board of Directors of NORMA, comprised of five members, established under FSM Code Title 24. Chapter 3, is the management system's decision-making body and its primary roles are to adopt regulations for the conservation, management and exploitation of fish in the EEZ, conclude fishing agreements, issue fishing permits, and participate in the planning and execution of programmes relating to fisheries. Under Title 24. Chapter 5 Sub-section 502 the Board of Directors is required to ensure that management measures are based on the best scientific evidence available and designed to maintain or restore stocks at levels capable of producing maximum sustainable yield. Decision-making by the Board of Directors with support from NORMA is made through the gathering of information from various sources including the VDS, VMS, components of integrated Fisheries Information Management Systems (iFIMS) and by analysing catch and effort data from the fishery. Measures and strategies to sustainably manage the tuna resources of FSM were established through the development and implementation of the Tuna Management Plan 2015.

FSM is a participating Party in the Palau Arrangement for the Management of the Western Pacific Tuna Fishery. FSM was an active Party in the development and implementation of the Purse Seine and Longline Vessel Day Schemes to control tuna fishing effort in the Parties of the Arrangement waters and ensure the sustainable harvesting of the tuna resources in these waters. As reported in Banks et al. (2011), PNA decision-making is made on a consensus basis, and any decisions made are recorded in the minutes of the PNA meetings. Information concerning meeting decisions is primarily sourced from WCPFC (such as catch information from CCMs) and affiliate organisations (such as FFA and SPC). This information is used in the development of measures and strategies to achieve fishery-specific objectives. The decision-making processes are well-established and contribute to the management of WCPFC Convention area tuna fishery resources.

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). CMMs are binding, but resolutions are non-binding on members. Members may request an independent review of a decision, to ensure it is consistent with the Convention and management objectives. The Convention also provides guidance in relation to overarching fisheries management arrangements, which requires that the precautionary approach be applied consistent with Articles 5 and 6 as well as Annex II of the UNFSA. The decision-making processes have resulted in a comprehensive set of CMMs and strategies to achieve the specific objectives for the purse seine fishery.

Based on the above, there are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives at the national, sub-regional and regional levels. 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

NORMA and its Board of Directors' primary roles are to prepare, monitor and amend regulations and management plans for the offshore fishery within FSM's EEZ. There is an adaptive management approach, which monitors and addresses changing conditions based on the best available information. This approach is reflected in Paragraph 7 of the Fishing Access Agreement for a Domestic Based Foreign Fishing Fleets that provides powers to NORMA in the event it determines, through consultations with competent regional scientific authorities, that if there is a serious threat to a stock, it can take precautionary measures to preserve the stocks by limiting or closing access to the FSM EEZ or portions thereof. In developing management plans NORMA consults with its stakeholders and provides a public forum for decision-making. The Tuna Management Plan originally developed in 2000 was reviewed by a stakeholder consultation in Pohnpei in October 2011. The objective of the consultation, following earlier workshops on the EAFM framework, was to update the TMP adopted in 2000 and consider its associated amendments to the Marine Resources Act 2002. Further consultations were held with stakeholders in the development of the TMP 2015 which provided guidelines for the management of the tuna resources to ensure sustainability.

PNA members have tuna management plans that are applied at the national level. The PNA management system is underpinned by a fishery information system, the integrated Fisheries Information Management System (iFIMS) which provides ready access to timely data. To enhance the management of tuna resources in the Western Pacific, FSM and the Parties to the Palau Arrangement developed and implemented a Vessel Day Scheme for the purse seine fishery in the waters of the Parties. Through the Management Scheme, the Parties limit the level of purse seine fishing effort to the levels of total allowable effort (TAE) agreed by the Parties. The TAE is set using the best scientific, economic, management and other relevant advice and information. The TAE is allocated amongst the Parties as their Party Allowable Effort (PAE) in the manner agreed to by the Parties. Each Party is required to ensure the number of fishing days by purse seine vessels in its waters does not exceed the Parties' PAE or adjusted PAE in any Management Year. The VDS can be adjusted to take into account new stock information if the need arises and do so in a timely manner. PNA meetings are open to observers, maintaining transparency of the process, although meeting reports are not available to all. The VDS is managed and reviewed by an Inter-Party VDS Committee, that reports to the annual meetings of the Parties. The Committee provides recommendations on the operational aspects of the fishery to the plenary meetings. PNA reports are available on the WCPFC website (TCC meetings) and the PNA website which provides information concerning issues addressed by its officials, members, various working groups and committees.

The WCPFC allows for the Scientific Committee, the Technical and Compliance Committee and stakeholders to bring serious and important issues (most notably from SPC stock assessments) to the attention of the WCPFC. The transparency in decision-making is a requirement of the Convention (Article 21). The WCPFC responds to tuna fisheries issues through the development and implementation of CMMs and Resolutions. The CMMs and Resolutions provide a transparent response to scientific, technical, social, and cultural issues. Stock assessments and studies presented at the SC identify serious issues at the regional or sub-regional level that are addressed through agreed CMMs, for example Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna (CMM 2020-01 and CMM 2018-01) in the Western and Central Pacific Ocean. The system enables Commission members to be fully informed of the issues under consideration and provides participation in decision-making processes. However, decision making is sometimes hampered due to the operational particularities of cooperative regional fisheries management, especially with consensus decision making. WCPFC decision-making processes respond to serious and important issues in a transparent and adaptive manner, however, it has not been successful in addressing issues such as establishing HCRs for bigeye and yellowfin. A Harvest Strategy Workplan was developed in 2015 in accordance with CMM 2014-06, however, delays have occurred due to the complexity of developing the harvest strategies for multiple species as well as the capacity of the CCMs to understand and participate fully in the process. Based on the above, at the regional level only SG60 and SG80 are met but SG100 is not met.

Note: This PI was previously subject to a harmonised condition across all certified fisheries targeting South Pacific Albacore because it was considered that WCPFC had not responded to the serious issue of declining CPUE; however, WCPFC has now set a TRP with the objective of improving catch rates. Following a harmonisation process, this condition was closed.

On the basis of the above, overall, **SG60 and SG80 are met but SG100 is not met.**

c	Use of precautionary approach	
	Guide post	Decision-making processes use the precautionary approach and are based on best available information.

	Met?	Yes

Rationale

Title 24. Chapter 5 Sub-section 502 stipulates that NORMA is required to apply the precautionary approach in the adoption of management measures that are consistent with and no less stringent than the criteria set forth in the United Nations Agreement or any other relevant agreement or fisheries management agreement to which FSM is a party. This approach is reflected in Paragraph 7 of the Fishing Access Agreement for a Domestic Based Foreign Fishing Fleets that provides powers to NORMA in the event it determines, through consultations with competent regional scientific authorities, that if there is a serious threat to a stock, it can take precautionary measures to preserve the stocks by limiting or closing access to the FSM EEZ or portions thereof. Under Title 24. Chapter 5 Sub-section 502 NORMA is also required to ensure that management measures are based on the best scientific evidence available and designed to maintain or restore stocks at levels capable of producing maximum sustainable yield. Decision-making by the Board of Directors with the support of NORMA is made through the gathering of information from various sources including the VDS, VMS, components of integrated Fisheries Information Management Systems (iFIMS) and by analysing catch and effort data from the fishery.

PNA closely follows the provisions of the UNFSA (1995) in adopting a precautionary approach for fisheries specific management measures; particularly pertinent is Article 5. All PNA member countries have national management legislation which also incorporates the precautionary approach and as members of the WCPFC, PNA members are legally obligated to apply a precautionary approach as required by the WCPFC Convention Article 5 and 7. Article 12 of the Palau agreement denotes that the TAE is set "having regard to the best available, scientific, economic, management and other relevant advice and information".

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 the 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. Evidence that WCPFC is attempting to apply the precautionary approach is found in CMM 2020-01 and CMM 2018-01 which provides measures for constraining fishing effort of bigeye tuna fishery, pending agreement on a target reference point. There is sufficient information to conclude that decision-making processes for WCPFC are based on the best available information and the precautionary approach.

Based on the above, the national, sub-regional and regional management system decision-making processes, **SG80 is met**.

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	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance** and management actions and describes how

			relevant recommendations emerging from research, monitoring, evaluation and review activity.	the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Yes	Yes	No

Rationale

At a national level, information concerning FSM fishery licensing, key documents and projects is publicly available on the NORMA website: www.norma.fm. This website includes information on fishery notifications, authorised vessels, IUU fishing, subsidies, allocation, compliance reports and measures as well as information on quota allocations, in line with SA4.8.5 and SA4.8.6. New regulations and amendments to regulations are gazetted in local newspapers and public notices. NORMA's Youth Ambassador visits the States regularly to promote fisheries issues and the World Tuna Day and Fisheries Symposium provide information to raise public awareness of the tuna fishery. FSM is required to submit annual reports to WCPFC concerning research, statistics and the status of their fisheries. Information submitted in these reports includes fleet composition, effort, interactions with ETP species and independent data from observer coverage or port sampling programmes. This information is publicly available on the WCPFC website. Also, the Office of the National Public Auditor provides information concerning FSM fishery performance on its publicly available website: www.fsmopa.fm. As information on the fishery's performance is available **SG60 and SG80 are met** but it is unclear that formal reporting to stakeholders has provided information on how the management system responds to findings and recommendations from research, monitoring and evaluation and reviews. **SG100 is not met**.

Via the PNA website, key PNA documents such as Palau Agreement are available, as are the aims and rules of the VDS, which shape the management actions. Documents such as the TAE Advisory and TAE Decision documents include discussions and management adoptions/actions by Parties and recommendations made by the VDS Technical and Scientific Committee are freely available. **SG60 and SG80 are met**. However, there is no formal reporting to all interested stakeholders (for example, parts of the PNA website remain password protected). **SG100 is not met** at the sub-regional level.

The WCPFC maintains a publicly accessible website where all meeting minutes, reports and scientific reports from the Commission and its subsidiary bodies are posted are available for download. However, TCC management and compliance issues in country reports 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. While reports are available, it is not clear that they represent all the information that is used in decision-making or that all the information provided is used in decision making. There is no formal, detailed explanation linking the information available/provided to the decision that results. In an international context it is recognized that it is very difficult to give full explanations for all decisions, since this might undermine co-operation. Decisions are often negotiated outcomes with the trade-offs not always apparent (Medley and Gascoigne, 2017). With detailed formal public reporting of decisions and information on how decisions are based, the WCPFC **meets SG60 and SG80**. However, the formal reporting criterion that can be clearly linked to all information is not always available, so **SG100 is not met**.

On the basis of the above, only **SG60 and SG80 are 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

At the national level, there is no evidence available to suggest that NORMA or its Board of Directors are disrespectful to, or defiant of national laws, or legally binding agreements reached at the international level. As outlined in 3.1.1 NORMA and the Department of Justice have well-established mechanisms and frameworks for addressing legal disputes concerning the fishery. NORMA attempts to curtail disputes by consulting with the industry through stakeholder meetings and workshops, to raise public awareness and provide input into amendments of management measures and/or policy. These consultative processes enable NORMA to minimize disputes and respond to judicial decisions in a timely fashion. There is evidence that NORMA has acted proactively to avoid legal disputes, therefore **SG100 is met**.

Article 8.2 of the Palau Agreement provides a mechanism to address disagreements between parties, which is considered effective in dealing with most issues. The PNA instruments are regarded as sub-regional agreements for the purpose of Article 30 of the UNFSA, which means that the dispute settlement provisions of UNCLOS apply to the Nauru Agreement, the Palau Arrangement and the VDS. PNA and its member's annual reports to the WCPFC at TTC meetings indicate that there are no unresolved disputes, suggesting resolution in instances where they have occurred were resolved in a timely fashion. However, there is no evidence that PNA has acted proactively to avoid legal disputes. Therefore, **SG60 and 80 are met** but **SG100 is not met**.

Article 31 of the WCPFC Convention fully articulates the dispute mechanism for legal challenges. The WCPFC has a consensus-based decision-making process, with provision for a two-tier voting process requiring a 75% majority (excluding Participating Territories and Cooperating Non-members) of both PICTs and DWFNs if all efforts to reach a decision by consensus have been exhausted. The Commission has not been subject to any court challenges as of 2017 (Medley and Gascoigne, 2017). Given that there are no current outstanding judicial disputes or outstanding international disputes, the management system **meets SG60 and SG80** requirements. However, there is no evidence as yet of proactive actions by WCPFC to limit disputes so the requirements of **SG100 are not considered to be met**.

On the basis of the above, **SG60 and SG80 are met** overall as there is no evidence that proactive actions have been taken to limit disputes at the sub-regional and regional levels.

References

Federated States of Micronesia Code Title 24 Chapter 3

Federated States of Micronesia Tuna Management Plan

Fishing Access Agreement for a Domestic Based Fishing Fleet Paragraph 7

Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Purse Seine Vessel Day Scheme

NORMA website: www.norma.fm

Blyth-Skyrme et al. (2018), Medley and Gascoigne (2017) and Banks 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 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	No	No

Rationale

A monitoring control and surveillance (MCS) mechanism is in place in the FSM. As a Member State of the WCPFC Convention, it is required to comply with regulations set by the WCPFC. The MCS Division of NORMA, comprised of 5 officers, is responsible for the collection and entry of fishing vessel logsheet data as required the FSM Code Title 24 that sets out the conditions and terms of the fishing permits and foreign fishing agreements. The reporting requirements of fishing licences include daily vessel positions, details on sets and gear specifications, information on species retained and discarded. The MCS Division is also responsible for ensuring that licensed fishing vessels are listed on the WCPFC Record of Fishing Vessels and the FFA Regional Register of Good Standing and that licensed vessels have been fitted with VMS as required by the Commission. A summary of this information is presented to the WCPFC on an annual basis in a two-part report. A Fisheries Management and Surveillance Working Group was established by NORMA to formulate and implement national fisheries management and surveillance strategies. The working group consists of appropriate representatives from NORMA and the Department of Justice as well as representatives from relevant National and State departments and divisions. The working group meets every quarter to discuss the management of the tuna fishery resources and MCS issues and provides recommendations to the Board of Directors.

Enforcement responsibilities sit primarily with the Maritime Police under the Department of Justice and Office of the Attorney General, which are given power to penalize parties in breach of compliance regulations stipulated in Title 24 of the FSM Code. The Maritime Police responsibilities include maritime surveillance of the FSM EEZ and enforcement of fisheries and maritime laws. Four patrol boats conduct surveillance activities in areas of fishing operations. The Maritime Wing Patrol vessels conduct multiple surveillance operations annually where purse seine and longline vessels fishing within the FSM EEZ are boarded and inspected to identify possible infractions. Data from 2016-2020 concerning the number of Marine Wing patrols within the FSM EEZ and High Seas, number of boardings of purse seine vessels, and infractions identified are detailed in Table 38. Also, other MCS operations provide enforcement support within the waters of the EEZ of FSM and high seas areas. This support includes VMS which

provides information on the location of vessels fishing within these waters, the "QUAD" nations (Australia, New Zealand, France and United States) which offer defence and military assets (patrol boats and aircraft) to conduct surveillance activities and information provided by observers that are required to be onboard all purse seine vessels fishing within the WCPO. FSM has implemented measures to restrict port entry and access to port services of vessels included in IUU lists and worked with other nations to strengthen enforcement and data programs aimed at curtailing IUU fishing. In December 2017, FSM with other CCMs at the Fourteenth Session of WCPFC adopted the Conservation and Management Measure on Minimum Standards for Port State Measures (CMM 2017-02) to establish processes and procedures for port inspections of fishing vessels suspected of engaging in IUU fishing or fishing related activities in support of IUU fishing. Regular dockside inspections are conducted on commercial fishing vessels entering into ports to determine whether the vessels are compliant with the regulations. The UoA fishing vessels apart from offloading catches in FSM ports, also periodically offload catches in the ports of Tuvalu, Philippines (General Santos), Samoa, American Samoa, Solomon Islands (Honiara and Noro), Republic of the Marshall Islands and Kiribati (Kiritimati Island). As members of WCPFC these countries have also adopted CMM 2017-02 which requires each CCM to designate ports for the purposes of inspection through the provision of a list of its designated ports to WCPFC, ensure that fisheries inspections are undertaken by Government authorized inspectors, and carry out inspections on any foreign longline, purse seine or carrier vessel that enters their designated ports. When a CCM has reasonable grounds to believe that a vessel has engaged in IUU fishing or fishing related activities in support of IUU fishing and is seeking entry into or is in the designated port of another CCM, it may request that CCM to inspect the vessel or take other measures consistent with the CCM's port state measures. A National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing was developed by FSM with assistance from FFA and approved in 2013. The Plan outlines actions that can be taken to enhance the objective of eradicating IUU fishing through fishing vessel licensing restriction, monitoring, control and surveillance, sanctions, and reporting activates. NORMA conducts regular compliance workshops with fishing industry representatives and fishing vessel captains to discuss new regulations and fishing vessel licensing and registration requirements. In 2019 NORMA met with tuna fishing operators to provide information concerning WCPFC management measures, observer coverage and electronic monitoring.

NORMA has implemented the integrated Fisheries Information Management System (iFIMS) that integrates fisheries management, compliance and marketing information. This covers fishing industry reporting of catch, vessel position and activity data generated by VMS as well as fisheries observer reporting. The platform also has an industry database where companies can see their own vessels and catch information, and apply electronically for licences through a portal. Licence application information is integrated directly into the system and is automatically delivered to the PNA Office facilitating the operation of the Purse Seine VDS. The System is now being used by all PNA members and data related to catch and vessel activity in particular EEZs can be viewed through iFIMS by individual PNA members. The system holds industry, government and flag state information and through various modules it provides catch data to SPC, allows observer managers to manage their observers, including the provision of electronic reports and facilitates the operation of the Purse Seine VDS with access to data and reporting needed to manage purse seine fishing in the FSM EEZ, AWs and PNA waters. For large-scale purse seine vessels WCPFC implemented a 100% observer coverage requirement, which FSM has adopted. Observer records of target species and bycatch are used to estimate and report catches of the tuna fleets operating in the WCPO. However, in April 2020, due to COVID-19 the Commission agreed to suspend the requirement for observer coverage on purse seine vessels set out in paragraphs 34 and 35 of CMM 2018-01 and CMM 2018-05. Although, observer coverage has been temporarily suspended, it was reported that PNA member countries have managed to maintain an average of 35% observer coverage on their purse seine vessels in 2020 (per. comm. Banks, R and Brownjohn, M, 9 Nov. 2020).

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 or fishing vessels and transhipment monitoring. The WCPFC's Technical and Compliance Committee has codified port State measures (CMM 2017-02), chartering arrangements (CMM 2016-05), catch/statistical documentation, 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 2017-07), which is largely dependent on the submission by members of information in annual 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 noncompliance, 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 is supported by the QUAD Operational Working Group, comprised of the aerial and naval divisions 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 three-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. 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 of monitoring activities, regional surveillance operations, the FFA Observer Programme, FFA licence information and staff training and support. The PNA Agreement promotes MCS cooperation among parties. 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 FFA Surveillance Centre (RFSC) operating from Honiara. 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 transhipment to prevent illegal catch entering the legal market. To address this issue, transhipment at sea is prohibited (CMM 2009-06) and there is monitoring of in-port transhipment. WCPFC continues to refine its development of a Catch Documentation Scheme, which should reduce the opportunities for IUU fishing and complement the vessel register. Based on the above, the MCS system in place has demonstrated to be effective **meeting SG60 and SG80 at regional level**, but it is not comprehensive, as evidence exists of gaps in port states controls (Medley and Gascoigne, 2017) and it cannot be demonstrated to have the ability to consistently enforce relevant CMMs, therefore **failing to meet SG100**.

At national, flag state, level, the combination of low observer coverage throughout 2020 due to Covid-19 and lack of surveillance activities conducted by national patrol vessels in the high seas areas, means that although monitoring, control and surveillance mechanisms exist at national level and are implemented in the fishery, there is only a reasonable expectation that they are effective. Therefore, **SG60 is met at the national level but not SG80**.

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	No	No

Rationale

A person who is found by the Supreme Court of FSM to have committed an act prohibited in Title 24 Chapter 9 Violations and Penalties for Prohibited Acts is subject to a civil penalty. In determining the amount of the penalty, the Supreme Court of FSM takes into account the nature, circumstances, extent and gravity of the prohibited acts committed and, with respect to the violator, the degree of culpability, any history of prior offenses, whether there are multiple violations which together constitute a serious disregard of conservation and management measures.

Prohibited acts under Chapter 9 of Title 24 include:

- Violations of any provision, condition or requirement of a fishing permit or license or access agreement, serious misreporting of catch, fishing in a closed area, fishing after attaining quota, directed fishing for a prohibited stock, using prohibited fishing gear or falsifying or concealing markings, identity, or registration of a fishing vessel is subject to a civil penalty of not less than $100,000 and not more than $500,000.
- Fishing without a valid fishing permit is subject to a civil penalty of not less than $100,000 and not more than $1,000,000.
- Unauthorized fishing in waters under the national jurisdiction of a foreign state is subject to a civil penalty of not less than $50,000 and not more than $1,000,000.
- Violation of marine space is subject to a civil penalty of not less than $50,000 and not more than $500,000.
- Fishing on or near submerged reefs or fish aggregating devices is subject to a civil penalty of not less than $50,000 and not more than $250,000.
- Possession, handling and sale of fish unlawfully taken is subject to a civil penalty of not less than $50,000 and not more than $250,000.
- Contamination of the exclusive economic zone is subject to a civil penalty of not less than $50,000 and not more than $500,000.

As sanctions to deal with non-compliance exist and there is some evidence that they are applied, **SG60 is met**. However, **SG80 is not met** as there is no evidence that sanctions are consistently applied. This information was requested from the FSM Department of Justice; however, no evidence was provided concerning sanctions that were applied for non-compliance.

Information concerning infractions and sanctions for purse seine vessels was not provided to the team by the FSM Department of Justice. However, NORMA was able to provide information concerning infractions and sanctions for the tuna longline fleet from 2014-2016. During this period, it was reported that a total of seven tuna longline

vessels committed 15 minor infractions that included failures to monitor international distress and call frequencies and failures to mark the vessel in accordance with FAO Standard space. Fines for these infractions ranged from USD1000 to 15000 and were settled out of court.

As FSM is a Party to the Palau Arrangement for the Management of Western Pacific Tuna Fishery – Purse Seine Vessel Day Scheme it is required to ensure that every purse seine vessel that is licensed to fish in its waters, and every purse seine vessel that is entitled to fly its flag, comply with the requirements of the Management Scheme and that if a Party exceeds its PAE for a Management Year, the Party's PAE for the following Management Year will be adjusted by deducting:

- If the excess is less than 100 days of the PAE – the amount of the excess;
- If the excess is 100 days of the PAE or more – 120% of the access.

Infractions by purse seine vessels are a rare event in PNA and WCPFC waters (MacKay et al., 2018). However, as there is insufficient information on non-compliance issues it is difficult to confidently determine that effective deterrence can be demonstrated.

Conservation measures are set by WCPFC, but their enforcement falls to member States. 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 and transhipment monitoring. Non-compliance by vessels is addressed with the application of WCPFC IUU listing procedures. Non-compliance by member States, rather than vessels, is currently addressed through Commission processes of monitoring, reporting and accountability under the Compliance Monitoring Scheme (CMM 2017-07), but sanctions are applied to IUU vessels and vessels detected as being non-compliant with CMMs and/or resolutions. WCPFC notifies Flag States of non-compliant vessels, which the Flag States order to withdraw from the Commission Area. Sanctions appear to be consistently applied and provide effective deterrence in relation to proven IUU fishing. Therefore, there is sufficient evidence to suggest that **SG80 is met**.

WCPFC TCC discusses compliance issues based on available information on infringements from observers and other sources. Responses to reported non-compliance are considered at the TCC and reported to the Commission plenary in the Compliance Monitoring (CMS) Report. Each annual TCC Report provides a matrix of each CCM's and Participating non-members compliance performance with CMMs. In December 2018 at the WCPFC Fifteenth Regular Session CMM 2018-06 was adopted for the WCPFC Record of Fishing Vessels and Authorization to Fish. This CMM establishes provisions for Members of the Commission to authorize the vessels to fish in the Convention area, consistent with Article 24 of the Convention, and maintain a record of fishing vessels entitled to fly its flag and authorized to fish in the Convention Area beyond its area of national jurisdiction and ensure that all such fishing vessels are entered in the record.

While some progress has been demonstrated towards transparency in reporting on Flag State compliance, the TCC reports still do not provide sufficient information on outcomes of investigations into non-compliance such that effective deterrence can be demonstrated. Therefore, **SG100 is not met** at WCPFC level.

Overall, **only SG60 is met** as evidence concerning national infractions committed and penalties awarded to purse seiners is lacking.

c	Compliance			
	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under	**Some evidence exists** to demonstrate fishers comply with the management system under	There is a **high degree of confidence** that fishers comply with the

		assessment, including, when required, providing information of importance to the effective management of the fishery.	assessment, including, when required, providing information of importance to the effective management of the fishery.	management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Yes	Yes	No

Rationale

At the national level, there is some evidence that the FSM purse seine fishers comply with the management system. Vessel operators provide information of importance to ensure the effective management of the fishery through vessel operator daily logbooks and catch disposal records. Compliance with catch regulations is verified at vessel unloading, where a member of NORMA is always present as a witness. Pohnpei is also the transshipment port for the FSM, and this is only permitted under strict Commission regulations (see CMM 2009-06). The Maritime Wing Patrol vessels conduct multiple surveillance operations annually where purse seine and longline vessels fishing within the FSM EEZ are boarded and inspected to identify possible infractions. Data from 2016-2020 concerning the number of Marine Wing patrols within the FSM EEZ and High Seas, number of boardings of purse seine vessels, and infractions identified are detailed in Table 38. Also, other MCS operations provide support to ensure compliance of the fishers within the waters of the EEZ of FSM and high seas areas. This support includes VMS which provides information on the location of vessels fishing within these waters, the "QUAD" nations which offer defence and military assets (patrol boats and aircraft) to conduct surveillance activities and data provided by observers that are required to be onboard all purse seine vessels fishing within the WCPO. However, it should be noted that observer coverage on purse seines vessels was much lower in 2020 due to the COVID pandemic. Some evidence exists to demonstrate fishers comply with the national management system, including, when required, providing information of importance to the effective management of the fishery therefore **SG60 and SG80 are met**. However, there is not a high degree of confidence that fishers comply with the national management system as evidence concerning sanctions that were applied for non-compliance was not provided. **SG100 is not met**.

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 systems in addressing matters related to compliance with CMMs, analyses information on compliance and report the findings to the WCPFC. An annual report which identifies infringements is produced as part of the compliance review. These reports 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. MRAG (2016) reported that "the largest contributor to the total estimated IUU volume are reporting violations, accounting for 56% the estimated IUU volume for purse seiners." This was largely attributed to estimates of under-reporting and misidentifying of YFT and BET. The next highest contributor was 'non-compliance with other licence conditions' accounting for around 43% of total estimated IUU volume. The 100% observer coverage requirement on purse seine vessels contributes to minimizing non-compliance and assists in identifying inaccurate reporting. However, SPC suggests that there are still some inconsistencies in observer data, requiring ongoing checking and verification. VMS provides additional evidence of general compliance with the management system. Other regional MCS operations support the implementation of WCPFC management system which include Pacific patrol boats from participating FFA member nations and 'QUAD' nations that offer defence and military assets to support regional surveillance covering more than 14 million km^2 of the WCPO. These operations detect vessels via radar, and conduct at-sea and in-port vessel boardings. A review of the Commission's Compliance Monitoring Scheme was conducted in March 2017 and concluded that

the current system was sound and achieves its overall objectives. Also, the CMS appears to be having positive effects upon overall compliance in the region. Given the above, **SG60 and SG80 is 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.

On the basis of the above, only **SG60 and SG80 are met**. **SG100 is not met** as there is not a high degree of confidence that fishers comply with the national and regional management systems.

d	Systematic non-compliance	
	Guide post	There is no evidence of systematic non-compliance.
	Met?	No

Rationale

It is recognised that non-compliance continues to be an issue in the broader WCPO with a range of offences varying from minor to more serious. PNA and its member's annual reports to WCPFC at TTC meetings indicate there is generally a high level of compliance by fishers in PNA waters. However, as evidence concerning national infractions committed and penalties awarded to purse seiners is lacking **SG80 is not met**.

References

Federated States of Micronesia Code Title 24 Chapter 5

Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Longline Vessel Day Scheme

Specifications for the Marking and Identification of Fishing Vessels (CMM 2004-03)

Centralized Vessel Monitoring System (Commission VMS) (CMM 2011-02)

Regional Observer Programme (ROP) CMM (2007-01)

WCPFC IUU List (CMM 2010-06)

Compliance Monitoring Scheme (CMM 2013-02

Standards, Specifications and Procedures for the Record of Fishing Vessels (CMM 2013-03) and

CMM for WVPFC implementation of a Unique Vessel Identifier (CMM 2013-04)

WCPFC Record of Fishing Vessels and Authorization to Fish (CMM 2018-06)

MacKay et al. (2018)

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

Draft scoring range	60-79 (more information needed)
Information gap indicator	More information sought on compliance and the UoA and national FSM levels

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

Overall Performance Indicator score	65
Condition number (if relevant)	11

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

At the national level, there are mechanisms in place to evaluate key parts of the management system. The FSM Code Title 24. Marine Resources is the main document for managing fisheries resources. Many of the provisions of Title 24 have been repealed and re-enacted since it was published in 1982 and currently there are amendments and inclusions being considered by NORMA to submit to Congress for approval. The National Tuna Management Plan 2015 states that *"the plan will be reviewed at least every two years, if necessary, to factor in priority policy changes on tuna fisheries in consideration of new information and decisions taken by the Board of Directors, including decisions emerging from sub-regional and international agreements where FSM is a signatory."* A review of the original TMP 2000 was conducted in 2011 that identified downfalls in the management system that included the lack of guidelines for NORMA to manage the tuna resources. A revised TMP was published in 2015 that addressed issues raised in the 2011 review. As of 2012, NORMA has been subject to periodic audits by the Office of the National Public Auditor (ONPA, 2012). The audit in 2012 covered operational duties of the Board of Directors, implementation and effectiveness of the current tuna management plan, vessel licence fees, data and reporting and NORMA's internal policy framework (ONPA, 2012). The ONPA conducted an independent audit in 2017 on applying agreed upon procedures of NORMA's Fisheries Access Agreements. The audit covered several matters that include fishing revenue, donate good and services, sold and non-sold fishing days and traded fishing days of the VDS scheme. An evaluation of the FSM fisheries Monitoring, Control, and Surveillance system was conducted by IUU Watch in April 2018 as part of a global evaluation of MCS systems in 84 countries (Pramod, 2018).Comprehensive review mechanisms are in place at the sub-regional level. The VDS is managed and reviewed by an Inter-Party VDS Committee, that reports to the annual meetings of the Parties. The Committee provides recommendations on operational aspects of the fishery to the plenary meetings. These are seen as regular internal reviews and evaluate all parts of the management system. The annual reviews provide the WCPFC with an assessment of the VDS and information on the effort of vessels in PNA waters. PNA party members also conduct reviews of their own fishery-specific management systems. For example, FSM has provisions to review their Tuna Management Plan (2015) "at least every two years…". An independent audit in 2017 of PNA included a review of sold, non-sold fishing days and traded days of the VDS scheme.

WCPFC has mechanisms in place to evaluate all parts of the management system through the various committees and working groups that meet regularly and report their findings to the Commission. The WCPFC Secretariat submits a report on compliance of members with the reporting provisions of the Commission (CMM 2017-07). Progress with implementation of CMMs is monitored through the reporting provisions within the CMMs themselves, or the members' Annual Reports (Parts 1 & 2) to the Commission. Stock assessments conducted by the SPC are subject to peer review by other members of the Scientific Committee and through occasional external reviews. Commission meetings provide an overall review of processes and outcomes. The WCPFC has well-developed arrangements to provide a range of information to the Secretariat and Commission Members through the Scientific Committee and the Technical and Compliance Committee. Both these committees are established by the Convention, which sets out the functions for each. The Scientific Committee:

- Recommends a research plan;
- Reviews stock assessments, analyses, other work and recommendations prepared for the Commission by scientific experts;
- Reviews the results of research and analyses of target stocks, non-target, associated or dependent species in the Convention Area;
- Reports to the Commission its findings or conclusions on the status of target stocks or non-target or associated or dependent species in the Convention Area;
- In consultation with the Technical and Compliance Committee, recommends to the Commission the priorities and objectives of the regional observer programme and assesses results of that programme;
- Makes reports and recommendations on the conservation and management of and research on target stocks or non-target or associated or dependent species in the Convention Area;

On the other hand, the Technical and Compliance Committee:

- Provides the Commission with information, technical advice and recommendations relating to the implementation of and compliance with, conservation and management measures;
- Monitors and reviews compliance with conservation and management measures adopted by the Commission and makes such recommendations to the Commission as may be necessary; and
- Reviews the implementation of cooperative measures for monitoring, control, surveillance and enforcement adopted by the Commission and makes such recommendations to the Commission as may be necessary.

On the basis of the above, **SG60, SG80 and SG100 are met** at the national, sub-regional and regional levels.

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

As of 2012, NORMA has been subject to periodic audits by the Office of the National Public Auditor (ONPA, 2012). Although a governmental body completed the audit, the auditors were external to the fishery specific management system and so the audit acts as an external review of the performance and effectiveness of many aspects of the management system. The audit in 2012 covered operational duties of the Board of Directors, implementation and effectiveness of the current tuna management plan, vessel licence fees, data and reporting and NORMA's internal policy framework (ONPA, 2012). The ONPA recently conducted an independent audit on applying agreed upon procedures of NORMA's Fisheries Access Agreements in 2017. The audit covered several matters that include fishing revenue, donated goods and services, sold and non-sold fishing days and traded fishing days of the VDS scheme.

The Pacific Islands Regional Oceanscape Program (PROP) of the World Bank in 2015 conducted a review of the NORMA fisheries management system to assess the need to improve and strengthen enforcement, enhance safety of seafood exports through the establishment of a seafood hygiene competent authority, build capacity through the training of observers and enforcement officers and update monitoring equipment, strengthen fisheries management through capacity building of NORMA systems, institution and staff, and assess coastal fisheries that may be viable for further development in partnership with local communities. Currently a review of the FSM fisheries legislation and seafood safety management system is being conducted by the European Union to identify gaps in the sanitary controls for seafood products to be exported to the European Union countries. In 2017, a gap analysis of FSM's Port State Controls against the FAO Port States Measures Agreement was conducted by FFA (FFA, 2017). An evaluation of the FSM fisheries Monitoring, Control, and Surveillance system was conducted by IUU Watch in April 2018 as part of a global evaluation of MCS systems in 84 countries (Pramrod, G. 2018). The Pacific Islands Regional Oceanscape Program (PROP) of the World Bank in 2015 conducted a review of the NORMA fisheries management system to assess the need to improve and strengthen enforcement, enhance safety of seafood exports through the establishment of a seafood hygiene competent authority, build capacity through the training of observers and enforcement officers and update monitoring equipment, strengthen fisheries management through capacity building of NORMA systems, institution and staff, and assess coastal fisheries that may be viable for further development in partnership with local communities.

Annual internal reviews at the PNA level are conducted through the VDS Committee. PNA members also meet regularly and on *ad hoc* basis to review fishery performance. An independent review of the PNA purse seine Vessel Day Scheme (VDS) was conducted in 2014 (Hagrannosknir, 2014). Additionally, an independent review by Toroa Strategy Limited of New Zealand in 2015 compared the effort-based VDS to a quota limit system and concluded: "the VDS is a fully functioning fisheries management regime without peer for its class of fishery…There is no clear benefit from changing the VDS to a catch scheme now or in the near future." (see https://wwwpnatuna.com/node/340PNA).

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 recommendations of the reviews, which can be found on the WCPFC website. Also, an independent review (MRAG, 2009) has been conducted of the Commission's science and TCC structure and functions, resulting in the overhauling of their

operations and adoption of review processes and 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.

As both the national and regional management systems have regular internal reviews but only occasional external reviews, only **SG60 and SG80 are met**.

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Federated States of Micronesia Title 24

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Pacific Islands Regional Oceanscape Program (PROP) NORMA review 2015

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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 Small-scale fisheries

To help identify small-scale fisheries in the MSC programme, 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%.

Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
0%	0%

Appendix 2 Evaluation processes and techniques

Appendix 2.1 Site visit and stakeholder participation

Due to the Covid-19 pandemic and the associated global travel restrictions in place, the MSC instated a derogation to ensure that site visits planned between the 27th March to 27th September 2020, could be held remotely. The updated MSC Covid-19 Pandemic Derogation (effective 28th September 2020) states that "initial assessments and audits that are to be completed without an on-site visit will require CABs to submit a variation request and risk assessment for approval". Considering the strict travel restrictions currently in place in FSM (whereby only limited and controlled entry is permitted), it was therefore considered more appropriate that the audit be held remotely. In addition to this, the Center for Disease Control and Prevention (CDC) "recommends travellers avoid all non-essential international travel to Micronesia" and the UK Foreign and Commonwealth Office (FCO) advised against "all but essential travel to Micronesia" (all dated 11th August 2020). A variation request was therefore submitted to MSC on the 18th September 2020 and approved on the 1st October 2020.

Remote meetings were held during the week from 3 to 10 November 2020. The individuals met during the remote meetings and their roles in the fishery are listed in Table 39. Stakeholders were notified about the assessment via notifications posted on the MSC website, as well as via direct email contact. The following notifications were made:

- Fishery announcement: 14 August 2020
- Remote site visit variation request: 18 September 2020
- Stakeholder Announcement: Site Visit - delayed by 1 week: 21 September 2020
- Stakeholder input received following publication of ACDR: 28 October 2020

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.

An overview of meetings and stakeholder submissions is given in Appendix 4.

Table 39. List of attendees at the remote meetings.

Name	Position	Type of consultation
Marko Kamber	Caroline Fisheries Corporation - President	Provision of information
Chih Yuan Wang	Da Yang – Managing Director	Provision of information via email
Spencer Hsu	Da Yang - Pacific Operations Manager	Provision of information
Jason Hsieh	Da Yang - Purse Seine Operations Manager	Provision of information
Warren Chen	Da Yang - Purse Seine Operations Coordinator	Provision of information
Emily Hsieh	Da Yang - Export Customer Service	Provision of information

Elain Hsieh	Da Yang - Export Customer Service	Provision of information
Jay Liu	Da Yang - Export Customer Service	Provision of information
Eugene Pangelinan	NORMA Executive Director	Provision of information
Mathew Chigiyal	NORMA Deputy Director	Provision of information
Jamel James	Assistant Biologist, NORMA	Provision of information
Justino Helgen	Senior Fisheries Compliance Officer, NORMA	Provision of information
Limanman Helgenberger	Assistant Director of the Management Division, NORMA	Provision of information
Johnson Asher	Legal Counsel, NORMA	Provision of information
Miorida Yee Thing Thompson	Licensing Manager, NORMA	Provision of information
Joe Murphy	Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC)	Provision of information
Eric Gilman	Liancheng Overseas Fishery (FSM) Co. Ltd. (FZLC) consultant	Provision of information
Maurice Brownjohn	PNAO	Provision of information and submission of comments during site visit (Appendix 4).
Richard Banks	PNAO	Provision of information and submission of comments during site visit (Appendix 4).
ISSF	N/a	Submission of comments on ACDR (Appendix 4).
Jo Gascoigne	Control Union	Assessor
Peter Watt	Control Union	Assessor
Chrissie Sieben	Control Union	Assessor, team leader

Appendix 2.3 Evaluation techniques

No public announcements were made, other than through the MSC website and MSC update emails, as well as through Control Union's fishery notifications (published on the MSC website) and emails to individual stakeholders.

The assessment was based on a review of publicly available data and documentation, and data, information and documentation provided by stakeholders prior to and during the site visit. Some information was also provided after the site visit. Where data analyses were carried out by the assessment team, this is indicated in the report. Data sources are explained in detail in Section 6.2 of this report.

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.

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.

The Risk-Based Framework was not used.

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 (as included in the Public Comment Draft Report - PCDR)
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	Overall the scoring conforms well to the standard and its guidance. There are, however, a few cases in which a lower score might be warranted (in particular, for discards of the target species, whether there is a strategy to mitigate the impacts of FADs on habitat, and whether decision-making processes respond to serious and important issues relating to non-target species). There are also a few cases where a higher score might be warranted (information from Indonesia on YFT catches, whether an available HCR can be "robust", and one case where a score appears to have been transposed incorrectly). There is also a case (PI 3.2.3) where the score is already quite low (65) but it has been interpreted narrowly (target species) and if interpreted more broadly (including non-target species) the low score is further reinforced. It is important to note that I approached this peer review as a stand-alone task, i.e. I did not review the consistency of these scores with other scores given to regional fisheries (Appendix 7).	Thank you. We assume that your concerns have been raised in relation to specific PIs and we will respond accordingly.
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	Overall the conditions highlight and address most of the key issues (discards may also need a condition depending on what other information can be presented). In one case (Condition #11) I suggest the condition be broadened (or at least clarified) to include non-target species issues. In Conditions #1-#6 the differences between 1 and 2, 3 and 4, and 5 and 6 could be better articulated, particularly as all three pairs seem to focus mainly on the same issue, i.e. whether a HCR is agreed. Similarly Conditions #8-#10 all seem to depend on obtaining more information about the habitat impacts of FADs so the differences between them are a bit muddled. Is one a precursor to the others? If they are inter-related can they be combined?	The reviewer is not wrong, but the requirement is to have an individual condition for each PI scoring <80 (7.18.1.1). That means that 8-10 cannot be combined, since they deal with 2.4.1, 2.4.2 and 2.4.3. The procedure for meeting these conditions would seem most likely to be 1. collect information (2.4.3), 2. put in place management as suggested by the information (2.4.2) to 3. obtain the desired outcome (2.4.1). This (presumed) approach is reflected in the milestones, in that Condition 8 must be met by Year 4 and Conditions 9 and 10 by Year 3. However, it is not up to the CAB to decide how these conditions are tackled, so the simplest seems to be to put them in numerical order. Regarding Conditions 1-6, we cannot combine 1 and 2, 3 and 4 and 5 and 6 for the same reason (i.e. different PIs). Condition 11: the condition is broad in the sense that it requires that the national monitoring, control and surveillance system implemented in the fishery should have demonstrated an ability to enforce relevant management measures, strategies and/or rules in both the FSM EEZ and High Seas areas – this includes but is not limited to any matters relating to non-target species.
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?		N/a	N/a (although please note the FAD sets are an enhanced fishery as explained in the report).
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary)		There is a wealth of information about this fishery and the report covers much of it. In this respect the information seems at times to swamp the reader making it difficult to grasp which specific points are considered relevant to the scoring under each PI. Although the text is generally well-written and proofed I have the sense that it has gradually accreted over time. At some point the length and detail will need to be revisited and rationalized otherwise assessment reports may surpass 500 pages	We tried to be as succinct as possible in the background sections and avoid repetition in the scoring tables. This is not always straightforward. It should be clear in the scoring tables which information was used in scoring each PI (where necessary, cross-references to the relevant background sections are provided). However, as the peer reviewer points out, there was a lot of information to provide for this assessment and it is often a fine line between being too succinct and too elaborate.

Performance indicator comments

Principle 1

UoA stock	UoA gear	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
SKJ-UoA1&2	PS	1.1.1	Yes	Yes	NA	Scoring agreed. However, the comparison between reference points is very hard to follow for several reasons: a) rounding (17.6 vs 18; 13.2 (75%Bmsy) vs. 13.5)--be consistent; and b) there are many other values and ratios mentioned that do not in the end relate to the key comparison of SB to SB75%Bmsy--focus and streamline the argument presented.	The stock assessment does not always estimate the same reference points as are required by MSC, hence some slightly convoluted arguments are needed. But we have amended the rationale to avoid confusion.	Accepted (no score change, change to rationale)
SKJ-UoA1&2	PS	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	Agree that this PI shouldn't be scored.	No comment required	NA (No response needed)

UoA stock	UoA gear	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
SKJ-UoA1&2	PS	1.2.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	No	First comment re: scoring issue "a". The argument could be improved to focus on the fact that according to MSC guidance the elements of a HS must include an HCR. At present there is no HCR and the other elements (five listed in one paragraph and four in another) are both responsive to stock status and working well together. The score is lowered because there is no HCR, not because of lack of responsiveness or working together of the existing elements. This should be made clearer including a reference to MSC guidance stating that HCR is an essential element of HS (GSA2.4?). On Condition #1 specifically: In the milestone it should be made clear whether the "evidence" to be provided must include the adoption of a HCR (note: there is a sentence missing from Condition #1 (Condition section) that makes this clear (compare Conditions #3 and #5)). If not, for the milestone to be achieved what more is required that is not available now?	The argument is logical, but scoring has to relate to the wording of the SGs. If we argue that because there is no HCR there is no harvest strategy, then neither SG60 nor SG80 are met. (But clearly this is not MSC's intent – otherwise why would there be the possibility of an 'available' HCR under PI 1.2.2.) The argument is first made that SG60 is met, and since the reviewer does not comment we assume that s/he agrees with this. Moving on to SG80, the argument has to focus on the elements which are different between the two SGs – i.e., 1. responsiveness to the state of the stock, and 2. elements working together. This is why the argument is framed in the way that it is. In conclusion, the team considered that the rationale clearly explains that "because there is no well-defined HCR in place, there is an element missing of the harvest strategy so that the elements required by the Standard cannot work together and be responsive to stock status". The scoring was not changed. Condition 1 has been corrected.	Not accepted (no change)
SKJ-UoA1&2	PS	1.2.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Second comment re: scoring issue "f". Despite having been prohibited since 2009, discards currently represent >2% of the BET, YFT and SKJ in the WCPFC fishery. (see https://www.wcpfc.int/file/482059/download?token=5PqNMhzZ ,Table 17). While this amount might be small enough to be ignored in the stock assessments (as has been the case) it does not seem to meet the standard of no "unwanted catch". Furthermore, ISSF has called on its members to make a commitment to full retention of tuna other than those unfit for human consumption (https://iss-foundation.org/what-we-do/verification/conservation-measures-commitments/bycatch-mitigation-3-3-full-retention-of-tunas/) not only because of the effects on the stock itself but because of the effects on the stock assessment. Although the UoA participates in some ISSF initiatives it is not clear whether it participates in this one. Observers should be collecting information on discards and if they have recorded that there are no discards of tuna in this fishery then that should be reported. Since discards of undesirable (small) tunas of the target species have remained a concern in this fishery despite the 2009 regulation (see also Gilman, E., Suuronen, P. and Chaloupka, M., 2017. Discards in global tuna fisheries. Marine Ecology Progress Series, 582, pp.231-252.) they should be addressed more comprehensively in this assessment.	It is important to bear in mind that unwanted catch is referred to here in the context of the UoA (unlike the rest of P1 which deals with the stock as a whole). Table 28 shows the discard rates for the target species based on UoA-specific observer data, all of which (for the target species) provide evidence that discard rates are negligible in the UoA (the highest average rate was 2.6% for skipjack in associated sets – note this is the proportion of discarded SKJ out of the total amount of SKJ caught, not the total catch). Also note the following guidance: *GSA3.5.3: in cases where there is negligible unwanted catch of a species, the team may use their discretion as to whether the scoring issue would be scored, but the decision should be made in accordance with a precautionary approach. When determining what is 'negligible' the MSC does not specify a set cut-off; the team may consider the significance of the catch in relation to things like the proportion of the unwanted catch as part of the total catch or as part of the total amount of unwanted catch, as well as the regularity of the catch occurring when deciding whether it is negligible*. The observer records show that any discarded weights are infinitesimal compared to the retained catch. On that basis, the team maintains that this scoring issue is not relevant for the target species. The rationale was not changed.	Not accepted (no change)
SKJ-UoA1&2	PS	1.2.2	Yes	No (change to rationale expected, not to scoring)	Yes	First comment re: scoring issue "b". I understand that a distinction is made between an HCR being "available" and "in place". If only "available" this drives the score to 60 for scoring issues "a" and "c", but scoring issue "b" doesn't make this distinction. It seems to me that if an HCR is "available" it could be that it is scientifically robust but just hasn't been adopted yet (i.e. robust is scientific, whereas adoption is political). It would help to explain more (including with reference to MSC guidance) how an HCR that is "available" is scored for robustness.	The discussion about what the HCR should consist of is not complete. Therefore, we have no means of knowing if it will be robust or not. The rationale has been edited to clarify.	Accepted (no score change, change to rationale)
SKJ-UoA1&2	PS	1.2.2			No	Second comment on Condition #2. This condition makes clear that an HCR is required by the end of Year 1. This answers some of my questions about Condition #1 but I still think it would be helpful to clarify what MORE is required under Condition #1 beyond just adopting the HCR (which is Condition #2).	Hopefully, the responses above clarify this point. Adopting a HCR (and incorporating it into management) responds to Condition 1 and Condition 2, as you rightly say.	Not accepted (no change)
SKJ-UoA1&2	PS	1.2.3	Yes	Yes	NA	Scoring agreed.	No comment required	NA (No response needed)
SKJ-UoA1&2	PS	1.2.4	Yes	Yes	NA	Scoring agreed.	No comment required	NA (No response needed)
YFT-UoA3&4	PS	1.1.1	Yes	Yes	NA	Scoring agreed. However, the comparison between reference points is very hard to follow because many other values and ratios mentioned do not in the end relate to the key comparison of SB to SB75%Bmsy. The argument could be made considerably clearer by focusing on the key quantities and defining exactly how they are sourced.	The rationale has been revised as suggested.	Accepted (no score change, change to rationale)
YFT-UoA3&4	PS	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	Agree that this PI shouldn't be scored.	No comment required	NA (No response needed)
YFT-UoA3&4	PS	1.2.1	No (change to rationale	No (change to rationale	No	First comment re: scoring issue "a". The argument could be improved to focus on the fact that according to MSC guidance the elements of a HS must include an HCR. At present there is no HCR	See same comment for skipjack above.	Not accepted (no change)

UoA stock	UoA gear	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
			expected, not to scoring)	expected, not to scoring)		and the other elements (five listed in one paragraph and four in another) are both responsive to stock status and working well together. But the score is lowered because there is no HCR, not because of lack of responsiveness or working together of the existing elements. This should be made clearer including a reference to MSC guidance stating that HCR is an essential element of HS (GSA2.4?). On Condition #3 specifically: In the milestone it should be made clear whether the "evidence" to be provided must include the adoption of a HCR. If not, for the milestone to be achieved what more is required that is not available now?	Regarding Condition 3 – The reviewer is correct but we cannot do this because the CAB cannot advise the client how to address the condition. However, please see the client action plan, where adoption of the HCR is indeed how the client plans to close out this condition.	
YFT-UoA3&4	PS	1.2.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Second comment re: scoring issue "f". Despite having been prohibited since 2009, discards currently represent >2% of the BET, YFT and SKJ in the WCPFC fishery. (see https://www.wcpfc.int/file/482059/download?token=5PqNMhzZ ,Table 17). While this amount might be small enough to be ignored in the stock assessments (as has been the case) it does not seem to meet the standard of no "unwanted catch". Furthermore, ISSF has called on its members to make a commitment to full retention of tuna other than those unfit for human consumption (https://iss-foundation.org/what-we-do/verification/conservation-measures-commitments/bycatch-mitigation-3-3-full-retention-of-tunas/) not only because of the effects on the stock itself but because of the effects on the stock assessment. Although the UoA participates in some ISSF initiatives it is not clear whether it participates in this one. Observers should be collecting information on discards and if they have recorded that there are no discards of tuna in this fishery then that should be reported. Since discards of undesirable (small) tunas of the target species have remained a concern in this fishery despite the 2009 regulation (see also Gilman, E., Suuronen, P. and Chaloupka, M., 2017. Discards in global tuna fisheries. Marine Ecology Progress Series, 582, pp.231-252.) they should be addressed more comprehensively in this assessment.	See same comment for skipjack above.	Not accepted (no change)
YFT-UoA3&4	PS	1.2.2	Yes	No (change to rationale expected, not to scoring)	Yes	First comment re: scoring issue "b". I understand that a distinction is made between an HCR being "available" and "in place". If only "available" this drives the score to 60 for scoring issues "a" and "c", but scoring issue "b" doesn't make this distinction. It seems to me that if an HCR is "available" it could be that it is scientifically robust but just hasn't been adopted yet (i.e. robust is scientific, whereas adoption is political). It would help to explain more (including with reference to MSC guidance) how an HCR that is "available" is scored for robustness.	See response for skipjack above. The rationale has been adjusted here too.	Accepted (no score change, change to rationale)
YFT-UoA3&4	PS	1.2.2			No	Second comment on Condition #4. This condition makes clear that an HCR is required by the end of Year 1. This answers some of my questions about Condition #3 but I still think it would be helpful to clarify what MORE is required under Condition #3 beyond just adopting the HCR (which is Condition #4).	See response for skipjack above.	Not accepted (no change)
YFT-UoA3&4	PS	1.2.3	Yes	No (score increase expected)	NA	First comment re: Scoring Issue 'a'. A score of 100 requires a comprehensive range of information on a variety of subjects, all of which exist. The score is lowered to 80 because of data gaps and uncertainty for Indonesian fisheries. These gaps and uncertainties certainly affect the other species' scores as well, but the assessors single out YFT because Indonesia's catch estimates are high. Given that it is reported that the Indonesian YFT catch is over-estimated, and gaps and uncertainties from Indonesian fisheries will influence SKJ, YFT and BET assessment and management similarly, I don't see a basis for a different scoring for YFT. Given that the information content is extremely high for all species a score of 100 seems warranted (but see Second comment below).	As a matter of fact, we agree with the reviewer here and s/he is also correct that the scoring of SIc looks a little inconsistent with the argument here. 18 months or so ago the CAB initiated a harmonisation process across CABs to increase this score (and more generally to align the scoring of 1.2.3 and 1.2.4 across different stocks with similar data and stock assessments – there are numerous inconsistencies.) However, not all the other CABs agreed, and in these circumstances, the requirement is that all CABs must use the lower score, which is why this SI is scored as it is. MSC do not require that scores are harmonised across different stocks, even when the data collection and stock assessment processes are the same.	Not accepted (no change)
YFT-UoA3&4	PS	1.2.3	Yes	No (score increase expected)	NA	Second comment re: scoring issue "c". If the assessor believes strongly that the Indonesia gaps and uncertainties for YFT should be scored somehow, this would be the appropriate SI ("other fishery removals from the stock"). I wonder, though, if this was avoided because not meeting 80 for SI "c" would trigger a condition, whereas moving SI "a" from 100 to 80 (see First comment above) would not. In any case, I consider the proper score for SI "c" would be 80, and that overall, the score should increase from 80 to 90 (to match SKJ and BET).	Please see comment above.	Not accepted (no change)
YFT-UoA3&4	PS	1.2.3	Yes	No (score increase expected)	NA	Third comment re: scoring issue "b". Just a note to ask that the relationship between an HCR that is "available" or "in place" and the monitoring required should be clarified. In other words, if the HCR is only "available" does that affect the score? If not, perhaps a score of 100 is warranted here? The monitoring in this fishery is some of the most comprehensive in the world (although it will decrease under the influence of COVID).	A comment was added about the absence of a HCR. But aside from this issue, SG100 is a very high bar ('high frequency' 'high degree of certainty' 'good understanding of inherent uncertainty and robustness of the assessment to it'). It would be interesting to know if it is ever met.	Accepted (no score change, change to rationale)
YFT-UoA3&4	PS	1.2.4	Yes	Yes	NA	Scoring agreed.	No comment required	NA (No response needed)

UoA stock	UoA gear	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
BET-UoA5&6	PS	1.1.1	Yes	Yes	NA	Scoring agreed. See comment on PI 1.1.1 for SKJ and YFT regarding focusing of the argument to make a clearer case for stock status. At first I considered the scoring to be a bit harsh as all models are uncertain and could be improved, but after reading the WCPFC SC16 report I decided the scoring was appropriate.	Rationale has been similarly adjusted.	Accepted (no score change, change to rationale)
BET-UoA5&6	PS	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	Agree that this PI shouldn't be scored.	No comment required	NA (No response needed)
BET-UoA5&6	PS	1.2.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	No	First comment re: scoring issue "a". The argument could be improved to focus on the fact that according to MSC guidance the elements of a HS must include an HCR. At present there is no HCR and the other elements (five listed in one paragraph and four in another) are both responsive to stock status and working well together. But the score is lowered because there is no HCR, not because of lack of responsiveness or working together of the existing elements. This should be made clearer including a reference to MSC guidance stating that HCR is an essential element of HS (GSA2.4?). On Condition #5 specifically: In the milestone it should be made clear whether the "evidence" to be provided must include the adoption of a HCR. If not, for the milestone to be achieved what more is required that is not available now?	See same comment for skipjack and yellowfin above. Regarding Condition 5 – the reviewer is correct but we cannot do this because the CAB cannot advise the client how to address the condition. However, please see the client action plan, where adoption of the HCR is indeed how the client plans to close out this condition.	Not accepted (no change)
BET-UoA5&6	PS	1.2.1	No (scoring implications unknown)	No (scoring implications unknown)	NA	Second comment re: scoring issue "f". Despite having been prohibited since 2009, discards currently represent >2% of the BET, YFT and SKJ in the WCPFC fishery. (see https://www.wcpfc.int/file/482059/download?token=5PqNMhzZ ,Table 17). While this amount might be small enough to be ignored in the stock assessments (as has been the case) it does not seem to meet the standard of no "unwanted catch". Furthermore, ISSF has called on its members to make a commitment to full retention of tuna other than those unfit for human consumption (https://iss-foundation.org/what-we-do/verification/conservation-measures-commitments/bycatch-mitigation-3-3-full-retention-of-tunas/) not only because of the effects on the stock itself but because of the effects on the stock assessment. Although the UoA participates in some ISSF initiatives it is not clear whether it participates in this one. Observers should be collecting information on discards and if they have recorded that there are no discards of tuna in this fishery then that should be reported. Since discards of undesirable (small) tunas of the target species have remained a concern in this fishery despite the 2009 regulation (see also Gilman, E., Suuronen, P. and Chaloupka, M., 2017. Discards in global tuna fisheries. Marine Ecology Progress Series, 582, pp.231-252.) they should be addressed more comprehensively in this assessment.	See same comment for skipjack and yellowfin above.	Not accepted (no change)
BET-UoA5&6	PS	1.2.2	Yes	No (change to rationale expected, not to scoring)	Yes	First comment re: scoring issue "b". I understand that a distinction is made between an HCR being "available" and "in place". If only "available" this drives the score to 60 for scoring issues "a" and "c", but scoring issue "b" doesn't make this distinction. It seems to me that if an HCR is "available" it could be that it is scientifically robust but just hasn't been adopted yet (i.e. robust is scientific, whereas adoption is political). It would help to explain more (including with reference to MSC guidance) how an HCR that is "available" is scored for robustness.	See same comment for skipjack and yellowfin above. The rationale has been adjusted.	Accepted (no score change, change to rationale)
BET-UoA5&6	PS	1.2.2			No	Second comment on Condition #6. This condition makes clear that an HCR is required by the end of Year 1. This answers some of my questions about Condition #5 but I still think it would be helpful to clarify what MORE is required under Condition #5 beyond just adopting the HCR (which is Condition #6). Note: Condition #5 is mislabelled as pertaining to PI 1.2.1 (instead of PI 1.2.2)	See same comment for skipjack and yellowfin above. Condition 5 should be 1.2.1, no? Condition 1 = 1.2.1 skj Condition 2 = 1.2.2 skj Condition 3 = 1.2.1 yft Condition 4 = 1.2.2 yft Condition 5 = 1.2.1 bet Condition 6 = 1.2.2 bet	Not accepted (no change)
BET-UoA5&6	PS	1.2.3	Yes	Yes	NA	Scoring agreed.	No comment required	NA (No response needed)
BET-UoA5&6	PS	1.2.4	Yes	Yes	NA	Scoring agreed. At first I considered the scoring to be a bit harsh as all models are uncertain and could be improved, but after reading the WCPFC SC16 report I decided the scoring was appropriate.	No comment required	NA (No response needed)

Principle 2

UoA stock	UoA gear	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
All UoAs	PS	2.1.1	Yes	Yes	NA	Scoring agreed. It would be useful for the report to state which of the species identified in Tables 14 and 15 are considered low productivity species (i.e. to which the 2% criteria were applied). I assume that striped marlin is low productivity. Also, although I agree 0.5t of striped marlin catch per year is low, I would expect some argument that such catch is low relative to the total catch of striped marlin.	Only bigeye met the 2% threshold (see the year 2016 in Table 10), however this species is not 'less resilient'. Striped marlin contributed a minimal amount to the total observed catch for both free-school sets and associated sets (generally below 0.01%). Therefore, there is no reason to consider this species as main (even if it is less resilient) (<0.05%). We have, however, added the total estimated 2019 WCPO catch for this species to our rationale.	Accepted (no score change, change to rationale)
All UoAs	PS	2.1.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	First comment re: Scoring Issue 'a'. It is not clear from the map in Figure 1 but it looks like some of the fishery occurs in the southern hemisphere. In that case there should be references to the South Pacific populations of minor species such as albacore and striped marlin as well as to the northern populations. (I don't know if there is a southern population of striped marlin but for albacore there is)	This is a good point. We have amended the scoring rationales for both striped marlin and albacore to reflect that there are 2 stocks. The overall scoring has not changed.	Accepted (no score change, change to rationale)
All UoAs	PS	2.1.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	Second comment re: scoring issue "f". Despite having been prohibited since 2009, discards currently represent >2% of the BET, YFT and SKJ in the WCPFC fishery. (see https://www.wcpfc.int/file/482059/download?token=5PqNMhzZ ,Table 17). While this amount might be small enough to be ignored in the stock assessments (as has been the case) it does not seem to meet the standard of no "unwanted catch". Furthermore, ISSF has called on its members to make a commitment to full retention of tuna other than those unfit for human consumption (https://iss-foundation.org/what-we-do/verification/conservation-measures-commitments/bycatch-mitigation-3-3-full-retention-of-tunas/) not only because of the effects on the stock itself but because of the effects on the stock assessment. Although the UoA participates in some ISSF initiatives it is not clear whether it participates in this one. Observers should be collecting information on discards and if they have recorded that there are no discards of tuna in this fishery then that should be reported. Since discards of undesirable (small) tunas of the target species have remained a concern in this fishery despite the 2009 regulation (see also Gilman, E., Suuronen, P. and Chaloupka, M., 2017. Discards in global tuna fisheries. Marine Ecology Progress Series, 582, pp.231-252.) they should be addressed more comprehensively in this assessment.	It is important to bear in mind that unwanted catch is referred to here in the context of the UoA. Table 28 shows the discard rates for the primary species based on UoA-specific observer data, all of which (for the main species) provide evidence that discard rates are negligible in the UoA (the highest average rate was 2.6% for skipjack in associated sets – note this is the proportion of discarded SKJ out of the total amount of SKJ caught, not the total catch). Also note the following guidance: *GSA3.5.3: in cases where there is negligible unwanted catch of a species, the team may use their discretion as to whether the scoring issue would be scored, but the decision should be made in accordance with a precautionary approach. When determining what is 'negligible' the MSC does not specify a set cut-off; the team may consider the significance of the catch in relation to things like the proportion of the unwanted catch as part of the total catch or as part of the total amount of unwanted catch, as well as the regularity of the catch occurring when deciding whether it is negligible*. The observer records show that any discarded weights are infinitesimal compared to the retained catch. On that basis, the team maintains that this scoring issue is not relevant for the main species. The rationale was not changed.	Not accepted (no change)
All UoAs	PS	2.1.3	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
All UoAs	PS	2.2.1	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
All UoAs	PS	2.2.2	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
All UoAs	PS	2.2.3	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
All UoAs	PS	2.3.1	Yes	Yes	NA	Scoring Agreed. First comment re: silky shark. There is no need to review and present Rice and Harley (2013). The latest stock assessment accepted by the WCPFC SC is the ABNJ assessment from 2018. This assessment could not produce a useful Pacific-wide model, but did advance the WCPO model (https://www.wcpfc.int/file/218012/download?token=VqYz9_v-) As the 2018 WCPO assessment is more optimistic than the Rice and Harley (2013) assessment, but still uncertain, no change to the scoring is expected.	Noted, thank you – we have amended the rationale.	Accepted (no score change, change to rationale)
All UoAs	PS	2.3.1	Yes	Yes	NA	Second comment re: whale shark. It seems there is a misunderstanding about the assessment status of this species. Rice (2018) suggested that traditional stock assessment could not be undertaken, not that the data quality was poor. At the same time ABNJ (2018) did a quantitative risk assessment on the understanding that this was the most appropriate assessment approach. No change to scoring expected.	We have removed any ambiguous statements but maintained the scoring at SG100 not met.	Accepted (no score change, change to rationale)
All UoAs	PS	2.3.1	Yes	Yes	NA	Third comment re: observer coverage. Reference is made to Table 12 to support the assertion that observer coverage is high. This is not disputed but the method used to derive Table 12 is unfamiliar and the observer coverage reported by SPC is different (https://www.wcpfc.int/file/482598/download?token=5xMUzPvW). Since SPC is the official source, it would be better to reference that paper or at least explain why other figures are presented in Table 12.	The observer coverage in Table 12 is for the UoA specifically. Given that all vessels carry observers, the team decided that coverage by trip would not be as informative as coverage estimated based on target catch (skipjack, yellowfin and bigeye combined). Granted, there is no single method for estimating observer coverage and the MSC Standard is not prescriptive in how this is done.	Not accepted (no change)
All UoAs	PS	2.3.1	Yes	Yes	NA	Fourth comment re: species specificity of observer data. I notice that all of the ETP species are reported to species level with no reports of for example, shark UID, turtle UID, etc. It would be	Given that there are other records of UID encounters including of ETP species (Mantas, devil rays nei, Mobula nei, Triggerfishes, durgons nei, Jacks, crevalles nei,	Not accepted (no change)

UoA stock	UoA gear	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
						reassuring to see a statement to the effect that there were no UIDs (or similar) to ensure that the number of encounters is not being artificially reduced by failure to identify to species.	Baleen whales nei, Scomber mackerels nei, Pomfrets nei, Beaked whales nei), the team saw no reason why unidentified species of taxonomic groups such as sharks or turtles would be unreported. There is always bound to be some uncertainty in the observer data; however, not to the extent that interaction levels for specific taxonomic groups would change by an order of magnitude (i.e., to the extent that population-level impacts might be expected). This issue was therefore not explored further.	
All UoAs	PS	2.3.1	Yes	Yes	NA	Fifth comment re: references. Several of the references cited in the text are missing from the references section. Likewise, some of the references listed on p.189 are also missing from the references section.	Corrected, thank you	Accepted (no score change, change to rationale)
All UoAs	PS	2.3.2	Yes	Yes	NA	Scoring agreed. As CMM 2019-04 replaced the previous shark CMMs it is not necessary to present 2010-07, 2011-04, 2012-04, 2013-08, and 2014-05 (see CMM 2019-04, para. 31). The characterization of 2019-04 as representing "key changes" from the preceding CMMs is not correct as many of the requirements were carried over without change. The same bullet points can be kept with the introductory phrase "including: ". Where the shark safe release guidelines are mentioned, please note that guidelines for whale shark and mantas have been previously and separately agreed: https://www.wcpfc.int/file/123961/download?token=XR8ywgal and https://www.wcpfc.int/file/227059/download?token=oVs47f7K	The new shark CMM only came into effect in November 2020, at the time of the site visit. As some of the report had already been drafted by then (the ACDR), we have left the information in there to maintain the information thread. We have clearly stated that the CMM replaces the preceding CMMs. It is not entirely clear how the peer reviewer wanted us to amend this section – we have tried, please let us know if there are still issues.	Accepted (no score change, change to rationale)
UoAs 2, 4 & 6	PS - FAD sets	2.3.2	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	Scoring agreed. See comment on UoA1-SKJ 2.3.2 above. I understand the rationale behind assigning a lower score to the associated sets because of lack of information on impacts. However, 2.3.2 pertains to strategy (albeit the reference to evidence) and 2.3.3 pertains to the information available, so I'm wondering whether it is appropriate to lower the associated set scores under both 2.3.2 and 2.3.3?	We are not sure which comment you mean? There does not seem to be a separate 2.3.2 comment on UoA1-SKJ. It is also not clear which scoring issue this comment relates to. Assuming it refers to scoring issue c (management strategy evaluation), this is not exactly the same as scoring information under 2.3.3. The team believes that impacts on ETP species through entanglement in FADs can be inferred from FAD design, at-vessel handling and release practices and data on UoA scale and intensity, all of which provides some objective basis for confidence that the strategy will work. However, the lack of UoA-specific data on unobserved mortality in FAD sets means that quantitative, UoA-specific data are lacking, which is why 2.3.3a is not met.	Not accepted (no change)
UoAs 2, 4 & 6	PS - FAD sets	2.3.3	Yes	Yes	Yes	Scoring agreed. Although the condition seems difficult to address, as it has been raised consistently across all MSC fisheries using FADs in the WCPO I assume there will be sufficient impetus toward a solution.	Thank you, no comment required. We invite you to have a look at the Client Action Plan for this condition.	NA (No response needed)
UoAs 1, 3 & 5	PS - Free school sets	2.4.1	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
UoAs 2, 4 & 6	PS - FAD sets	2.4.1	Yes	Yes	Yes	Scoring agreed. However, I note there is an important cumulative effects issue here such that perhaps no one fishery's beached FADs would be significant but together all fisheries are having an effect. It is acceptable to conclude that the effects of the UoA will not cause serious or irreversible harm (2.4.1) but this then places a greater weight on managing the impacts (2.4.2) so that unacceptable cumulative effects do not occur. The condition is useful in that it represents a step toward taking some responsibility for the impacts caused by FADs even though they are being used in compliance with all regulations. Even so, it is difficult to separate Conditions 8, 9 and 10 as they all involve getting more information to address the issues. If there is a need for three separate conditions perhaps make them more distinct?	The team is bound by the MSC Standard and guidance which stipulate that cumulative impacts are only taken into account for habitats under 2.4.2 (management) at SG100. Given that this SG is not met here, cumulative impacts did not come into play in our assessment. However, this is certainly a valid point. The peer reviewer also raises a valid point in relation to the conditions which indeed all overlap. Procedurally we are not permitted to combine conditions (7.18.1.1); however, many of the milestones are held in common.	Not accepted (no change)
UoAs 1, 3 & 5	PS - Free school sets	2.4.2	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
UoAs 2, 4 & 6	PS - FAD sets	2.4.2	Yes	No (material score reduction expected to <80)	Yes	Scoring agreed for scoring issues b, c and d. For scoring issue a, it seems the arguments given under SI b (which support a score of 60 for SI b) would suggest that 80 is not met for SI a either. The "partial strategy" appears to consist of complying with WCPFC's high FAD limit, participating in ISSF studies of non-entangling/biodegradable FADs, and having the required observer coverage. These relate either to compliance or gathering information and are not related to managing the FAD-associated impact of the fishery. While that is perhaps acceptable under a "partial" strategy (Table GSA3), the MSC guidance quoted suggests that even a "partial" strategy	There have been many debates between assessors on how to score this PI and several years on, this has still not been resolved. In our opinion, our scoring is in line with the MSC Standard and guidance. 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.* In this case, the partial strategy	Not accepted (no change)

UoA stock	UoA gear	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
						needs to encompass compliance with VME rules (not applicable) and precautionary measures to avoid impact. The assessors refute the need in this UoA for the example measures given in the guidance for the precautionary measures, but as these are examples, and the assessors go on to list a number of other things that could be done (but aren't being done), after considering all this I can't see that there are any precautionary measures in place with regard to FAD use/loss and so I don't agree that 80 is met. This would lower SI "a" to 60 and move the overall score from 70 to 65. The condition--which is useful--would still apply but (as stated above) it is difficult to separate Conditions 8, 9 and 10 as they all involve getting more information to address the issues. If there is a need for three separate conditions perhaps make them more distinct?	is centred around CMM 2020-01 which includes requirements on FAD design, limitations on FAD deployment through seasonal closures and a limit on the number of FADs buoys that can be in use at any one time, and monitoring requirements (observer coverage). Arguably, this of itself would constitute a partial strategy to manage dFAD impacts on habitats (focused on impact limitation and monitoring). As the MSC definition makes clear, the partial strategy *may not have been designed to manage the impact on that component specifically*. In addition to the WCPFC measures, there are the measures at PNA (dFAD-tracking programme) and UoA level (implementation of ISSF best practice, relatively low number of FAD deployments). The team maintains that this constitutes a partial strategy which incorporates precautionary measures to avoid impact (including by attempting to limit the impact in the first place). The effectiveness of the partial strategy and how it is being implemented is scored under scoring issues b, c and d. Finally, we need to point out that the conditions are not just about getting more information, but also about having the assurance (objective basis for confidence) that the measures that are in place, will work. Which is currently not the case. Therefore, the conditions are a combination of putting in place better monitoring as well as management/mitigation measures to ensure an SG80 score under outcome.	
UoAs 1, 3 & 5	PS - Free school sets	2.4.3	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
UoAs 2, 4 & 6	PS - FAD sets	2.4.3	Yes	No (change to rationale expected, not to scoring)	Yes	At first reading I thought the score for SI c might be too high but this depends on whether the continuing information is for the fishery as a whole or the UoA. If the former, I agree that information sources are growing and becoming more reliable and relevant. However, if the latter, I think the UoA could be doing more to understand its own impacts. Fortunately the condition (which is in response to SI b) will generate some of this information. It would be useful to clarify whether it is expected that the monitoring called for by the condition would be conducted on an ongoing basis (and thus support both SI b and c). Finally, please note that the Condition is mislabelled as 2.4.2 (rather than 2.4.3) on p. 346.	Because no beaching event can be attributed to a single UoA, the risk to main habitats (in particular VMEs) has to be derived from a combination of UoA-specific information (particularly on FAD deployments), FAD trajectory modelling (see Escalle et al papers) and local data collection programmes which will inform on in situ beaching rates. All this contributes to the SG80 scoring under scoring issue c. The need to better understand UoA impacts is covered under scoring issue b and the corresponding condition, which calls for the implementation of a monitoring plan (which by definition should be ongoing and this will be assessed on an annual basis during surveillance audits, should this fishery become certified). Thank you for spotting the error in the condition table – this has been rectified.	Not accepted (no change)
UoAs 1, 3 & 5	PS - Free school sets	2.5.1	Yes	No (score increase expected)	NA	The text indicates on p. 220 a score of 100 but on p. 225 and p. 30 this is shown as 80. I agree that 100 is appropriate. (Also note that UoAs should be grouped as 1, 3, 5 and 2, 4, 6.)	Thank you, this has been rectified.	Accepted (score increased)
UoAs 2, 4 & 6	PS - FAD sets	2.5.1	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
All UoAs	PS	2.5.2	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)
All UoAs	PS	2.5.3	Yes	Yes	NA	Scoring agreed.	Thank you, no comment required.	NA (No response needed)

Principle 3

UoA stock	UoA gear	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
All UoAs	PS	3.1.1	Yes	Yes	NA	Scoring agreed. Note that it may be misleading to state that the WCPFC voting procedure was "invoked" in 2016. It was "threatened" (discussed), as it has been in the past, but not "invoked". I find it counterintuitive that resolution of disputes without resorting to a formal dispute mechanism--which should be a good thing--results in a lower score (this is a comment about the scoring criteria, not about how this fishery was scored).	Noted, the peer reviewer's comment has some merit. The text has been revised in the rationale to replace invoked with threatened.	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
All UoAs	PS	3.1.2	Yes	No (change to rationale expected, not to scoring)	NA	First comment. Scoring agreed. Concerning SI "a": Most of the rational for not achieving 100 (penultimate paragraph) relates to shortfalls in data provision. This is an important issue that should be highlighted. However, it doesn't seem to be due to a misunderstanding of roles and responsibilities, rather simply a non-compliance with data rules. If the former, a stronger argument about why this is related to roles and responsibilities should be made. If the latter, this issue should be accounted for in the score under another PI. In any case, 80 seems warranted as "all areas" (for SG100) is a high bar.	Noted. This rationale is in line with the Akroyd et al. 2020 rationale for SIa. Relevant information has been added to the rationale concerning roles and responsibilities of the vessel masters and CCMs.	Accepted (no score change, change to rationale)
All UoAs	PS	3.1.2	Yes	No (change to rationale expected, not to scoring)	NA	Second comment. Scoring agreed. Concerning SI "b": The rationale for not meeting SG100 ("information used by WCPFC management, other than scientific information, is not clearly reported and it is not clear how different sources of information are weighed") seems to apply equally to PNA (as explained in an earlier paragraph). Both processes would need to become more transparent in order to achieve a higher score. (Also Akroyd et al. (2020) is not in the references list)	The reference list has been corrected. PNA has been added to the text in the rationale to clarify that it is not clear how different sources of information are weighed within its consultation processes.	Accepted (no score change, change to rationale)
All UoAs	PS	3.1.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	First Comment. Scoring agreed. It is true that FSM, PNA and WCPFC are founded on management principles that require the application of a precautionary approach. Whether each management body actually implements that approach is probably a subjective call. The scoring seems to give the benefit of the doubt to FSM and PNA, but finds that WCPFC has not been precautionary across all policies for all stocks. This is probably a reflection of a shorter history or less documentation available for FSM and PNA. In practice I can't see a meaningful distinction between the precautionary nature of the WCPFC versus the other management bodies and think it would be more appropriate to give them the same score (90). This would not change the overall score.	The reason that the FSM and PNA management systems have been awarded higher scores than WCPFC is that FSM has applied a precautionary approach in its legislation, its policies and the TMP, and PNA has applied this approach through limiting the number of vessel licenses and implementing a TAE for the tuna fishery through the purse seine and longline VDS schemes. While WCPFC has not been able to establish HCRs for bigeye and yellowfin, thus a precautionary approach has not been applied across all stocks. Based on the above, FSM and PNA were awarded higher scores than WCPFC and an overall score of SG90 was awarded. The rationale has not been revised.	Not accepted (no change)
All UoAs	PS	3.1.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	Second comment. Where the term "partial" is used, please refer to Appendix 2.3.	Noted. Text has been added to the rationale.	Accepted (no score change, change to rationale)
All UoAs	PS	3.2.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	First Comment. Scoring agreed. However, I again (see first comment on UoA1-SKJ 3.1.3) find it strange that the objectives of the FSM and PNA systems are scored as being well-defined and measurable whereas the weaknesses in the WCPFC system--which is much broader in scope--are cited as a basis for lowering the score. It seems that where the systems cover the same issues (mainly target species which is the focus of all three management regimes) the scoring considers those objectives clear, and for many of the other issues which lack clear objectives it is only the WCPFC which has any specific articulated objectives at all and it is scored lower. In other words, it appears that having no specific regulations is clearer (and better, in terms of score) than having regulations which are not absolutely clear. This seems counterintuitive. Nevertheless, a score of 90 overall seems warranted.	Noted. Both FSM and PNA have well defined short and long-term fishery specific objectives that are outlined in the rationale and Background 6.8.3, Objectives. The FSM TMP and PNA Purse seine and Longline VDS schemes include explicit fishery specific objectives. WCPFC even though there are numerous CMMs, in most cases, the objectives of these CMMs are not well defined or measurable. In addition, although Commission reports indicate that explicit action is being undertaken through CMMs to support the achievement of objectives, this is yet to result in target reference points being formulated for all managed stocks. 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. Additional text has been added to the rationale to address the issues raised.	Accepted (no score change, change to rationale)
All UoAs	PS	3.2.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	Second comment. Where the term "partial" is used, please refer to Appendix 2.3.	Noted. The text has been revised in the rationale to address the issue raised.	Accepted (no score change, change to rationale)
All UoAs	PS	3.2.2	Yes	No (scoring implications unknown)	NA	In general a score of 80 for decision-making processing is fair. However, for SI "b" it is not clear in the scoring or guidance what constitutes "serious" and "important". The scoring text implies that such issues would be related to the target species, and if so, I think it is reasonable to conclude that serious and important issues are considered and responded to. For other issues, such as catch of non-target species (for example marlins and sharks), it would be difficult to make a case that the poor stock condition of these species--though well documented in Scientific Committee reports--has been responded to. Depending on the scope of SI "b" a score of less than 80 may be warranted which, given the current scores for SI "a", "c", "d" and "e", would bring the overall score below 80 and require a condition. This might be a bit extreme since it is not this fishery that has caused/is causing the bycatch problems, nevertheless the decision-making process does not seem to be considering non-target species issues.	Issue noted, however, WCPFC and CCMs have responded to serious and important issues concerning marlins and sharks. Stock assessments have been conducted for some shark species and blue and striped marlin. CMMs 2006-04 and 2010-01 for striped marlin, CMM for Sharks (CMM 2019-04), CMM for Sharks (CMM 2014-05), CMM for the Protection of Whale Sharks (CMM 2012-04), CMM for Oceanic Whitetip Sharks (2011-04) and CMM for Silky Sharks (CMM 2013-08) were implemented by WCPFC and adopted by CCMs to address the condition of these stocks. Therefore, the team has decided that the score of SG80 is justified.	Not accepted (no change)
All UoAs	PS	3.2.3	No (non-material score	Yes	Yes	The scoring is agreed, and the condition is appropriate, but the assessors seem to consider only target species IUU and compliance in their assessment. Some mention should be made of the level of compliance with bycatch reporting requirements, both in the scoring and in the	Noted. Text has been added to rationale to address issue raised concerning the lack of bycatch data due to low observer coverage during the COVID-19 pandemic.	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
			reduction expected)			condition. In the past, observer records have been used to estimate and report bycatch and this has been reasonable since observer coverage has been very high. However, under pandemic conditions observer coverage has fallen/will fall dramatically and thus logbook reporting of bycatch will become much more important. No information is presented on this topic but it is suspected that bycatch is severely under-reported in this fishery and given WCPFC bycatch reporting requirements this could constitute a significant component of IUU fishing. The condition is written generally and so could apply to both target and non-target catches, but some specific mention of non-target species requirements would strengthen it.		
All UoAs	PS	3.2.4	Yes	Yes	Yes	Scoring agreed.	No comment required.	NA (No response needed)

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 (as included in the Public Comment Draft Report - PCDR)
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	Scoring was mostly consistent with MSC standard and clearly based on evidence presented. There are potentially non-material changes in scoring in 2.3.1 SI(b) for turtles based on interpretation of the evidence, and also in 2.4.1 SI(a) - habitats outcome - and in 2.4.2 SI(d) - habitats management strategy. Potential increases in score should be considered for 3.2.3 SI(a) where a reduction in observer coverage in 2020 because of Covid-19 does not really reflect the ability of the management system to enforce management measures, strategies and rules. 3.2.3. SI(b) Before concluding that there is no evidence of sanctions being consistently applied, the team must first establish that infractions were in fact reported, but not sanctioned appropriately. More evidence is required. 3.2.3 SI(d) More evidence of systematic non-compliance is required. Indeed, the rationale in SI(c) argues to the contrary - that there is evidence that fishers comply with the management system apart from relatively minor infractions.	Thank you. We have seen that your concerns have been raised in relation to specific PIs and we have responded accordingly.
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	Conditions are realistic and can be achieved within the timeframes specified	Thank you – no comment required.
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	Yes	UoAs 2,4 and 6 (FAD-associated purse seine fishing) were considered to be enhanced fisheries, and the additional impacts were clearly evaluated in the Principle 2 components for ETP species (2.3), habitats (2.4) and ecosystems (2.5)	Thank you – no comment required.
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary)	N/a	The PRDR is comprehensive and done to a high professional standard. My comments are minor and reflect mainly on the interpretation of information - not on a lack of evidence (with one exception). The background information was more than adequate throughout the report. The scoring was consistent with the MSC standard and I agree with the outcome of the assessment. The assessment team is commended for a job well done.	Thank you!

Performance indicator comments

Principle 1

UoA stock	UoA gear	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
Skipjack/ UoA1 & 2	Purse Seine	1.1.1	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Yellowfin/ UoA3 & 4	Purse Seine	1.1.1	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Bigeye/ UoA5 & 6	Purse Seine	1.1.1	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
All UoAs	Purse Seine	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	Scoring agreed	No comment required	NA (No response needed)
Skipjack/ UoA1 & 2	Purse Seine	1.2.1	Yes	Yes	Yes	Scoring agreed	No comment required	NA (No response needed)
Yellowfin/ UoA3 & 4	Purse Seine	1.2.1	Yes	Yes	Yes	Scoring agreed	No comment required	NA (No response needed)

UoA stock	UoA gear	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
Bigeye/ UoA5 & 6	Purse Seine	1.2.1	Yes	No (change to rationale expected, not to scoring)	Yes	Top of page 127. Should the rationale not rather be - "SG100 not met because…." Instead of "Not scored as…" If it was not scored then use NA, not No	We have changed this to 'Not scored and therefore not considered met as 1.2.1a **does not meet SG 80.'**	Accepted (no score change, change to rationale)
Skipjack/ UoA1 & 2	Purse Seine	1.2.2	Yes	Yes	Yes	Scoring agreed	No comment required	NA (No response needed)
Yellowfin/ UoA3 & 4	Purse Seine	1.2.2	Yes	Yes	Yes	Scoring agreed	No comment required	NA (No response needed)
Bigeye/ UoA5 & 6	Purse Seine	1.2.2	Yes	Yes	Yes	Scoring agreed	No comment required	NA (No response needed)
Skipjack/ UoA1 & 2	Purse Seine	1.2.3	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Yellowfin/ UoA3 & 4	Purse Seine	1.2.3	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Bigeye/ UoA5 & 6	Purse Seine	1.2.3	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Skipjack/ UoA1 & 2	Purse Seine	1.2.4	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Yellowfin/ UoA3 & 4	Purse Seine	1.2.4	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)
Bigeye/ UoA5 & 6	Purse Seine	1.2.4	Yes	Yes	NA	Scoring agreed	No comment required	NA (No response needed)

Principle 2

UoA stock	UoA gear	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
All UoAs	Purse Seine	2.1.1	Yes	Yes	NA	Scoring agreed for main and minor primary species caught with unassociated and FAD-associated sets.	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.1.2	Yes	Yes	NA	Main primary species: Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.1.2	No (change to rationale expected, not to scoring)	Yes	NA	Minor primary species: Scoring agreed. No units provided for discard rates in Table 28. Would it be average numbers / set? Insert unit on Table 28.	We have added detail to the table caption.	Accepted (no score change, change to rationale)
All UoAs	Purse Seine	2.1.3	Yes	Yes	NA	Main and minor primary species: Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.2.1	Yes	Yes	NA	Main and minor secondary species stock status: Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.2.2	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.2.3	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.3.1	Yes	No (change to rationale expected, not to scoring)	NA	SI(b) For silky sharks (page 178, 3rd line) - improve rationale for SG100 not met. Suggestion: However, considering the declining stock status **and uncertainty in stock biomass and fishing mortality estimates**, a high degree of confidence is lacking. Similar addition suggested for Associated UoAs (7th line). - F/Fcrash? (page 178)	Silky shark: added, thank you F/Fcrash: we have changed the font so this is clearer, if this is what you were asking? Fcrash = the fishing mortality that drives the population to extinction	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						- Mobulidae (p179): Croll et al (2016) estimates that purse seines in WCPO catch an avg of 7817 mobulid rays per year, of which observers for UoAs 1-6 have observed an avg of only 35 per year. Is this a mismatch considering the relative scales of the UoAs and the WCPO Purse Seine fleet?	Mobulidae: we are not certain what the issue is. The Croll et al estimate is for the WCPO purse seine fleet as a whole. The UoA is a fraction of that fleet, so it is reasonable to assume that Mobulidae bycatch will be a fraction as well.	
All UoAs	Purse Seine	2.3.1	Yes	No (change to rationale expected, not to scoring)	NA	SI(b) Turtles (p186): average catches by the UoA is <1 turtle/year. There are population estimates available for nesting females. A strong argument can be made for scoring at SG100 - high degree of confidence of no significant direct detrimental effect of UoA on turtles	The references cited for the population estimates are all somewhat outdated, and in some cases UoA impacts were inferred from rookery trends (e.g. hawksbill). This means there can be no high degree of certainty.	Not accepted (no change)
All UoAs	Purse Seine	2.3.2	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.3.3	Yes	Yes	Yes	Scoring agreed. Condition for UoAs 2,4,6	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.4.1	No (scoring implications unknown)	No (scoring implications unknown)	Yes	SI(a) Strong argument could be made for meeting SG100 because observer information would constitute evidence of lost / or not purse seine nets - the only potential way of causing serious or irreversible harm to the commonly encountered habitat (i.e. water column). Gear impact on the water column is considered negligible by MSC interpretation. Are there pieces of torn net that drift in the water column and accumulate to become marine debris? Again observer information can provide this evidence.	In previous assessments we indeed scored this at 100; however, following MSC technical oversight and peer review comment we have had to revise our approach, on the basis that there is no clear evidence about the impact use of the purse seine gear may have on the water column, whether through gear loss or through other, unobserved, impacts.	Not accepted (no change)
UoAs 1,3,5	Purse Seine	2.4.2	Yes	Yes	NA	Scoring agreed. Note that condition 9 is not applicable to the free (unassociated) sets	Thank you – no comment required.	NA (No response needed)
UoAs 2,4,6	Purse Seine	2.4.2	Yes	No (non-material score reduction expected)	Yes	SI(d) Some concern remains around the dFAD tracking programme and UoA buoy deployment data - for example systematic modification of buoy transmissions to PNA when moving outside PNA EEZs. No markings of ownership on buoys, so they become difficult to identify and track - also by observers. The quantitative evidence on FADs has weaknesses - cannot be considered as being clear.	These weaknesses are all addressed under scoring issues b and c. Scoring issue d is about compliance with VME protection measures, including those imposed by other fisheries outside the scope of this assessment. As stated in the rationale, commercial purse seining is excluded from within 24nm of any landmass in the FSM EEZ. There are no VME protection measures in place for the High Seas. The fishery is not subject to any other protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries. Compliance with the FSM exclusion areas is verified on a continual basis by the authorities involved via VMS data, providing 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. SG60, SG80 and SG100 are met.	Not accepted (no change)
UoAs 1,3,5	Purse Seine	2.4.3	Yes	Yes	NA	Scoring agreed - with some reservations. Note that condition 10 is not applicable to unassociated UoAs. Comment: Hard to see how SG100 is not met in SI(b), especially with the rationale that "...there is no study demonstrating that purse seines do not affect the water column". Are there any studies, anywhere, that have actually found that purse seines do affect the water column?	We do not necessarily disagree with the peer reviewer here. This addition was the result of MSC technical oversight and peer review comments as mentioned previously. This is more a matter of procedural correctness than scientific common sense.	Not accepted (no change)
UoAs 2,4,6	Purse Seine	2.4.3	Yes	Yes	Yes	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.5.1	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.5.2	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	2.5.3	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)

Principle 3

UoA stock	UoA gear	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
All UoAs	Purse Seine	3.1.1	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)

UoA stock	UoA gear	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
All UoAs	Purse Seine	3.1.2	Yes	Yes	NA	Scoring agreed. Note - Include Akroyd et al. 2020 in the Reference list	The reference list has been corrected.	NA (No response needed)
All UoAs	Purse Seine	3.1.3	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)
All UoAs	Purse Seine	3.2.1	Yes	Yes	NA	Scoring agreed. Comment - WCPFC makes mainly strategic decisions with longer term objectives, leaving the details to national and sub-regional fishery-specific management systems to sort out. Within this context CMM objectives may not always be measurable over the short term.	Noted, thank you.	NA (No response needed)
All UoAs	Purse Seine	3.2.2	Yes	Yes	NA	Scoring agreed, on balance. In SI(e), the last 2 sentences starting with "The management system acts proactively to avoid legal disputes…" contradict each-other. There is always potential for legal challenges.	Noted. Agreed, the two sentences contradict each other. The text has been revised to address the issue.	Accepted (no score change, change to rationale)
All UoAs	Purse Seine	3.2.3	Yes	No (score increase expected)	Yes	SI(a) Reconsider scoring at SG80. Low observer coverage in 2020 due to Covid-19 was unavoidable, and not a reflection on the ability of the system to enforce relevant management measures, strategies and/or rules. Surveillance activities on the high seas are conducted by QUAD nations and other WCPO mechanisms. Why must it be by national patrol vessels - which may not have the range?	The rationale for the score of SG60 states there is only a reasonable expectation that the MCS systems are effective. However, the criteria for a higher score of SG80 requires that the MCS system has demonstrated an ability to enforce relevant management measures, strategies and/or rules. Due to the weak MCS for the high seas and the drop in observer coverage during the COVID pandemic, the team determined that there was only a reasonable expectation that the MCS systems were effective, therefore SG60 was awarded and not SG80 for the national, flag state jurisdiction. These are FSM flagged vessels so the responsibility for ensuring the integrity of the MCS on the high seas falls under FSM (which may be achieved through observer coverage, regional MCS tools etc). The scoring was not changed.	Not accepted (no change)
All UoAs	Purse Seine	3.2.3	Yes	No (score increase expected)	Yes	SI(b) Before concluding that there is no evidence of sanctions being consistently applied, the team must first establish that infractions were in fact reported, but not sanctioned appropriately. Examples are required - expand on Table 35.	As evidence concerning national infractions committed and penalties awarded to purse seiners was lacking the team determined that only a score of SG60 was appropriate. We have added some detail to the rationale.	Accepted (no score change, change to rationale)
All UoAs	Purse Seine	3.2.3	Yes	No (score increase expected)	Yes	SI(d) Based on the rationale provided in SI(c), there is no evidence of systematic non-compliance occurring at national level. The MRAG reported no IUU fishing in the PNA.	Without information concerning infractions and sanctions the team could not determine with any certainty whether systematic non-compliance was occurring or not. Therefore only SG60 was awarded. (also see this interpretation: https://mscportal.force.com/interpret/s/article/3-2-3-Scoring-Issue-d-Systematic-non-compliance-SA4-9-1527262005731)	Not accepted (no change)
All UoAs	Purse Seine	3.2.4	Yes	Yes	NA	Scoring agreed	Thank you – no comment required.	NA (No response needed)

Appendix 3.3 Peer reviewer 3

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 (as included in the Public Comment Draft Report - PCDR)
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	This is a really well presented report, with all of the necessary evidence clearly and succinctly set out in the narrative text and scoring rationales. Nearly all of the scoring is appropriate. There are a number of issues flagged up in the PI-specific comments, most of a minor nature. Being nit-picky, the team has not consistently followed the sequential ("first 60, then 80, then 100") scoring approach dictated by FCP v2.1 7.17.7, but this has not materially impacted scoring.	Thank you very much. Please see our responses to your individual PI comments.
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	The conditions all follow the narrative and metric form of the corresponding SIs (some better than others, but all adequately); and the proposed milestones all seem to be appropriate.	Thank you.
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	NA	This is not an enhanced fishery.	It is (FAD sets are) but no comment required.
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary)	N/a	The team has presented an excellent report, and it is clear that the CAB has a good quality control process in place: sections and page numbering are all consistent. There are a few broken cross-references in the report (references to "Section 0"), but these will be readily rectified. It would be nice to include a decent map showing the boundary of the UoA, though the map of fishing effort (Figure 1) is good to see. The only significant shortcoming in the report seems to be the rather incomplete traceability section, where it is clear that the CAB has submitted a VR concerning traceability to the UoC level and states that "The outcome of this will be incorporated at a later stage." It will be important to ensure that this issue is addressed appropriately.	Thank you, we will check the broken cross-references. We agree that the map of the UoA boundary is a nice-to-have and not crucial to the assessment itself – i.e. it is clear that the UoA covers the FSM EEZ and WCPO high seas. We did try to get UoA-specific VMS data but reduced staff availability at NORMA meant this would significantly delay the assessment so we did not explore it further. Indeed, the VR processing had been delayed because of unforeseen circumstances at MSC. The VR has now been approved, which means that traceability is only required to fishery level, not to UoC level. The traceability section has been updated accordingly.

Performance indicator comments

Principle 1

UoA stock	UoA gear	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
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.1.1	Yes	No (non-material score reduction expected)	NA	A score of 100 is awarded. If this MSC assessment was being carried out in 2019, the score of 100 would seem to be appropriate, based on the stock assessment that was available at that time. It is clear from section 6.4.1 of the report that skipjack are a short-lived, fast growing species, and that the stock biomass has declined from around 0.7 SBF=0 in 2000 to the current level of 0.44 SBF=0. The predictions from the 2019 stock assessment are based on fishing mortality remaining at the level seen in 2016-18 (Figure 5 of the report). The data presented in Table 10 and 11 of the report show that total reported catches from unassociated and associated sets for this species averaged 15,853t per year over this period. The catch in 2019 was 20,833t. This is an increase of 31%. If this increase was mirrored throughout the range of the stock, then the assumptions upon which the predictions from the 2019 stock assessment were made are no longer valid. Information on total fishery removals from this stock is not, however, reported. Further to this it is noted that in section 6.4.4 of the report the team note that there are	This is a good point. We checked for more recent information. SPC conducted short term stochastic projections for skipjack in August 2020 using actual data for 2019 and assuming the same for 2020. These conclude that the risk of SB<SBmsy is ~0%. Hence the conclusion of the scoring appears to be robust. We have added this information to the rationale.	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						concerns about the standardised CPUE data that are used in the stock assessment. Given that the report presents at least some evidence that the assumptions on which the 2019 stock predictions were made are not satisfied, and also highlights concerns about the CPUE data, it is therefore questionable whether there can still be a "high degree of certainty" that the stock is still above Bmsy. Further justification would seem appropriate. This observation would apply in equal measure to the fisheries against which this one has been harmonised; the fact that they pre-date this assessment and hark form a time when 2019 stock assessment was more relevant has to be taken into account for all of these fisheries.		
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	It is not appropriate to score this PI when PI1.1.1 scores more than 80.	No comment required.	NA (No response needed)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.1	Yes	Yes	NA	SIa - the scoring is appropriate, and for this SI the team have correctly assessed the Harvest Strategy against the MSC's requirements set out in PI1.1.1 to determine whether its design meets MSC requirements.	No comment required.	NA (No response needed)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.1	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIb - the scoring is inappropriate. It is clear that the harvest strategy is not achieving <u>its</u> objectives, which is the issue tested here (the wording of SIb is clearly and expressly different to SIa in this regard: SIa makes specific reference to PI1.1.1 (and hence is couched in terms relating to PRI and MSY); SIb specifically refers to "*The harvest strategy...is achieving its objectives*"). The objectives of the harvest strategy for this stock are stated in section 6.3.4 of the report: *"The spawning biomass of skipjack tuna is to be maintained on average at a 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."* The rationale, inappropriately, argues that "*The objective of the harvest strategy, as agreed by WCPFC, is to maintain the biomass at 50%SBF=0 (the interim TRP). This is under review but remains the stated objective in CMM 2020-01 which rolled over the provisions of 2018-01 without change, although SPC has stopped using it as a reference point for evaluating stock status, presumably because the review data stipulated in CMM 2015-06 have passed. In any case, as noted above, this is not the objective used for MSC scoring. To be consistent with 1.1.1b and 1.2.1a, we evaluate the objective of the harvest strategy in terms of MSY reference points – which is also a stated objective, according to SPC (2017).*" And for PI1.2.2 SIc the report states:- "*The tools in place for management of WCPO skipjack are i) at regional level, CMM 2020-01 (and previous iterations), the provisions of which are described in Section 6.3.4; and ii) at sub-regional level the PNA VDS, of which FSM is a part (Section 0).*" There are several issues of concern here:- 1. The report is internally inconsistent: CM2020-01 is either in place or it is not. The "Harvest Strategy" according to the MSC vocabulary comprises "*The combination of monitoring, stock assessment, harvest control rules and management actions...*". This being the case, if CMM2020-01 is not relevant, as asserted here, then it cannot be "in place" for PI1.2.2 SIc, and there is no basis for scoring that SI at >60. However if it is "in place", then it cannot be disregarded here.	We believe there is a misunderstanding, perhaps because of a poor turn of phrase on our part. We were not intending to state that 2020-01 is not in place or does not apply; 2020-01 is in place and provides the "tools" element of the harvest strategy, as clearly explained in SIa. The only element that is under review is the TRP. The situation as regards this TRP is a bit ambiguous at present; according to 2015-06 it is an interim target and is overdue for review. Some stakeholders (PNA) consider that it no longer applies, and SPC are not using it as a target for stock assessment; but as the reviewer says it remains the stated target for 2020-01 because the review has not been conducted and 2020-01 was created by rolling over 2018-01 without change. Presumably, this is a consequence of the covid pandemic and will be sorted out when possible. So, in scoring SIb it is not a question of 'disregarding' 2020-01, but rather of trying to convey the nuance of the situation. We have tried to explain this a little better in the revised rationale. If we have understood the reviewer's comments correctly, we think the core of the issue here is how to define the objective of the harvest strategy as per the SGs in Sib. This issue has come up several times in this peer review forum and we do not disagree with the reviewer that there is a discussion to be had here. However (since the PR raises the issue of internal consistency), MSC does seem to state clearly in the SGs for SIa that the objective needs to be consistent with PI1.1.1 SG80 – in other words Bmsy or some suitable proxy. Therefore, logic suggests that the intent for SIb is the same objective as is defined in SIa. The reviewer is arguing that while SIa is scored relate to MSC's objective (Bmsy), SIb is scored against the stated management objective, even if that is different. In this case, the reviewer's approach would be precautionary because the TRP is well above Bmsy, but it is easy to imagine a situation where a management agency set a much lower target, and would as a result get a higher score here. In fact, this is the logic that a few years ago led MSC to redefine the benchmark used in PI1.1.1b from the agreed management target to Bmsy; and we do not see why it would not apply here as well. Regarding issue of concern #2 specifically, we cannot really tell what the reviewer is referring to in the rationale for SIb regarding 'unsupported and unjustified presumption about activity at the WCPFC level which pre-dates CMM 2020-01'. The reviewer will have another opportunity to explain more	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						2. The team has argued that the harvest strategy that is clearly stated in WCPFC CMM2020-01 does not apply because of an unsupported and unjustified presumption about activity at the WCPFC level which pre-dates CMM 2020-01; and also because of assertions about the reference points used by the SPC to evaluated stock status (the role of which in the harvest strategy are not explained). 3. The rationale also seeks to argue away the need to test the performance of the harvest strategy against its objectives, which as already noted is the whole point of this SI. It is, in effect, seeking to re-interpret the SI. This is not appropriate. It is clear from Figures 4 & 5 in the report and the evidence presented for PI1.1.1 that the SB for this stock is presently below this TRP set in the harvest strategy (according to Table 20 of the report the 2018 estimate was that SBrecent/SBF=0 was 0.440). The scoring rationale justifies the SG80 score on the basis that SB is above SBmsy and F is below FMSY. Both facts are correct, but are not relevant here. The rationale simply needs to consider whether the harvest strategy is achieving its objective (i.e. SB > TRP). It is not, so SG80 is not met.	specifically what the problem is, if s/he still considers the revised rationale inadequate.	
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.1			Yes	The condition follows the narrative and metric form of the corresponding SI, and is harmonised with overlapping fisheries. The milestones are considered to be appropriate.	No comment required.	NA (No response needed)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.2	Yes	Yes	NA	The scoring here is appropriate - however as noted above, if the rationale for PI1.2.1 SIb is consistently applied, then the argument that SG60 is met becomes invalid. Further to this it is important to note that CMM2014-06 does not mention either target or limit reference points; it simply sets out a (now considerably delayed) programme for agreeing and adopting HCRs. The LRP and TRP are to be found in CMM2020-01 and its precedents.	No comment required.	NA (No response needed)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.2			Yes	The condition follows the narrative and metric form of the corresponding SI, and is harmonised with overlapping fisheries. The milestones are considered to be appropriate.	No comment required.	NA (No response needed)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	SIa: the scoring is back-to-front. The correct procedure (as per FCPv2.1 7.17.7) is to score SG60 first, then 80 and 100. The rationale presented here starts at SG100.	True. But we think it is nevertheless fairly clear, so we have not revised the rationale.	Not accepted (no change)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	SIa: No explanation is presented on the information that is available that "*...may not be directly related to the current harvest strategy...*" which is required at SG100. All of the information presented is set in terms that are directly related to the harvest strategy. Unless such information is available, a score of 80 would seem more appropriate.	The rationale states: 'There is also, however, data that may not be used regularly in a formal way, such as information on the spatial distribution and variability of productivity, ENSO status etc.' The rationale and scoring were not changed.	Not accepted (no change)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.3	No (scoring implications unknown)	No (scoring implications unknown)	NA	SIa: The rationale here is rather at odds with the scoring of the same SI for yellowfin. In that instance concerns are raised about the adequacy of fishery-independent information (particularly with regard to Indonesia) and reliance on fishery-dependent data. It would seem appropriate to adopt the more systematic approach to scoring yellowfin for this SI and to ensure consistency between the two UoAs.	The reviewer is correct and PR1 also made the same point. Because harmonisation is required across assessments for a single stock but not between stocks, we have been stuck in a situation where the rationales for the same SI for different stocks in the same assessment are inconsistent with each other. We believe that the correct score is 100 for both stocks, but since another CAB with a yellowfin fishery does not wish to increase the scoring (or possibly engage with harmonisation) we cannot change the yellowfin score to be consistent with this one.	Not accepted (no change)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.3	Yes	Yes	NA	SIb: the rationale is well articulated, highlighting both the strengths and weaknesses in the information available and the scoring is appropriate.	Thank you, no comment required.	NA (No response needed)

UoA stock	UoA gear	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
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIc: The most significant omission here is any consideration of IUU fishing on this stock (note here that whilst SIa and SIb are set in the context of the UoA, SIc is set in the context of the entire stock). Organisations such as the Pew Trust consider that this is a particular issue in the Western Pacific (https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/09/report-finds-transshipments-in-western-and-central-pacific-likely-underreported). The WCPFC itself in CMM 2019-07 states that it is "*Concerned that IUU fishing activities in the Convention Area undermine the effectiveness of the conservation measures adopted by the WCPFC.*" Given this information and the absence of alternative information, it seems very hard to conclude that the SG80 requirements of this SI are met.	Interesting report. If we understood right, the concerns relate to transshipment at sea by longline vessels. As the report notes, transshipping at sea is not permitted for purse seiners and therefore not really relevant for skipjack. The report shows that the Panamian-registered carrier vessel fleet operating with the purse seine fleet was transhipping in ports across the Pacific, as per the rules (see Figure 3 of the Pew report). We cannot evaluate monitoring of transhipment across every port in the Pacific, but experience suggests that the PNA system at least is fairly rigorous. The rationale has been expanded to cover this issue.	Accepted (no score change, change to rationale)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.4	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	Further to comments on PI1.1.1 above: the stock assessment used in this report is now several years old. The age of the stock assessment and some of the intrinsic uncertainties in the input data (see PI1.2.3 SIc) should be reflected in the scoring of this PI. In particular the scoring at SG100 for SIa, SIc and SId should be considered in the light of the age of the stock assessment and the known shortcomings in some of the input data.	We have reviewed the wording of SG100 and do not see any justification for reducing the scores based on the fact that the stock assessment dates from 2019. Data issues should be scored under PI 1.2.3. More generally, we believe it is generally acknowledged that the stock assessments conducted by SPC are state-of-the-art.	Not accepted (no change)
UoA 1/2: WCP Skipjack	Unassociated and Associated Purse seine sets.	1.2.4	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	The scoring does not follow the correct procedure (as per FCPv2.1 7.17.7) for SIa, SIb or SIc (this is a generic issue affecting scoring for many SIs, not just this one).	The reviewer is right, but these rationales are short and we think they are nevertheless fairly clear.	Not accepted (no change)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.1.1	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required.	NA (No response needed)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	It is not appropriate to score this PI when PI1.1.1 scores more than 80.	No comment required.	NA (No response needed)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.2.1	Yes	Yes	NA	The scoring is appropriate. It is interesting to contrast the scoring rationale here, which relies on CMM2020-01 with that for PI1.2.1 SIb for skipjack, which attempts to disregard the same CMM and to score SIb relative to MSY rather than the target set out in CMM2020-01. In this instance, the team has chosen (correctly) to evaluate the harvest strategy against its own objectives.	No comment required. Not so – we have evaluated the harvest strategy against Bmsy and Fmsy, not against the stated objective of the harvest strategy which is average SB for 2012-15. The rationale is entirely consistent with SIb for skipjack.	NA (No response needed)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.2.1			Yes	The condition follows the narrative and metric form of the corresponding SI, and is harmonised with overlapping fisheries. The milestones are considered to be appropriate.	No comment required.	NA (No response needed)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.2.2	Yes	Yes	NA	The scoring is appropriate, and the decision to raise a condition of certification supported by an well-reasoned rationale.	No comment required.	NA (No response needed)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.2.2			Yes	The condition follows the narrative and metric form of the corresponding SI, and is harmonised with overlapping fisheries. The milestones are considered to be appropriate.	No comment required.	NA (No response needed)
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIc: The most significant omission here is any consideration of IUU fishing on this stock (note here that whilst SIa and SIb are set in the context of the UoA, SIc is set in the context of the entire stock). Organisations such as the Pew Trust consider that this is a particular issue in the Western	The Pew report and its concerns about reporting of transshipments has been incorporated into the rationale, as well as the activities of WCPFC around this issue. The team reached out to Peter Williams at WCPFC to try and evaluate the extent to which transshipment reporting was likely to compromise estimates of total removals from the stock. He noted that these data are not	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						Pacific (https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/09/report-finds-transshipments-in-western-and-central-pacific-likely-underreported). The WCPFC itself in CMM 2019-07 states that it is "*Concerned that IUU fishing activities in the Convention Area undermine the effectiveness of the conservation measures adopted by the WCPFC.*" Given this information and the absence of alternative information, it seems very hard to conclude that the SG80 requirements of this SI are met.	a major part of estimates of removals, even when transshipments are independently monitored by observers, because it is difficult for observers to estimate quantities with any confidence. Instead, WCPFC and SPC use data from logbooks and CCM reporting, with VMS data providing an independent cross-check of logbook data. So on that basis we did not feel that the Pew report justified a change in scoring, although it is important to have evaluated this issue.	
UoA 3/4: WCP Yellowfin	Unassociated and Associated Purse seine sets.	1.2.4	Yes	Yes	NA	The scoring is appropriate, supported by adequate evidence, and well articulated.	Thank you, no comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.1.1	Yes	Yes	NA	The scoring is appropriate, supported by adequate evidence, and well articulated.	Thank you, no comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.1.2	NA (PI not scored)	NA (PI not scored)	NA	It is not appropriate to score this PI when PI1.1.1 scores more than 80.	No comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.1	Yes	Yes	NA	The scoring is appropriate. The rationale for SIa (and also for PI1.2.2 SIa) explains that there are no HCRs in place. The objective of the HS is, essentially, to maintain the status quo biomass and to develop an HCR if the stock declines below Bmsy. Given these rather vague objectives, scoring of SIb is appropriate, but I had to look at this long and hard before deciding that the team's conclusion was indeed correct. A condition of certification is indeed needed here.	Thank you, no comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.1			Yes	The condition follows the narrative and metric form of the corresponding SI, and is harmonised with overlapping fisheries. The milestones are considered to be appropriate.	No comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.2	Yes	Yes	NA	The scoring is appropriate, supported by adequate evidence, and well articulated. The team was quite right to raise a condition of certification.	No comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.2			Yes	The condition follows the narrative and metric form of the corresponding SI, and is harmonised with overlapping fisheries. The milestones are considered to be appropriate.	No comment required.	NA (No response needed)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.3	No (non-material score reduction expected)	No (non-material score reduction expected)	NA	SIa: on the basis of the information presented, which is very similar in terms of its range and source (both fishery dependent / independent and also in terms of Flag States), and the rationale presented by the team, the score awarded here really should be the same as for yellowfin. The same strengths and weaknesses are detailed. As noted for this SI in the skipjack UoA, the SG100 scoring requirements specify that some information that "...*may not be directly related to the current harvest strategy, is available.*" It would, therefore, seem more appropriate to award a score of 80 rather than 100 for this SI both to ensure consistency throughout the assessment report and in recognition of the nature of the evidence presented in the report.	Please see response to this same comment for skipjack. We actually consider that 100 is the correct score but we have been unable to revise the yellowfin scoring to be consistent.	Not accepted (no change)
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.3	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIc: The most significant omission here is any consideration of IUU fishing on this stock (note here that whilst SIa and SIb are set in the context of the UoA, SIc is set in the context of the entire stock). Organisations such as the Pew Trust consider that this is a particular issue in the Western Pacific (https://www.pewtrusts.org/en/research-and-analysis/issue-	The Pew report and its concerns about reporting of transshipments has been incorporated into the rationale, as well as the activities of WCPFC around this issue. The team reached out to Peter Williams at WCPFC to try and evaluate the extent to which transshipment reporting was likely to compromise estimates of total removals from the stock. He noted that these data are not a major part of estimates of removals, even when transshipments are	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						briefs/2019/09/report-finds-transshipments-in-western-and-central-pacific-likely-underreported). The WCPFC itself in CMM 2019-07 states that it is "*Concerned that IUU fishing activities in the Convention Area undermine the effectiveness of the conservation measures adopted by the WCPFC.*" The team mention that in 2017 a workshop considered the sensitivity of the stock assessment to IUU catches. Whilst interesting, this is not relevant to this SI, which simply asks if there is good information on fishery removals (and not the sensitivity of the stock assessment). It seems pretty clear that there are concerns about IUU fishing, and also about the understanding of fishery removals from Indonesia, the Philippines and Vietnam - with improvements only reported for Indonesia and not for either Vietnam or the Philippines. Given this information and the absence of alternative information, it seems very hard to conclude that the SG80 requirements of this SI are met.	independently monitored by observers, because it is difficult for observers to estimate quantities with any confidence. Instead, WCPFC and SPC use data from logbooks and CCM reporting, with VMS data providing an independent cross-check of logbook data. So on that basis we did not feel that the Pew report justified a change in scoring, although it is important to have evaluated this issue.	
UoA5/6: WCP Bigeye	Unassociated and Associated Purse seine sets.	1.2.4	Yes	Yes	NA	The scoring is appropriate, supported by adequate evidence, and well articulated.	Thank you, no comment required.	NA (No response needed)

Principle 2

UoA stock	UoA gear	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
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.1.1	Yes	Yes	NA	The scoring is appropriate for all of the UoAs. It would be helpful to clarify at the end of the PI that the overall score applies to all UoAs (this to ensure consistency with later PIs where there are differences in scoring between UoAs). In fact, this applies to pretty much all of the P2 PIs.	Thank you. We have tweaked how the scores are presented in all P2 scoring tables to make this more consistent.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.1.2	Yes	Yes	NA	The scoring is appropriate, thorough, and well-reasoned. The approach to scoring SIe is particularly good.	Thank you, no comment required	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.1.3	Yes	Yes	NA	The scoring is appropriate, thorough, and well-reasoned. The caveat about observer coverage during the Covid-19 pandemic is wise. Overall scoring for the PI is presented by element, rather than by UoA. It would seem more appropriate to relate the overall score to UoAs instead.	The information base is the same for both set types, so the rationale applies to all UoAs.	Not accepted (no change)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.2.1	Yes	Yes	NA	The scoring is appropriate. It might be helpful to refer to the MSC Interpretation that justifies the use of the "all or nothing" approach to clarify that this is an MSC-approved procedure that can be applied in these circumstances to SIb.	This has been added.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.2.2	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.2.3	Yes	Yes	NA	The scoring is appropriate, thorough, and well-reasoned. The caveat about observer coverage during the Covid-19 pandemic is again wise.	Thank you, no comment required	NA (No response needed)
WCP Skipjack /	Unassociated sets (UoA 1, 3, 5)	2.3.1	Yes	Yes	NA	This report seems to be the first and only MSC tuna assessment for the western Pacific that considers each ETP species correctly as an element rather than lumping them together taxonomic groups.	Thank you. We have amended our approach following peer review comments on this issue. We agree the requirements for use of the default tree are met.	NA (No response needed)

UoA stock	UoA gear	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
Yellowfin / Bigeye						There is an argument that the RBF could have been used for some of these species. Having said this, the team has been very clear in terms of the information available for each species and has scored on a precautionary basis. The basis for decision making is therefore clear and well articulated.		
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.3.2	Yes	Yes	NA	The scoring is appropriate. The team has given particularly good consideration to issues that other assessments have neglected to consider. These include a thorough consideration of shark finning and also the work of WCPFC to investigate different FAD designs and construction materials. Again, the approach is clear, supported by evidence and highly commendable.	Thank you very much.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.3.3	Yes	Yes	NA	Once again, a very thorough and clear rationale which supports and justifies the scores awarded.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.4.1	Yes	Yes	NA	SIa: The scoring is appropriate and precautionary.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.4.1	Yes	Yes	NA	SIb: The scoring is appropriate and precautionary.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.4.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	SIc: The scoring is appropriate (i.e. SG100 not met). Given that there is not 100% certainty that purse seines never encounter the seabed, it would seem appropriate for benthic (non-VME) habitats to have been mentioned for all UoAs - but only as a matter of thoroughness, it would not affect scoring at all.	We agree, we have changed the scoring to SG100 not met.	Accepted (non-material score reduction)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.4.2	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.4.3	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.5.1	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.5.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIb: the relationship between the rationale and the score awarded is not clear. The Figure presented to support the rationale relates only to fishing for bigeye tuna and fishing with FADs. Its relevance to the other UoAs and particularly the unassociated sets is not clear. Given the contrast between the quality of information presented here compared to the rest of the P2 PIs, it seems that there is a paucity of information to provide the necessary confidence that the management strategy will work. Further information is needed to justify the SG80 scoring here.	The rationale has been redrafted, hopefully this is now satisfactory. The scoring has not changed.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Unassociated sets (UoA 1, 3, 5)	2.5.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	For this PI more than any other in P2 the need to score sequentially (SG60 first, than 80, then 100) should be applied (as per FCPv2.1 7.17.7), since it is not at all clear in some instances why SG100 is met (for SIc, d, e). There is also a need here to differentiate between the unassociated and associated set UoAs more carefully here (for instance in SIb,c, d & e) where it is clear form the rationale that there are differences in the nature of the impacts and quality of the information available.	We have made this clearer in the rationale and split the rationale by set type.	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.1.1	Yes	Yes	NA	The scoring is appropriate for all of the UoAs. It would be helpful to clarify at the end of the PI that the overall score applies to all UoAs (this to ensure consistency with later PIs where there are differences in scoring between UoAs). In fact, this applies to pretty much all of the P2 PIs.	Thank you. We have tweaked how the scores are presented in all P2 scoring tables to make this more consistent.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.1.2	Yes	Yes	NA	The scoring is appropriate, thorough, and well-reasoned. The approach to scoring SIe is particularly good.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.1.3	Yes	Yes	NA	The scoring is appropriate, thorough, and well-reasoned. The caveat about observer coverage during the Covid-19 pandemic is wise. Overall scoring for the PI is presented by element, rather than by UoA. It would seem more appropriate to relate the overall score to UoAs instead.	The information base is the same for both set types, so the rationale applies to all UoAs.	Not accepted (no change)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.2.1	Yes	Yes	NA	The scoring is appropriate. It might be helpful to refer to the MSC Interpretation that justifies the use of the "all or nothing" approach to clarify that this is an MSC-approved procedure that can be applied in these circumstances to SIb.	This has been added.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.2.2	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.2.3	Yes	Yes	NA	The scoring is appropriate, thorough, and well-reasoned. The caveat about observer coverage during the Covid-19 pandemic is again wise.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.3.1	Yes	Yes	NA	This report seems to be the first and only MSC tuna assessment for the western Pacific that considers each ETP species correctly as an element rather than lumping them together taxonomic groups (except in the case of seabirds, but this is forgivable given the very low encounter rate). There is an argument that the RBF could have been used for some of these species. Having said this, the team has been very clear in terms of the information available for each species and has scored on a precautionary basis. The basis for decision making is therefore clear and well articulated.	Thank you. We have amended our approach following peer review comments on this issue. We agree the requirements for use of the default tree are met.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.3.2	Yes	Yes	NA	The scoring is appropriate. The team has given particularly good consideration to issues that other assessments have neglected to consider. These include a thorough consideration of shark finning and also the work of WCPFC to investigate different FAD designs and construction materials. Again, the approach is clear, supported by evidence and highly commendable.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.3.3	Yes	Yes	NA	Once again, a very thorough and clear rationale which supports and justifies the scores awarded.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.3.3			Yes	The condition adequately follows the narrative and metric form of the corresponding SI. The milestones are considered to be appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.1	Yes	Yes	NA	SIa: The scoring is appropriate and precautionary.	Thank you, no comment required.	NA (No response needed)

UoA stock	UoA gear	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
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.1	Yes	Yes	NA	SIb: Again, the scoring is precautionary. It might have been appropriate to have used the RBF to score this SI, although it is arguable that the requirements of Table 3 of FCPv2.1 are met by the evidence presented in the report.	Thank you. We agree the requirements for use of the default tree are met.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.1			Yes	The condition adequately follows the narrative and metric form of the corresponding SI. The milestones are considered to be appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	SIc: The scoring is appropriate (i.e. SG100 not met). Given that there is not 100% certainty that purse seines never encounter the seabed, it would seem appropriate for benthic (non-VME) habitats to have been mentioned for all UoAs - but only as a matter of thoroughness, it would not affect scoring at all.	We have amended the rationale; the scoring has not changed.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.2	Yes	Yes	NA	The scoring is appropriate. It is noted that in SIa the team consider the relevance of move-on rules to scoring at SG80. The requirements of SA3.14.2.3 at SG60 which make a move-on rule mandatory are not mentioned. It would be appropriate to mention this and also the corresponding MSC Derogation (https://mscportal.force.com/interpret/s/article/Move-On-Rules-derogation-November-2020) which applies here and renders this requirement unnecessary.	Has been added, thank you.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.2			Yes	The condition adequately follows the narrative and metric form of the corresponding SI. The milestones are considered to be appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.3	Yes	Yes	NA	The scoring is appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.4.3			Yes	The condition adequately follows the narrative and metric form of the corresponding SI. The milestones are considered to be appropriate.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.5.1	Yes	Yes	NA	The scoring is appropriate. The team has, in particular, given a very thorough review of the impact of FADs as ecological traps in the scoring rationale which supports the score awarded with evidence from the fishery.	Thank you, no comment required.	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.5.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIb: the relationship between the rationale and the score awarded is not clear. The Figure presented to support the rationale relates only to fishing for bigeye tuna. Its relevance to the other UoAs is not clear. Even for this species, the graph is potentially misleading. There was indeed an increase in FAD sets in the mid-1990s, and a decline since the peak in 2003-04 (which preceded the introduction of CMM2008-01). Given that the reduction in FAD use preceded the introduction of the partial strategy, something else must have been going on - perhaps the transition from deploying lots of "dumb" FADs to the use of "smart" FADs with GPS buoys, which meant that fewer FADs needed to be deployed? I am guessing. Further explanation is needed. Given the contrast between the quality of information presented here compared to the rest of the P2 PIs, it seems that there is a paucity of information to provide the necessary confidence that the management strategy with respect to FADs will work. Further information is needed to justify the SG80 scoring here.	We removed the reference to the figure as this was really about regional trends in purse seine effort while the scoring of this PI should be about the UoA. Hopefully the rationale is clearer now.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	Associated sets (UoA 2, 4, 6)	2.5.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	For this PI more than any other in P2 the need to score sequentially (SG60 first, than 80, then 100) should be applied (as per FCPv2.1 7.17.7), since it is not at all clear in some instances why SG100 is met (for SIc, d, e). There is also a need here to differentiate between the unassociated and associated set UoAs more carefully here (for instance in SIb,c, d & e) where it is clear form the rationale	We have made this clearer in the rationale and split the rationale by set type.	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						that there are differences in the nature of the impacts and quality of the information available.		

Principle 3

UoA stock	UoA gear	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
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.1.1	Yes	Yes	NA	The scoring is appropriate and well justified.	Thank you, no comment required	NA (No response needed)
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.1.2	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	The need to score sequentially (SG60 first, than 80, then 100) should be applied (as per FCPv2.1 7.17.7). Whilst the scoring seems to be appropriate, it would be very helpful to do this (for instance in SIc, what is it that is done which provides "*encouragement*" and "*facilitates...effective engagement*" which warrants a score of 100 rather than 80?).	The text has been revised to score sequentially. The rationale for SIc states that at a regional level WCPFC provides encouragement and facilitates effective engagement through the provision of financial and logistic support to CCMs and stakeholders to attend meetings. NORMA and PNA provide opportunities for stakeholders to be involved in consultation processes at meetings and workshops. Based on this evidence the team did award the score of SG100 for SIc.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.1.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	Again, the score awarded seems appropriate, but the concatenation of rationales for each SG makes it rather difficult to distinguish how each SG is met. Rewording would be helpful.	The text has been revised in the rationale to clarify how each SG is met.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.2.1	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	Again, the score awarded seems appropriate, but the scoring approach needs to follow that set out in FCP v2.1 at 7.17.7. This is particularly evident for the evaluation of NORMA which skips the SG60 and SG80 requirements by jumping straight to SG100. Rewording would be helpful here.	The text has been revised in the rationale to address the issue raised.	Accepted (no score change, change to rationale)
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.2.2	No (material score reduction expected to <80)	No (material score reduction expected to <80)	NA	SIb: evidence is presented in the report which shows that the WCPFC has manifestly failed to deliver an appropriate harvest strategy for tropical tuna species (see Table 16 of the report which summarises events since 2013). Whilst it can be accepted that "*serious issues*" have been addressed (meeting SG60), the lack of progress with the development of harvest strategies and the repeated rolling over of the deadline for addressing this would indicate that "*other important issues*" (i.e. the need for a harvest strategy) are not being addressed in a "*timely*" manner. In this context it is very hard to see how SG80 is met.	The score of SG80 for Sib is in line with the rationales and scores given by other CABs for tuna fisheries within the WCPO. A Harvest Strategy Workplan was developed in 2015 in accordance with CMM 2014-06. The workplan set out an ambitious schedule of technical work and Commission decision-making for the development of harvest strategies for the four key tuna stocks. Delays have occurred due to the complexity of developing the harvest strategies for multiple species as well as the capacity of the CCMs to understand and participate fully in the process. For this reason, it was cautioned that the harvest strategies would not be developed in specific years. This PI was previously subject to a harmonised condition across all certified fisheries targeting South Pacific Albacore because it was considered that WCPFC had not responded to the serious issue of declining CPUE. Following a harmonisation process, this condition was closed after WCPFC set a TRP for SP albacore and catch rates increased. On the other hand, stock assessments for target species including bigeye, yellowfin and skipjack indicate that the stocks are in good biological condition. Therefore, the lack of HCRs does not meet the criterion of a "serious issue". Based on the above, the team has determined that the score of SG80 is justified.	Not accepted (no change)
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.2.3	No (change to rationale expected, not to scoring)	No (change to rationale expected, not to scoring)	NA	The rationale presents a great deal of detail, but because of this has become rather contradictory. This is not an issue particular to a single SI, but between all of them and has led to a particular inconsistency with regard to IUU fishing activity. SIa: the rationale states that: *"A problem among many tuna fisheries management systems is monitoring transhipment to prevent illegal catch entering the legal market. To address this issue, transhipment at sea is prohibited (CMM 2009-06) and there is monitoring of in-port transhipment. WCPFC continues to refine its development of a Catch Documentation Scheme, which should reduce the opportunities for IUU fishing and complement the vessel register. Based on the above,*	The text of the SI rationales for 3.2.3 has been revised where needed to address the issues raised concerning illegal transhipments, infractions and sanctions.	Accepted (no score change, change to rationale)

UoA stock	UoA gear	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
						the MCS system in place has demonstrated to be effective meeting SG60 and SG80..." This does not meet the SG80 requirements: given that illegal transhipment is (and remains) an issue of concern, there is no evidence that the MCS system has "...*demonstrated an ability to enforce relevant management measures and / or rules.*" SIb states that: "*Sanctions appear to be consistently applied and provide effective deterrence in relation to proven IUU fishing.*" This statement is presented without any evidence to support it. Indeed, as noted already, SIa raises concerns about IUU fishing activity which has clearly not been deterred, as is clear from SIc, which states that: "*It is recognised that non-compliance continues to be an issue in the broader WCPO with a range of offences varying from minor to more serious. According to Blyth-Skyrme et al., (2018), there is generally thought to be a good level of compliance by fishers in the PNA. An IUU report was commissioned by PNA and undertaken by MRAG (MRAG, 2016) that suggested IUU fishing occurs within the broader WCPO but certainly not within the PNA group (Blyth-Skyrme et al., 2018). However, as evidence concerning national infractions committed and penalties awarded to purse seiners is lacking SG80 is not met.*" The team has already concluded, for other good reasons, that SG80 is not met, but this rather jumbled reasoning lets the rest of the P3 text down a bit.		
WCP Skipjack / Yellowfin / Bigeye	All UoAs (1-6)	3.2.4	Yes	Yes	NA	The scoring is appropriate and well justified.	Thank you, no comment required	NA (No response needed)

Appendix 3.4 Peer reviewer 1 follow-up

Principle 1

UoA stock	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
SKJ-UoA1&2	1.2.1	No (change to rationale expected, not to scoring)	Scoring Issue "a". I still find the logic relating to the scoring of a fishery without a HCR but with all the other aspects of a HS rather subjective. I understand the CAB's argument but guessing at MSC's intent is not optimal. MSC should clarify what the standard expects, particularly as this issue is very important across many stocks and certifications. Specifically on the condition I was commenting that the sentence "The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions." is missing from Condition 1 (but it appears in Conditions 3 and 5). The CAB says that this has been corrected but the sentence is still missing from Condition 1 (pp. 19 and 363).	We believe this issue is part of the current Standard review. We have added the statement to Condition 1.	Accepted (no score change, change to rationale)
SKJ-UoA1&2	1.2.1	No (scoring implications unknown)	Scoring Issue "f". I accept the argument that MSC guidance allows this SI not to be scored if there is "negligible" unwanted catch and I agree the levels of catch could be considered negligible. (However, why not go ahead and score it to be precautionary?) Anyway, the argument made by the CAB in response to the comment is around "negligible" but the text still reads (p. 69) "need not be scored if there are no unwanted catches of SKJ" and "it is not thought likely that there is any unwanted catch of SKJ". Clearly from Table 28 there is unwanted catch so the PCDR text should be rectified to match the argument now being made.	The rationale has been edited and actual discard rates provided.	Accepted (no score change, change to rationale)
SKJ-UoA1&2	1.2.2	No (change to rationale expected, not to scoring)	With reference to Scoring Issue "b", I see that a sentence has been added to the scoring text reflecting the CAB's response. However, I feel like the CAB is not engaging on my main point which is that a lot of technical work has gone into assessing the robustness to uncertainty in the "available" HCR. This is a technical issue and it has been handled well by the fishery. The fact that the HCR has not been adopted is a management/political issue and it doesn't change the fact that the technical evaluation of the HCR is comprehensive. In other words if the HCR is adopted tomorrow does it suddenly become robust if it hasn't changed from the "available" HCR? The robustness to uncertainty depends on the technical work which has already been done (and continues).	Yes – we agree that excellent technical work has been done (and is underway). However, there is no guarantee that the final form of the HCR will be robust according to all that technical work. Agreeing a HCR is a political as much as a technical process. In other words, although the point is well made, we should not assume anything until the HCR finally appears. However, we have added clarifications to the rationale.	Accepted (no score change, change to rationale)
YFT-UoA3&4	1.2.1	Yes	But see comment above on SKJ 1.2.1 Scoring Issue "a" which applies here as well.	See above.	NA (No response needed)
YFT-UoA3&4	1.2.1	No (scoring implications unknown)	Same comment as above on SKJ 1.2.1 Scoring Issue "f". The argument in the text needs to be aligned with the argument the CAB is making in their response, i.e. "no" versus "negligible".	This has been done and specific discard rates are provided in the rationale.	Accepted (no score change, change to rationale)
YFT-UoA3&4	1.2.2	No (change to rationale expected, not to scoring)	See comment above on SKJ 1.2.2 Scoring Issue "b". The same logic applies here.	Please see response above.	Accepted (no score change, change to rationale)
YFT-UoA3&4	1.2.3	Yes	I stand by the technical aspects of my original comment but I understand that the CAB has procedural reasons for scoring the way they did.	No response needed.	NA (No response needed)
YFT-UoA3&4	1.2.3	No (scoring implications unknown)	The CAB refers to their response immediately above, but here I am commenting on the appropriateness of scoring the Indonesian data gaps under Scoring Issue "a" (which is what was done) rather than Scoring Issue "c" (which I think would be more appropriate). This aspect of the comment has not been addressed.	Indonesian data gaps are considered in detail under SIc – see first two paragraphs of the rationale.	Not accepted (no change)

UoA stock	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
YFT-UoA3&4	1.2.3	Yes	I accept the response from the CAB. However, I think the point about whether the HCR is "available" or "in place" and how this would affect the score under Scoring Issue "b" should be looked at by MSC.	No response needed.	NA (No response needed)
BET-UoA5&6	1.2.1	Yes	But see comment above on SKJ 1.2.1 Scoring Issue "a" which applies here as well.	See response above.	NA (No response needed)
BET-UoA5&6	1.2.1	No (scoring implications unknown)	Same comment as above on SKJ 1.2.1 Scoring Issue "f". The argument in the text needs to be aligned with the argument the CAB is making in their response, i.e. "no" versus "negligible".	See response above.	Accepted (no score change, change to rationale)
BET-UoA5&6	1.2.2	No (change to rationale expected, not to scoring)	See comment above on SKJ 1.2.2 Scoring Issue "b". The same logic applies here.	See response above.	Not accepted (no change)

Principle 2

UoA stock	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
All UoAs	2.1.2	No (scoring implications unknown)	Re: Scoring Issue "e" (note: I had mistakenly labelled this as "f" in my comment). As commented above for 1.2.1 Scoring Issue "f" for all target species, I do not consider that minimal discarding is the same as no discarding. It might be technically acceptable to dismiss the observed amount of discarding as negligible and thus acceptable, but this seems to ignore the fact that both WCPFC catch retention measures and ISSF's initiative (of which this fishery is a member) are aiming at zero discards. To not score this issue for the target species in effect is saying that it is fine to continue discarding at the current level even though there are two applicable policies that suggest this level should be reduced. This doesn't seem to be in the spirit of MSC.	As per the reviewer's comments under P1, we have amended the rationale to say that the unwanted catch is negligible, not non-existent. We cannot guess the spirit of the MSC but we can however follow the standard and its associated guidance. Please refer to our previous response on this issue and the guidance cited. We maintain that the correct scoring procedure was followed.	Accepted (no score change, change to rationale)
All UoAs	2.3.1	No (change to rationale expected, not to scoring)	The rationale reflects the latest assessment for silky shark but it appears that the wrong report was used to compose the summary. The WCPO silky shark assessment (not the Pacific-wide assessment) should be summarized. See pp. 89-93 of https://meetings.wcpfc.int/file/7470/download for the WCPFC Scientific Committee summary. The 2018 WCPO silky shark assessment is here: https://meetings.wcpfc.int/file/6416/download	This has been rectified.	Accepted (no score change, change to rationale)
All UoAs	2.3.1	No (change to rationale expected, not to scoring)	The CAB has made the correction requested regarding whale shark, but I note that Table 29 just uses the most recent assessment reports to report the latest catch estimate and without reflecting what those assessment reports say about stock status, assert that recovery of the population is not being hindered. Actually, in many cases we do not know for sure the extent to which the populations are depleted and whether they are recovering at all. Maybe "would not hinder recovery" is better phrasing?	We understand your point but our hands are somewhat tied by the SG wording. The fact is that regardless of whether the population is recovering or not, the low encounter levels in the fishery are highly unlikely to influence this process in a significant manner. The important part of the phrase is that the 'direct effects of the UoA' are highly likely to not hinder recovery.	Not accepted (no change)
All UoAs	2.3.1	Yes	I can accept this response, however, calculating observer coverage as a percentage of logbook catch is rather unorthodox and may be difficult to understand (in particular when observer coverage is reported at figures over 100% (e.g. 153%?)). It might be a good idea to include more conventional metrics alongside for reference?	We will consider this for future assessments; however as it will involve a data request to SPC, this is not something that can be included in the report at this stage, particularly as it does not influence on scoring.	NA (No response needed)
All UoAs	2.3.1	No (change to rationale expected, not to scoring)	Regarding UID species reported by observers, I'm not sure I understand the response. In the report I see no mention of any unidentified bycatch but the CAB refers to such records for a few species groups in their response. Is the CAB saying there were no	As mentioned in our previous response, there are clearly a number of taxa which are not identified to species level – please have a look at the data tables in Section 6.2.4. We are saying therefore that there <u>are</u> such records and therefore	Not accepted (no change)

UoA stock	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
			records of unidentified sharks, turtles or seabirds at all? This is difficult to believe. My point is that UID records should be shown in tables so we have an idea of the extent to which unidentified species might be missing from species-specific tallies.	see no reason why unidentified species of other taxonomic groups such as sharks or turtles would be unreported. We assumed that the reviewer's comment referred to the observer data itself but perhaps he/she is referring to the team's consideration of unidentified catches in the scoring. In any case, for ETP species these concern Mobulidae (considered in detail – see rationale) and one encounter of an unidentified baleen whale.	
All UoAs	2.3.1	Yes	I did not re-check the references.	No response needed.	NA (No response needed)
All UoAs	2.3.2	No (change to rationale expected, not to scoring)	I understand the reason for maintaining continuity, although I think presenting superseded CMMs just makes things confusing. My point was that some of the items under CMM 2019-04 listed under "key changes from the preceding CMMs" are not changes, i.e. they have been in effect all along. A quick fix would be to just change this to "Key elements include: ". The clarification of the safe release guidelines is useful.	Quick fix has been added and we have made clearer that the old CMMs are now superseded.	Accepted (no score change, change to rationale)
UoAs 2, 4 & 6 (FAD sets)	2.3.2	No (change to rationale expected, not to scoring)	This was not a strong comment. I was trying to make a comment about 2.3.2 and 2.3.3 at the same time and the difference between UoAs 1,3,5 and 2,4,6 (the reference to "SKJ" was an error on my part). My point was that the information, not the strategy, is what is lacking for associated sets, so lowering the score for both 2.3.2 and 2.3.3 seems like double-penalizing for the same issue in two different PIs.	Indeed, given how a strategy is made up of various elements including monitoring, a lack of data will typically be mentioned in the scoring of 2.3.2 as well. This is unavoidable given how interdependent these PIs are. However, in this case this does not lead to an additional condition under 2.3.2 (despite there being a condition under 2.3.3), just that SG100 is not met.	Not accepted (no change)
UoAs 2, 4 & 6 (FAD sets)	2.4.1	Yes	Note that the basis for the response is procedural rather than technical.	No response needed.	NA (No response needed)
UoAs 2, 4 & 6 (FAD sets)	2.4.2	Yes	It's clear this is a difficult issue and I'm glad that it seems to be generating much thought.	No response needed.	NA (No response needed)
UoAs 2, 4 & 6 (FAD sets)	2.4.3	No (change to rationale expected, not to scoring)	Actually, I agree with the response and found it very helpful to understanding the scoring. I think it would be helpful to add some of the response text to the scoring rationale for 2.4.3 "c". The link between the UOA and regional monitoring doesn't come through so clearly there.	Thank you – we have added clarification to the rationale. Hopefully this is better now.	Accepted (no score change, change to rationale)

Principle 3

UoA stock	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
All UoAs	3.1.1	Yes	I am happy with the change in the rationale made by the CAB. However, I remain concerned that the escalation of a dispute to the dispute resolution stage (in order for it to be tested and proven to be effective) would score higher than a dispute that is resolved through informal consultation (which would presumably be a good thing). This is an issue for the MSC to consider when revising the standard.	No response needed.	NA (No response needed)
All UoAs	3.1.3	Yes	OK, but I still think an explicit reference to Appendix 2.3 would be helpful.	We have added this to the text.	Accepted (no score change, change to rationale)
All UoAs	3.2.1	Yes	OK, but I still think an explicit reference to Appendix 2.3 would be helpful.	We have added this to the text.	Accepted (no score change, change to rationale)

UoA stock	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
All UoAs	3.2.2	Yes	The CAB has chosen to interpret SI "b" such that any management response, regardless of effectiveness, is considered a response. I guess this is within the scope of the standard as written, but it is not a desirable approach. For example, if a species is being driven to extremely low levels of biomass through interactions with a specific type of gear and the only management response is to commission another stock assessment I suppose that could be considered a "management response". However, it does not at all meet the spirit of PI 3.2.2 which refers to "effective decision-making processes that result in measures and strategies to achieve the objectives". It is worrying that counting a management action as a response regardless of its effectiveness in remediating the issue only perpetuates meaningless "band aid" decision-making. In summary, I agree with the CAB response that their scoring was appropriate given the way SI "b" is written, but I totally disagree with the way that the standard allows counting all management responses--no matter how trivial--as equal.	Noted. However, WCPFC decision making processes have resulted in measures and strategies in response to achieve the objectives through the Conservation and Management Measures for Bigeye, Yellowfin and Skipjack (CMMs 2017-01, 2018-01 and CMM 2020-01). Also, in the case of South Pacific albacore in response to the declining CPUE WCPFC adopted an interim target reference point. At WCPFC17, a work plan for the adoption of Harvest Strategies under CMM 2014-06 was adopted. The plan sets out a schedule of technical work and WCPFC decision making for the development of harvest strategies for the key tuna stocks.	NA (No response needed)
	3.2.3	No (change to rationale expected, not to scoring)	Neither the scoring rationale nor the condition refers to non-target species reporting requirements. It is good to mention the decline in observer coverage but this will have a direct effect on the ability to report accurate non-target species catch, so it should be made explicit.	Reporting of non-target species catch is a Principle 2 issue, not a compliance issue which this PI is about (because the fishery is in fact conforming to its regional reporting requirements, including under a Covid derogation). The scoring here is about the combined effect of reduced observer coverage and lack of surveillance activities by national patrol vessels in the high seas areas, on the MCS system overall.	Not accepted (no change)

Appendix 3.5 Peer reviewer 2 follow-up

No follow-up comments received.

Appendix 3.6 Peer reviewer 3 follow-up

Principle 1

UoA stock	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
UoA1/2 WCP Skipjack	1.2.1	No (material score reduction expected to <80)	SIb: the issues raised in my initial comments remain - in fact the team's response to the comments show a misunderstanding both of the purpose of SIb, the construction of SIa, and the relationship between the two. To be clear, the issue tested by SIb is whether "...evidence exists that it [the harvest strategy] is achieving its objectives." [My emphasis] The rationale (revised slightly from the earlier draft) states that: "WCFPC agreed an interim TRP for skipjack of 50%SBF=0 in CMM 2015-06. According to CMM 2015-06, this TRP should have been reviewed no later than 2019, but this review has not yet taken place. However, since 2020-01 was rolled over from 2018-01 without change, the interim TRP remains the stated management objective of the harvest strategy, even though SPC has stopped using it as a reference point for evaluating stock status.	We initially drafted a point by point response to this PR comment, but in the end this seemed fruitless because it just restated the same points that both sides made in the previous review round (and we have the impression in past reviews of other fisheries on this stock). Essentially, there are two conflicting interpretations of SIb here. The PR is obviously confident in the rightness of his/her interpretation, but in reality there is no right and wrong answer here since there is no pertinent guidance which allows us to choose between the two interpretations, and this situation will remain until MSC choose to weigh in on the issue. (There are just two co-existing and mutually exclusive options, as per Schrödinger's cat.) We would just make two points in response to the PR: 1. We remain convinced that it makes not much sense to judge the design (SIa) vs. the performance (SIb) of the HS against two different sets of objectives; and 2. The interpretation used in scoring here appears to have been used by the other CABs with fisheries on this stock. If the PR wants to take the issue up with these CABs or with MSC, s/he	Not accepted (no change)

UoA stock	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
			In any case, as noted above, this is not the objective used for MSC scoring. To be consistent with 1.1.1b and 1.2.1a, we evaluate the objective of the harvest strategy in terms of MSY reference points – which is also a stated objective, according to SPC (2017). Testing of the harvest strategy, via evaluation of management scenarios, is described above (see Pilling et al. (2019) and SPC (2017)). The stock assessment provides evidence that it is achieving the objective of maintaining SB above SBMSY and F below FMSY, and projections suggest it will continue to achieve them. SG60 and SG80 are met." This rationale is clearly flawed in several respects, and the crux of the problem lies in the second paragraph. PI1.2.1b does not examine the status of the stock with regard to MSY reference points. The team are explicitly and inappropriately transposing words from PI1.2.1 SIa and PI1.1.1 SIb into their interpretation of PI1.2.1 SIb. Indeed, this is clear form the team's response to the previous comments on this issue (page 323 of the PCDR): "If we have understood the reviewer's comments correctly, we think the core of the issue here is how to define the objective of the harvest strategy as per the SGs in SIb. This issue has come up several times in this peer review forum and we do not disagree with the reviewer that there is a discussion to be had here. However (since the PR raises the issue of internal consistency), MSC does seem to state clearly in the SGs for SIa that the objective needs to be consistent with PI1.1.1 SG80 – in other words Bmsy or some suitable proxy. Therefore, logic suggests that the intent for SIb is the same objective as is defined in SIa. The reviewer is arguing that while SIa is scored relate to MSC's objective (Bmsy), SIb is scored against the stated management objective, even if that is different. In this case, the reviewer's approach would be precautionary because the TRP is well above Bmsy, but it is easy to imagine a situation where a management agency set a much lower target, and would as a result get a higher score here. In fact, this is the logic that a few years ago led MSC to redefine the benchmark used in PI1.1.1b from the agreed management target to Bmsy; and we do not see why it would not apply here as well. Regarding issue of concern #2 specifically, we cannot really tell what the reviewer is referring to in the rationale for SIb regarding 'unsupported and unjustified presumption about activity at the WCPFC level which pre-dates CMM 2020-01'. The reviewer will have another opportunity to explain more." This response underlines that the team has failed to grasp that it is the purpose of PI1.2.1 SIa to evaluate the design of the harvest strategy relative to MSY reference points and the purpose of SIb is to evaluate the HS performance relative to its objectives. This is plain from the wording of the SI. No interpretation has been issued by the MSC to allow the team to adopt a different approach. The team's argument that an HS with a TRP that is lower than MSY reference points would be flattered by this approach is bogus: such an HS would fail to meet either the SG60 or SG80 requirements of PI 1.2.1 SIa. What is clear from the rationale and the team's response is that the HS objective is defined by the TRP of 50% SBF=0, an objective that was set in 2015 and has yet to be achieved. The only way to score SG80 for this SI is either to pretend that this is not the objective and / or to read words into SIb that are not there. Neither is appropriate or justified. The more appropriate response is to raise a condition of certification.	is welcome to. Or possibly the MSC's current standard review (covering PI 1.2.1 specifically) will clarify the situation.	

UoA stock	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
			Finally, with regard to the team's confusion about item #2 in my comments, they have deleted the text from the earlier rationale which began "...presumably because..." that was the issue of concern, so this is no longer an issue.		
UoA1/2 WCP Skipjack	1.2.1	Yes	SIb: With regard to the team's confusion about item #2 in my comments, they have deleted the text from the earlier rationale which began "...presumably because..." that was the issue of concern, so this is no longer an issue.	No response needed.	NA (No response needed)
UoA1/2 WCP Skipjack	1.2.3	No (material score reduction expected to <80)	SIc: The team has made a revision to the scoring rationale to take account of the Pew (2019) report which raised concerns about illegal transhipment of tuna in the WCPO. The revision is:- "Pew (2019) has recently raised some concerns about IUU transhipments in the WCPO. Since this relates to transhipments at sea, which is not permitted for purse seiners, it is not such a concern for skipjack" This revision and the response to the earlier PR comments raise further concerns, both about the team's interpretation of this SI and the adequacy of information. To recap very quickly: SIa and SIb refer specifically to UoA removals. SIc requires that:- "There is good information on all other fishery removals from the stock." [My emphasis] The key point here is the emphasis is not on the UoA, but on all other fishery removals from the stock. The headline news from the Pew report is that this is not the case; and indeed if the team look at another report that thy have cited later in their assessment (MRAG, 2016), it is evident that the biggest problem for IUU fishing in this region appears to be for purse seiners fishing for skipjack. MRAG estimated that the IUU catch of skipjack was in excess of 100,000t (5% of the total catch). More recently, WCPFC themselves have highlighted the difficulty monitoring transhipment, particularly during the Covid pandemic (see the most recent IWG report to WCPFC 17 from December 2020); indeed the team themselves report for this SI for the Yellowfin UoAs that this is the case, and is clearly known to them. All in all there is plenty of evidence to suggest that there are significant IUU fishery removals from the stock, and that WCPFC themselves acknowledge this as an issue that they are trying to address. The team provide no evidence to the contrary, only that information gathering within the UoA is being improved (which is just part of the issue). It would seem appropriate, given the efforts that the WCPFC and the Pacific Island Governments are taking to tackle IUU fishing, for the assessment team to align their scoring with the facts of the matter and raise a condition that would support the work that is being done to address this issue in the western Pacific Ocean.	We appreciate that the SI relates to all non-UoA removals – the point we were making in relation to skipjack is that skipjack removals are almost entirely from purse seine fisheries, while the Pew report, which was the main issue raised by the PR in her/his previous review, is focusing on transshipment by longliners. Longliners catch very little skipjack. Having said that, we put more information in the yellowfin and bigeye rationales, since the Pew report appeared more pertinent in these two cases; we will include this information here too. Hopefully the PR will find the rationale improved. In relation to IUU fishing of skipjack by purse seiners, it is hardly surprising that purse seine / skipjack accounts for the largest volume of IUU since it is the largest fishery by far. But IUU catch is not the same as unreported removals. The MRAG report has multiple categories of IUU catch, and IUU skipjack estimates mainly come from two sources – reporting violations and illegal FAD fishing. Neither of these necessarily have to be unreported catch. Illegal FAD catch is catch which is reported as free-school when it is actually FAD (noting that observer coverage was lower in the period covering the data used for the report than it is now, covid excepted). Reporting violations also do not necessarily mean it is not reported at all – it can be misreporting by area (such as reporting EEZ catch as high seas), for example. So 5% IUU does not mean that the true catch was 105% of what is reported. As noted in the other two rationales (and now this one) we contacted Peter Williams of SPC about this question after the first round of PR. His view was that transshipment is irrelevant in terms of estimating removals, and that the current system is relatively robust. Regarding the issues around observer coverage during covid, the point is well made, but we think we have to wait and see how it plays out in terms of data. At present (or at least, at the time of information gathering for this assessment in 2020) it was impossible to make a judgement about the impact it might have. Regarding the PR's last point, we cannot raise a condition simply because it would be nice to support a worthwhile project.	Accepted (no score change, change to rationale)
UoA1/2 WCP Skipjack	1.2.4	No (change to rationale expected, not to scoring)	I accept the team's view that the rationale is short, but this does not remove the obligation to score as per FCP v2.1 7.17.7. I'm not going to lose sleep over it though - it does not affect the score awarded.	No response needed.	NA (No response needed)
UoA 3/4 WCP Yellowfin	1.2.3	No (material score reduction expected to <80)	SIc: The team has made a revision to the scoring rationale following my earlier comments. The rationale now states:- "MRAG (2016) attempted to evaluate the magnitude of IUU fishing in the Asia-Pacific region and on this basis the pre-assessment workshop did not consider that it needed to	Regarding UoA removals vs all other removals – we do not understand why the PR thinks we have misinterpreted this. The rationale says nothing which is specific to the UoA.	Not accepted (no change)

UoA stock	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
			be considered for the yellowfin stock assessment (although it was for bigeye). A report by Pew Charitable Trusts in 2019 (Pew, 2019), however, highlighted uncertainties in the declaration of transshipments and provides evidence that points to the possibility of significant levels of undeclared transshipments from longline vessels. WCPFC estimates that ~15% of yellowfin catch was transshipped in 2019. The WCPFC Secretariat is developing a Transshipment Analysis Tool which uses VMS data to detect potential high seas transshipment events by noting when two vessels were within 250m of each other for at least 4 hours. They note that this is so far preliminary but hope that it will eventually be able to support validation of reported transshipment data (WCPFC, 2020e). WCPFC is also reviewing its transshipment CMM (2009-06) via a Transshipment Intersessional Working Group which first met at TCC15 (2019) but as of TCC16 (2020) does not appear to have made much progress (WCPFC_TCC, 2020) Following peer review comments, the assessment team followed up the question of transshipment data with WCPFC (Dr Peter Williams, WCPFC, pers. comm.). In fact, WCPFC does not rely on transshipment data to quantify removals from the stock, since it is very challenging for transshipment observers to estimate quantities accurately. Instead, they rely on logbooks and reports from CCMs, and use VMS data to cross-check logbook data. Thus overall while there are some concerns around reporting of various types of data, these issues are being addressed by WCPFC and there is no evidence that they significantly compromise the robustness of the stock assessment (as per the conclusions of the pre-assessment workshop for the stock assessment). SG80 is met." This revision and the response to the earlier PR comments raise further concerns, both about the team's interpretation of this SI and the adequacy of information. The case that SG80 is met is not made. To recap very quickly: SIa and SIb refer specifically to UoA removals. SIc requires that:- "There is good information on all other fishery removals from the stock." [My emphasis] The key point here is the emphasis is not on the UoA, but on all other fishery removals from the stock. The MRAG (2016) report cited in the rationale concluded that IUU removals of Yellowfin have been over 15% of the estimated total catch from the stock. More recently, WCPFC themselves have highlighted the difficulty monitoring transhipment, particularly during the Covid pandemic (see the most recent IWG report to WCPFC 17 from December 2020). Indeed, the revised rationale in the PCDR shows that WCPFC struggle to estimate quantities of fish that are legally transshiped, let alone IUU removals and transshipments and that they are actively engaged in developing tools (the "Transshipment Analysis Tool") to address this - which in fact uses a very similar approach to that underlying the Pew (2019) report. The concluding paragraph of the rationale includes information that is not tested by, or relevant to, this SG to justify that it is met. The fact that the stock assessment is robust with respect to a paucity of information is tested in PI1.2.4, not here. All in all there is plenty of evidence to suggest that there are significant IUU fishery removals from the stock, and that WCPFC themselves acknowledge this as a weakness.	Regarding IUU removals of yellowfin, the PR is conflating several different issues – the estimates of IUU removals (which as noted above does not always mean unreported removals) in the MRAG report; vs. the specific circumstances around covid; vs. the specific issue of transshipment which is what the PR raised last time (hence what we have mainly tried to improve in response to the review). As per the response in relation to skipjack above, the timeline of this assessment did not allow us to make any clear judgements about what covid issues mean for estimates of removals (and other data collection) – so this issue is not included in the scoring although it is mentioned in the report. In order to evaluate the transshipment issue, we contacted Peter Williams in follow up to the previous set of PR comments. As noted in the response for skipjack, he told us fairly unambiguously that estimating transshipments is not an element in estimating total removals – other data sources are used. (That's not to say that it's not important for other reasons.) In relation to the IUU estimates in the MRAG report, we think the question is how you interpret 'good estimates' of all other fishery removals. We do not interpret this as meaning 'perfect' since this is an unachievable standard. Whether the issue is IUU or recreational fishing or artisanal fishing or bycatch or something else, most fisheries have some problem with quantifying some part of the removals. Rather we would interpret it as 'sufficient for the purposes of robust assessment and robust management'. So we would respectfully disagree that it is irrelevant here to ask whether the estimates of removals are sufficient for a robust stock assessment. The stock assessment pre-assessment workshop reviewed the MRAG report and did not consider that it was necessary to include IUU as a sensitivity in the stock assessment (unlike for some others); we would take this as good evidence to support 'good estimates' of removals.	

UoA stock	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
			The team provide no evidence to the contrary, only that information gathering within the UoA is being improved. It would seem appropriate, given the efforts that the WCPFC and the Pacific Island Governments are taking to tackle IUU fishing, for the assessment team to align their scoring with the facts of the matter and raise a condition that would support the work that is being done to address this issue in the western Pacific Ocean.		
UoA 5/6 WCP Bigeye	1.2.3	No (material score reduction expected to <80)	SIc: The team has made a revision to the scoring rationale following my earlier comments. The rationale now states:- "MRAG (2016) attempted to evaluate the magnitude of IUU fishing in the Asia-Pacific region and on this basis the pre-assessment workshop did not consider that it needed to be considered for the yellowfin stock assessment (although it was for bigeye). A report by Pew Charitable Trusts in 2019 (Pew, 2019), however, highlighted uncertainties in the declaration of transshipments and provides evidence that points to the possibility of significant levels of undeclared transshipments from longline vessels. WCPFC estimates that ~15% of yellowfin catch was transshipped in 2019. The WCPFC Secretariat is developing a Transshipment Analysis Tool which uses VMS data to detect potential high seas transshipment events by noting when two vessels were within 250m of each other for at least 4 hours. They note that this is so far preliminary but hope that it will eventually be able to support validation of reported transshipment data (WCPFC, 2020e). WCPFC is also reviewing its transshipment CMM (2009-06) via a Transshipment Intersessional Working Group which first met at TCC15 (2019) but as of TCC16 (2020) does not appear to have made much progress (WCPFC_TCC, 2020) Following peer review comments, the assessment team followed up the question of transshipment data with WCPFC (Dr Peter Williams, WCPFC, pers. comm.). In fact, WCPFC does not rely on transshipment data to quantify removals from the stock, since it is very challenging for transshipment observers to estimate quantities accurately. Instead, they rely on logbooks and reports from CCMs, and use VMS data to cross-check logbook data. Thus overall while there are some concerns around reporting of various types of data, these issues are being addressed by WCPFC and there is no evidence that they significantly compromise the robustness of the stock assessment (as per the conclusions of the pre-assessment workshop for the stock assessment). SG80 is met." This revision and the response to the earlier PR comments raise further concerns, both about the team's interpretation of this SI and the adequacy of information. The case that SG80 is met is not made. To recap very quickly: SIa and SIb refer specifically to UoA removals. SIc requires that:- "There is good information on all other fishery removals from the stock." [My emphasis] The key point here is the emphasis is not on the UoA, but on all other fishery removals from the stock. The MRAG (2016) report cited in the rationale concluded that IUU removals of Yellowfin have been over 15% of the estimated total catch from the stock. More recently, WCPFC themselves have highlighted the difficulty monitoring transhipment, particularly during the Covid pandemic (see the most recent IWG report to WCPFC 17 from December 2020).	Please see comment above. NB: In relation to bigeye, the pre-assessment workshop did suggest including the MRAG IUU estimates as a sensitivity and this and the outcome is described in the rationale.	Not accepted (no change)

UoA stock	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
			Indeed, the revised rationale in the PCDR shows that WCPFC struggle to estimate quantities of fish that are legally transshiped, let alone IUU removals and transshipments and that they are actively engaged in developing tools (the "Transshipment Analysis Tool") to address this - which in fact uses a very similar approach to that underlying the Pew (2019) report. The concluding paragraph of the rationale includes information that is not tested by, or relevant to, this SG to justify that it is met. The fact that the stock assessment is robust with respect to a paucity of information is tested in PI1.2.4, not here. All in all there is plenty of evidence to suggest that there are significant IUU fishery removals from the stock, and that WCPFC themselves acknowledge this as a weakness. The team provide no evidence to the contrary, only that information gathering within the UoA is being improved. It would seem appropriate, given the efforts that the WCPFC and the Pacific Island Governments are taking to tackle IUU fishing, for the assessment team to align their scoring with the facts of the matter and raise a condition that would support the work that is being done to address this issue in the western Pacific Ocean.		

Principle 3

UoA stock	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
WCP Skipjack / Yellowfin / Bigeye	3.2.2	No (material score reduction expected to <80)	SIb: The team's response to the concerns that the WCPFC has manifestly and clearly failed to deliver an appropriate harvest strategy is, in essence, that the scoring of this SI is harmonised with other CABs and that WCPFC has set out a Harvest Strategy Workplan. It goes on to provide excuses for why this workplan is behind schedule, stating that: "....Delays have occurred due to the complexity of developing the harvest strategies for multiple species as well as the capacity of the CCMs to understand and participate fully in the process. For this reason, it was cautioned that the harvest strategies would not be developed in specific years. [....] Therefore, the lack of HCRs does not meet the criterion of a “serious issue”. Based on the above, the team has determined that the score of SG80 is justified. " The team's response confirms my earlier concerns that the decision making processes in place have proven to be incapable of responding "in an adaptive and timely manner" and also that the available information is that whilst "serious issues" are addressed (SG60), they do not consider that "other important issues" (SG80) are met, which was in fact the point that I made in my initial comments. It is therefore manifestly clear from the facts (i.e. the lack of progress with the Harvest Strategy Workplan set out in Table 16 of the report) and also from the team's response above that the SG80 requirements are not met. Finally, a key point here is that the Harvest Strategy that is presently in place (or the lack of one) is failing to deliver the agreed TRP for skipjack tuna. This is therefore not an insignificant issue or pedantic detail, but a fundamental issue of concern and one that both the decision making process for the fishery and any MSC assessment of it.	Noted. WCPFC decision making processes have responded to serious and other important issues concerning the tuna fisheries in the WCPO. Conservation and management measures for bigeye, yellowfin and skipjack (CMMs 2017-01, 2018-01 and 2020-01) were adopted by WCPFC. Stock assessments for bigeye and yellowfin conducted in 2017 and 2020 indicated that these stocks were not in an overfished state and overfishing was not taking place. Results from these stock assessments indicate that the CMMs appear to be effective. In response to the declining CPUE of South Pacific albacore catches WCPFC adopted a TRP in 2018 with the objective of increasing the CPUE by 8%. A South Pacific albacore stock assessment was conducted indicated that the stock is not in an overfished state and overfishing is not taking place. With regards to a harvest strategy for the four target tuna stocks, WCPFC developed a workplan in 2015 in accordance with CMM 2014-06. The plan set out a deliberately ambitious schedule of technical work and WCPFC decision making for the development of harvest strategies. The workplan was intended to be a living document and has been updated annually to reflect progress. Delays have occurred due to the complexity of developing harvest strategies for multiple species within the multilateral WCPFC environment and the capacity of member CCMs to understand and participate in the process. For this reason, all parties were cautioned against expecting that harvest strategies would be completed in specific years. To further progress the development of harvest strategies WCPFC17 adopted an indicative workplan for the adoption of harvest	Not accepted (no change)

UoA stock	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
			The argument that this score is somehow set in stone because it has been harmonised across CABs is irrelevant; harmonisation is not a process for fixing scores, but one for ensuring consistency. It would seem appropriate, for the sake of the fishery and the integrity of the MSC Standard, to rescore this SI and raise a condition of certification that would encourage the WCPFC and CCMs to get their Harvest Strategy Workplan back on track.	strategies under CMM2014-06. Based on the above, the team concluded that SI 3.2.2b is awarded SG80.	

Appendix 4 Stakeholder input

Appendix 4.1 Prior to PCDR publication

Following publication of the ACDR, comments were submitted by ISSF. All parties were given the opportunity to discuss the comments with the assessment team, either in-person or remotely. A summary of site visit meetings is provided in Appendix 4.1.1. ISSF comments are responded to in Appendix 4.1.2.

Appendix 4.1.1 Site visit meetings

Stakeholder	Date	Participants	CAB response required
NORMA	21/10/2020	See Table 39	No
Meeting summary The focus of this meeting was the provision of information for this assessment which is not repeated here. Where relevant, the information has been incorporated directly into the report and is referenced accordingly. Discussion points: *Principle 1*: - Target species unwanted catch, FSM-level monitoring - Any other developments on bigeye, yellowfin and skipjack stock status/management - WCPFC plenary - Tropical tunas WCPFC workplan, CMM 2018-01 - Data availability *Principle 2:* - Covid-19: implications for fishing operations and observer coverage - FSM FAD management plan - FSM FAD buoy monitoring - Any strategies to monitor/limit/mitigate FAD beachings in FSM waters - Shark finning - Compliance with the 24nm exclusion zones - Electronic monitoring - ETP species interactions *Principle 3:* - FSM tuna management plan and associated consultation processes - FAD closure compliance - FSM inspection regime - FSM surveillance operations, infractions and penalties awarded for the purse seine fleet - UoA VMS data to show fishing footprint			
Client group	3 – 4/11/2020	See Table 39	No
Meeting summary The focus of this meeting was the provision of information for this assessment which is not repeated here. Where relevant, the information has been incorporated directly into the report and is referenced accordingly.			

Stakeholder	Date	Participants	CAB response required
Discussion points: *General information gaps identified in ACDR:* - Certificate sharing mechanism – other eligible fishers; - Fishing footprint - Purse seine gear specifications - FAD buoy deployments (numbers, set types) - Participation Western and Central Pacific Ocean tuna - purse seine (Thai Union) FIP - Data availability - Covid-19: implications for fishing operations and observer coverage *Principle 1:* - ACDR information gaps (unwanted catch, FSM-level monitoring, FIP activities to date) - Any other developments on bigeye, yellowfin and skipjack stock status / management - WCPFC plenary - Tropical tunas WCPFC workplan *Principle 2:* - FIP activities to date - FAD design - Purse seine gear loss - FAD life expectancy and fate - FAD deployment vs buoy deployment - Observer coverage - ISSF skipper training and other training - ISSF ProActive Vessel Register - Company bycatch mitigation policies, shark finning policies - ETP species encounters - Review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and their implementation - PNA FAD tracking programme *Principle 3:* - Participation in FSM and WCPFC management - Enforcement and compliance - Points of landings and offloading procedures *Traceability:* - Fishing areas - On-board handling procedures - Offloading processes - Systems for separation between catch from associated and unassociated, free-school sets			
PNA Office	9/11/2020	PNAO: Maurice Brownjohn, Richard Banks Assessment team	No
<u>Meeting summary</u> The focus of this meeting was the provision of information for this assessment which is not repeated here. Where relevant, the information has been incorporated directly into the report and is referenced accordingly. Additional comments made in relation to this fishery assessment were as follows:			

Stakeholder	Date	Participants	CAB response required
- Submission of UoA FAD tracking data: this is currently done on a voluntary basis and complied with by DYS and CFC. The 60-day lag of data submission is, however, problematic in relation to potential plans for FAD recovery. - Concern was raised about the large number of dFADs that sink with unobserved impacts on abyssal and seamount habitats. Although the move towards lesser entangling FADs is positive, they still pose a risk. Fisheries need to move towards fully non-entangling, biodegradable FADs. - Use of large numbers of FADs equipped with echosounder buoys leads to an increase in cherry picking of FADs with the highest biomass, leading to effort creep. - Observed that fishing effort has increased during the Covid-19 pandemic. However, although a derogation on observer coverage is in place, believe coverage may still be as high as ~30% for some fleets (as some observers have stayed in circulation). This combined with live logsheet data, transhipment procedures in designated areas and continued monitoring at canneries does provide some degree of oversight. - Believe there is a lack of industry-led initiatives, particularly towards FAD impact management. Would prefer to see more proactive and meaningful engagement of companies with for example the FAD tracking programme (including provision of data without time lags).			

Appendix 4.1.2 ISSF submission

The following comments were submitted by ISSF on the 19th October 2020.

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
1.2.1 - Harvest strategy (SKJ)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 1.2.1.d and that SI 1.2.1.f should be scored and would meet SG80.	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 1.2.1.d and that SI 1.2.1.f should be scored and would meet SG80. 1.2.1.d: "According to CMM 14-06, a formal harvest strategy for bigeye, yellowfin and skipjack should be put in place by WCPFC, with provision for periodic review (see 14-06, Annex 1, para. 9). This has, however, not yet been achieved. Meanwhile, the existing harvest strategy, currently set out in 2018-01, has been more or less the same for several years; although it is not clear that improvement is required as a matter of urgency. SG100 is not met." 1.2.1.f: "A joint meeting of the tuna Regional Fisheries Management Organisations (tRFMOs) in Brisbane 2010 as part of the Kobe process, specifically focused on bycatch and discarding, although this mainly dealt with non-tuna species. Discards are routinely estimated for all target species where possible, but discarding of target tunas is not generally considered significant compared to other mortality. Monitoring depends upon the presence of at-sea observers, however. The main concern with discards of tuna appears to apply to the purse seine fleet. WCPFC has in place CMM 2009-02 which aims to limit discard mortality and requires reporting of discard events. In addition, recent CMMs on tropical tunas (2018-01, 2017-01) aim to reduce undesirable catch of juvenile bigeye through control of effort on FADs and require purse seine to retain of yellowfin, bigeye and skipjack on board for landing. On this basis, discarding is clearly subject to review and that controls are being	Medley et al. (2020)	80	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		implemented, meeting SG80. It is not clear this review is sufficiently frequent to meet SG100."			
CAB response to stakeholder input		1.2.1d. The SI is asking if the HS is reviewed and improved as necessary. As Medley et al. rightly point out, it is not clear that this is necessary. There is extensive review which is set out in the various rationales for 1.2.1. 1.2.1f. This analysis is generic for WCPFC, but the SI applies to the UoA directly, so the analysis relates to discarding and evidence from the UoA itself - thus there is no reason why it would be the same as the analysis in Medley et al.			
1.2.1 - Harvest strategy (YFT)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 1.2.1.d and that SI 1.2.1.f should be scored and would meet SG80.	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 1.2.1.d and that SI 1.2.1.f should be scored and would meet SG80. 1.2.1.d: "According to CMM 14-06, a formal harvest strategy for bigeye, yellowfin and skipjack should be put in place by WCPFC, with provision for periodic review (see 14-06, Annex 1, para. 9). This has, however, not yet been achieved. Meanwhile, the existing harvest strategy, currently set out in 2018-01, has been more or less the same for several years; although it is not clear that improvement is required as a matter of urgency. SG100 is not met." 1.2.1.f: "A joint meeting of the tuna Regional Fisheries Management Organisations (tRFMOs) in Brisbane 2010 as part of the Kobe process, specifically focused on bycatch and discarding, although this mainly dealt with non-tuna species. Discards are routinely estimated for all target species where possible, but discarding of target tunas is not generally considered significant compared to other mortality. Monitoring depends upon the presence of at-sea observers, however. The main concern with discards of tuna appears to apply to the purse seine fleet. WCPFC has in place CMM 2009-02 which aims to limit discard mortality and requires reporting of discard events. In addition, recent CMMs on tropical tunas (2018-01, 2017-01) aim to	Medley et al. (2020)	80	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		reduce undesirable catch of juvenile bigeye through control of effort on FADs and require purse seine to retain of yellowfin, bigeye and skipjack on board for landing. On this basis, discarding is clearly subject to review and that controls are being implemented, meeting SG80. It is not clear this review is sufficiently frequent to meet SG100."			
CAB response to stakeholder input		Please see our response in relation to skipjack above, which applies here as well.			
1.2.1 - Harvest strategy (BET)	The independent report by Medley et al. (2020) indicates that SI 1.2.1.f should be scored and would meet SG80.	The independent report by Medley et al. (2020) indicates that SI 1.2.1.f should be scored and would meet SG80. 1.2.1.f: "A joint meeting of the tuna Regional Fisheries Management Organisations (tRFMOs) in Brisbane 2010 as part of the Kobe process, specifically focused on bycatch and discarding, although this mainly dealt with non-tuna species. Discards are routinely estimated for all target species where possible, but discarding of target tunas is not generally considered significant compared to other mortality. Monitoring depends upon the presence of at-sea observers, however. The main concern with discards of tuna appears to apply to the purse seine fleet. WCPFC has in place CMM 2009-02 which aims to limit discard mortality and requires reporting of discard events. In addition, recent CMMs on tropical tunas (2018-01, 2017-01) aim to reduce undesirable catch of juvenile bigeye through control of effort on FADs and require purse seine to retain of yellowfin, bigeye and skipjack on board for landing. On this basis, discarding is clearly subject to review and that controls are being implemented, meeting SG80. It is not clear this review is sufficiently frequent to meet SG100."	Medley et al. (2020)	80	Not accepted (no score change)
CAB response to stakeholder input		Please see our response in relation to skipjack above, which applies here as well.			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
1.2.2 - Harvest control rules and tools (YFT)	The independent report by Medley et al. (2020) 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").	The independent report by Medley et al. (2020) 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"): 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): • 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. MSC's second requirement for an 'available' HCR is met for yellowfin by CMM 2014-06. In terms of the first requirement, 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 being below or F above 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. 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	Medley et al. (2020)	<60	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		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. Because there is no particular evidence that any 'available' HCR is able to reduce the exploitation rate as the PRI is approached, 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. 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. 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 original timetable. Progress is being made at least for some species (WCPFC HS, 2019). Limit reference points have been agreed for bigeye or yellowfin, but not yet target reference points. Interim targets have been agreed for South Pacific albacore, for which HCR are now being			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		developed. In contrast, progress with skipjack has led to the final stage, developing the monitoring strategy. 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. We note however that a variation request was granted in 2018 to extend the timeline for meeting the condition on this performance indicator." (…) 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'). The tools by which CMM 2018-01 is implemented are as follows: (a) temporal / spatial limits on purse seine setting on FADs, (b) restrictions on purse seine effort (days), (c) purse seine required to retain all tuna catch, (d) longline catch limits for bigeye, (e) various limits on increasing fishing capacity. 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			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		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. There are no limits on longline fishing for yellowfin, although catch limits for bigeye may limit effort for some CMMs. The catch time series in the 2017 stock assessment runs to 2015; the harvest strategy has only been in place since 2014, and is 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. For improvement in this scoring, some demonstrable progress is required towards a formal harvest strategy (as per CMM 2014-06) such that it is clearer that management tools are likely to be effective in maintaining a stable biomass at or above reference levels.			
CAB response to stakeholder input		The response is given in the final part of ISSF's comment on SIa (and also applies to SIc) (repeated here for reference): *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.* *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*			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		not being observed. The workplan for the implementation of CMM 2014-06 has been systematically revised, with CPCs seemingly unwilling to apply the original timetable. *Progress is being made at least for some species (WCPFC HS, 2019). Limit reference points have been agreed for bigeye or yellowfin, but not yet target reference points. Interim targets have been agreed for South Pacific albacore, for which HCR are now being developed. In contrast, progress with skipjack has led to the final stage, developing the monitoring strategy. 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. We note however that a variation request was granted in 2018 to extend the timeline for meeting the condition on this performance indicator.* Our scoring is therefore in line with the agreed the milestones as per the CAB-wide variation request. We also note that MSC have recently issued a Covid-19 derogation which grants an additional 12 months to each existing condition. Given that all WCPO P1 conditions must be harmonised, this derogation will affect this assessment as well, as is reflected in the revised milestones.			
1.2.2 - Harvest control rules and tools (BET)	The independent report by Medley et al. (2020) 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").	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): • 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. For WCPO bigeye, the first requirement is met because the stock biomass has not previously been reduced below the MSY level, according to the 2017 and 2018 stock assessments. The second of MSC's requirements to score a HCR as 'available' is met via CMM 2014-06. 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.	Medley et al. (2020)	<60	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		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. 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 now to avoid further declines. Because there is no evidence that the HCR will reduce the exploitation rate as the PRI is approached, 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. The authors are aware that this scoring may not be consistent with the MSC certification of several fisheries targeting			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		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. 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 original timetable. Progress is being made at least for some species (WCPFC HS, 2019). Limit reference points have been agreed for bigeye or yellowfin, but not yet target reference points. Interim targets have been agreed for South Pacific albacore, for which HCR are now being developed. In contrast, progress with skipjack has led to the final stage, developing the monitoring strategy. 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. We note however that a variation request was granted in 2018 to extend the timeline for meeting the condition on this performance indicator." (…)			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		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’). The tools by which CMM 2018-01 is implemented are as follows:(a) temporal / spatial limits on purse seine setting on FADs,(b) restrictions on purse seine effort (days),(c) purse seine required to retain all tuna catch,(d) longline catch limits for bigeye, (e) various limits on increasing fishing capacity 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 until 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. For improvement in this scoring, some demonstrable progress is required towards a formal harvest strategy (as per CMM 2014-06) such that it is clearer that management tools are likely to be effective in maintaining a stable biomass at or above reference			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		levels. Evidence that the current catch can be reduced by applying the proposed controls would meet SG60. 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 (....) 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."			
CAB response to stakeholder input		Please see our response in relation to yellowfin above, which applies here as well.			
1.2.3 - Information and monitoring (BET)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 1.2.3.a.	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 1.2.3.a. 1.2.3.a: "A 2017 review of the scientific data available to WCPFC notes that there have been considerable improvements in the last few years. In 2017, all CCMs provided aggregate catch and effort estimates for 2016 by the deadline (30 April), and the quality of these data have also improved (fewer gaps). Operational-level data is now received from several major fleets, including China, Korea, Japan, Chinese Taipei and Indonesia (these last two for the first time in 2017), as well as other smaller fleets. Purse seine fisheries are required to have 100% observer coverage, and although not all achieve it, observer coverage is high, providing detailed operational-level data, as well as information on catch proportions by species etc. WCPFC has been providing technical assistance to Vietnam, Indonesia and the Philippines to address data issues, although some problems still remain for these CCMs. Work is also underway to improve historical data. The key data gaps identified in the data availability report generally relate to species other than the main	Medley et al. (2020)	80	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		tuna species under WCPFC management – e.g. sharks, species which are discarded, species lacking good length/weight conversion factors. In terms of fishery-independent data for bigeye, there are tagging data incorporated into the stock assessment, as well as recent age and growth information which has resulted in a major change to the conclusions of the stock assessment (see 1.1.1). On this basis, sufficient information (on stock structure, stock productivity, fleet composition), is available for bigeye to monitor and assess stock status, including: aggregate and operational catch and effort data, historical catch data, size-frequency data and biological information (size at age, tagging), sufficient to support the harvest strategy as well as evaluate alternative management measures as required. SG80 is met. In relation to SG100, while data are comprehensive, there still remain some issues that could apply to bigeye; e.g. longline observer coverage, data provision from the above-mentioned countries. Furthermore, uncertainties remain about the biology of the species, which have an impact on our view of the stock; e.g. the definition of stock boundaries in the Pacific Ocean, age and growth (the new growth model had a dramatic impact on stock assessment conclusions and remains controversial) and environmental drivers of recruitment. On this basis, SG100 is not met."			
CAB response to stakeholder input		The team had in mind here the extensive work that has been done to address some of the points raised in Medley et al. (e.g. in relation to different regional structures in the assessment and the massive quantity of work on age-and-growth by CSIRO in recent years) - compared to most fish stocks, the data available to assessment of this stock are very extensive, and the team judged that the score of 100 was merited.			
1.2.4 - Assessment of stock status (BET)	The independent report by Medley et	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SIs 1.2.4.d and 1.2.4.e.	Medley et al. (2020) See link.	95	Accepted (non-material

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
	al. (2020) indicates that the fishery would not meet SG100 for SIs 1.2.4.d and 1.2.4.e.	1.2.4.d: (...) "The stock assessment process is rigorous, including reviews of data and models through pre-assessment workshops. The 2017 assessment considers a range of alternative model structures and inputs, including different growth models, different software, different approaches to CPUE standardisation, a different regional structure, different approaches to estimating recruitment and with or without length-frequency data (because of data conflicts). The stock assessment was updated in 2018. Sensitivities were also tested for a range of assumptions, including steepness, tag mixing period, weighting of length- vs. weight-frequency (because of data conflicts) as well as different assumptions about growth and maturity/natural mortality as well as some more technical elements. On this basis it is reasonable to say that alternative hypotheses and approaches have been rigorously explored. SG80 is met. The new growth curve has changed radically the perception of the stock. While recognising uncertainty with the new growth model, the scientific committee (SC14) accepted that it was the best available scientific information. Nevertheless, given the sensitivity to this structural assumption and the uncertainty (it implies different growth to the East Pacific), the new stock assessment has not been 'shown to be robust'. SG100 is not met." 1.2.4.e: "The assessment is subject to internal peer review through the WCPFC SC; preparatory workshops are also held before the stock assessment takes place to review data and the approach. An external peer review was completed for the 2011 stock assessment, which was published in 2012, but there has been no specific external review for the 2014 or 2017/18. For this reason, SG100 is not met."			score reduction)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		Note that this score has now been harmonized (June2020, see PCDR of Fiji Albacore, Yellowfin and Bigeye Tuna longline (expedited P1 BET, P2.1))			
CAB response to stakeholder input		We revised this scoring - SG100 is now not met in both cases.			
3.1.1 - Legal and/or customary framework (WCPFC)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 3.1.1.d at the RFMO level (WCPFC) and that, as a result, the overall PI score would be less than 100.	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 3.1.1.d at the RFMO level (WCPFC) and that, as a result, the overall PI score would be less than 100. 3.1.1.d: "(…) WCPFC has an intention and has a management system that observes the legal rights created explicitly or established by custom for people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. Therefore the international management system meets the requirement for SG60 and SG80. The WCPFC considers common allocation principles such as historical participation, the rights of Coastal States and the rights of developing States, but are not yet formally part of the allocation process. At the present time, this does not yet meet SG100."	Medley et al. (2020)	80	Accepted (non-material score reduction)
CAB response to stakeholder input		The team, taking into consideration the information presented in the report by Medley et al. 2020 for 3.1.1d, has included in the rationale the following: “although the WCPFC considers common allocation principles such as historical participation, the rights of coastal States, and the rights of developing States, these are not formally part of the allocation process”. On this basis, the score of SG 80 was awarded.			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
3.1.2 - Consultation, roles and responsibilities (WCPFC)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 3.1.2.a at the RFMO level (WCPFC).	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 3.1.2.a at the RFMO level (WCPFC). WCPFC - 3.1.2.a: "(…)Roles and responsibilities are not necessarily well understood in all areas, however. WCPFC has had a number of problems with flag States that have not applied appropriate controls to all their vessels, and it appears that not all vessels understand their responsibilities and in some cases there appear to be conflicts between requirements for confidentiality and the responsibilities to provide information necessary for management, which need to be resolved. This includes members not submitting timely data. The Regional Observer Programme (ROP), despite being overall successful, also has allegations of inappropriate behaviour towards observers on vessels, suggesting fishing entities do not fully understand or comply with their responsibilities. Although most data are available to the Pacific Community (Oceanic Fisheries Programme) (SPC-OFP), which is responsible for stock assessment, not all these data have been entered and made available to the Commission. While these problems are not in key areas in the sense that they do not prevent WCPFC completing its primary tasks, they nevertheless undermine its overall effectiveness and increase risks to sustainability. For example, while stock assessments provide estimates of stock status up to the current year, the Scientific Committee noted that the incomplete submission of data increases uncertainty in the assessments and encouraged all members to provide data in accordance with the WCPFC data rules. Hence although the fisheries meet the SG80, they do not meet SG100."	Medley et al. (2020)	80	Accepted (non-material score reduction)
CAB response to stakeholder input		The team, taking into consideration the information presented in the report by Medley et al. 2020 for 3.1.2a, has included in the rationale the following: “Although most data are available to the SPC-OFP not all of this data have been entered and made available to the			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		Commission. The Scientific Committee noted that the incomplete submission of data increases uncertainty in stock assessments and has encouraged members to provide data in accordance with WCPFC data rules." On this basis SG60 and SG80 were met but not SG100.			
3.1.3 - Long term objectives (WCPFC)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 3.1.3.a at the RFMO level (WCPFC).	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG100 for SI 3.1.3.a at the RFMO level (WCPFC). 3.1.3: "(…)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."	Medley et al. (2020)	80	Not accepted (no score change)
CAB response to stakeholder input		The regional level currently does not meet SG100 – see scoring rationale.			
3.2.2 - Decision-making processes (WCPFC)	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG80 for SI 3.2.2.b at the RFMO	The independent report by Medley et al. (2020) indicates that the fishery would not meet SG80 for SI 3.2.2.b at the RFMO level (WCPFC). 3.2.2.b: "(…) 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	Medley et al. (2020)	75	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
	level (WCPFC).	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. 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."			
CAB response to stakeholder input		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.			
General comments					
Cumulative impacts ISSF is concerned the ACDR does not address cumulative impacts on Principle 2 components. Although some fisheries do not meet the MSC guidance requirements that trigger the evaluation of cumulative impacts, this does not mean that existing cumulative impacts are not significant. This is especially evident in terms of ETP species, as current guidance considers that the combined impact needs to be evaluated “only in cases where either national and/or international requirements set			' - https://fisheryprogress.org/directory	N/a	Not accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
catch limits for ETP species". However, we consider that cumulative impacts to ETP species mortality should be assessed in reference to the species' biological limits, stock assessment results, and management advice, regardless of whether catch limits are in place or not (e.g. when management advice requests to reduce catches but catch limits are not agreed). Additionally, 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, as well as other P2 components such as habitats) and managed for all tuna fisheries with MSC aspirations. All currently certified and prospective MSC tuna fisheries should conduct a joint assessment for cumulative impacts on ETP species in the Western and Central Pacific Ocean and prepare a joint management strategy. The fishery client could coordinate with already certified fisheries, fisheries under assessment, and also seek support on this task from Western and Central Pacific Ocean FIPs.					
CAB response to stakeholder input	Cumulative impacts were considered as per MSC procedure and were not triggered for this assessment. For ETP species, cumulative impacts are only assessed under 2.3.1a where there are limits in place, which is not the case here. Please see this interpretation for further information on what constitutes a limit in MSC terms. For habitats, cumulative impacts intervene at SG100 under 2.4.2 only, which is not considered met for this fishery. While we do not disagree with the points raised by ISSF, it would be more useful to address these to MSC directly so that this can be considered in their policy and standard reviews.				
Fishery description and FAD management First, ISSF would like to acknowledge CFC's cooperation during the joint project with ISSF to test two non-entangling and biodegradable FAD designs. Second, ISSF suggests the client provides complete background information in the assessment report covering the following: GENERAL FISHERY DESCRIPTION A complete dFAD fishery description section must include information on all fishery's operations, including the use of FADs. For example, information required to correctly evaluate impacts would include: number of FADs deployed annually, design and materials of FADs, FAD marking system used (if any), number of FAD tracking buoys purchased annually and/or average number of buoys active.			'- ISSF non- entangling and biodegradable FADs guide https://iss-foundation.org/knowledge-tools/guides-best-practices/non-entangling-fads/download-info/non-entangling-and-biodegradable-fads-guide-english/ - ISSF Technical Report 2019-11 https://iss-foundation.org/knowledge-tools/technical-and-meeting-	N/a	Accepted (no score change)

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
FAD MANAGEMENT STRATEGY ISSF recommends that the PCDR includes a description of the fishery's FAD management strategy. A comprehensive FAD management plan would comprise data collection and analysis to address FAD impacts on habitat and P2 species, including cumulative effects with other tuna fisheries in the Western and Central Pacific Ocean (see comment on cumulative impacts). Such FAD management plan could be informed by, and developed to comply with all best practices identified in, ISSF´s Technical Report 2019-11 on Recommended Best Practices For FAD Management In Tropical Tuna Purse Seine Fisheries. Moreover, the fishery's FAD management plan could be further informed by ISSF Technical Report 2018-19A Workshop for the Reduction of the Impact of Fish Aggregating Devices' Structure on the Ecosystem. Please see below the six elements of FAD management that ISSF considers to be of utmost importance, as well as some practical examples the fishery could adopt to implement them. For further examples and recommendations, please see ISSF Technical reports 2019-11 and 2020-11. Moreover, ISSF recommends that the client fishery develops a public FAD Management Plan in the line of what is required by ISSF Conservation Measure 3.7 Transactions with Vessels or Companies with Vessel-Based FAD Management Policies (effective June 2021). (1) Comply with flag state and RFMO reporting requirements for fisheries statistics by set type Provision to WCPFC of routine FAD fishery statistics (e.g. activity on FADs, number of active FADs, etc.) as per WCPFC CMMs (e.g. 2018-01, 2013-05) requirements is essential to assess and manage the impacts of FAD fisheries. ISSF suggests that information on FAD fishery statistics as well as information on observer data (100 % coverage) as per WCPFC requirements are provided to flag States, WCPFC and the Science Provider. (2) Voluntarily report additional FAD buoy data for use by RFMO science bodies In order to meet ISSF´s best practices on this aspect, ISSF recommends the client fishery provides information on position and acoustic record for the whole track or, alternatively, at least one position and echosounder record per day to scientific research institutes or to WCPFC and the WCPFC Science Provider. (3) Support science-based limits on the overall number of FADs used per vessel and/or FAD sets made In order to meet WCPFC's Recommendations and ISSF´s best practices for limiting the number of FADs and to strengthen the effectiveness of these FAD measures, ISSF recommends committing to actions such as (i) deploying only FADs with satellite tracking buoys , (ii) not activating remotely the buoys of inactive FADs in the water (i.e. dormant FADs), (iii) allowing buoys to report at least once per			reports/download-info/issf-2019-11-recommended-best-practices-for-fad-management-in-tropical-tuna-purse-seine-fisheries/ - ISSF Technical Report 2018-19 https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2018-19a-workshop-for-the-reduction-of-the-impact-of-fish-aggregating-devices-structure-on-the-ecosystem/ - ISSF Technical Report 2020-11 https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2020-11-recommended-best-practices-for-tropical-tuna-purse-seine-fisheries-in-transition-to-msc-certification-with-an-emphasis-on-fads/		

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
day while they are in the water, and (iv) adopting alternative possible measures such as FAD closures to reduce their impact. (4) Use only non-entangling FADs to reduce ghost fishing o A new ISSF non- entangling and biodegradable FADs guide was published on August 2019 and, thus, ISSF encourages fisheries to commit to the new definition of fully non-entangling FAD (without any netting). This will allow following the best practice of Technical Paper 2019-11 to commit to using only non-entangling FADs. o ISSF encourages incorporating in the FAD management plan actions to reduce and remove entangling FADs from the water, including encountered FADs not owned by the fishery client. (5) Mitigate other environmental impacts due to FAD loss including through the use of biodegradable FADs and FAD recovery policies ISSF recommends the FAD management plan incorporates specific actions to address the impact of FAD losses. For example, ISSF suggests the fishery under assessment works towards an early adoption of biodegradable FADs in the Pacific Ocean and the construction and deployment of simpler, smaller biodegradable FADs. Moreover, ISSF encourages FAD fisheries to further develop good practices to reduce the loss and abandonment of FADs as described in Technical Paper 2019-11 and Technical Paper 2018-19. For example, by (i) providing FAD track data till the end of their lifetime to identify areas of high incidence of stranding events, (ii) providing positional data on beached FADs to enable targeted recovery, and (iii) participating in cooperative efforts to recover FAD from the water and remove stranded FADs. The assessment report should include a detailed description of the number of FADs recovered by the fishery and the recovery strategy/plan in place and technology used. (6) For silky sharks (the main bycatch issue in FAD sets) implement further mitigation efforts ISSF supports the adoption by the fishery under assessment of measures to reduce shark bycatch (e.g. developing and implementing a Code of Good Practices for bycatch) and suggests the fishery further develops measures to ensure that silky shark mortality is reduced (e.g. directing more effort to school sets and decrease FAD sets, avoiding small sets or with high bycatch/tuna ratio, releasing sharks from the net when safe and practical, implementing live and safe release of sharks (and rays) from the deck). ISSF encourages FAD fisheries to further test and develop shark and rays release techniques from the deck (with a special focus on big individuals) and to identify the tools/tactics used to the safe release of sharks (hoppers, stretchers, release ramps, etc.).				

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
CAB response to stakeholder input		All available information on the client fishery's FAD management strategy has been incorporated into this report and the fishery was scored accordingly. Important information and management gaps have been identified as is reflected in the conditions raised. We have transmitted the above information on best practice to the client so that this can be incorporated into the Client Action Plan as appropriate.			
Score alignment ISSF notes that the preliminary assessment for the only Scoring Issue under PI 2.5.1 resulted in a score of >80. However, according to the Final Report of the PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery, this PI does not meet SG80. ISSF asks the CAB to revisit this score to harmonize it with the PNG assessment (<80) and set a condition. ISSF suggests the client fishery explores ways to work jointly with the PNG and other WCPO FAD fisheries towards achieving the SG80 requirements of PI 2.5.1.			Final Report PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery	< 80	Not accepted (no scoring change).
CAB response to stakeholder input		Scoring of this PI considered UoA-specific information which may not be relevant to the PNG fishery. We also considered the latest studies carried out by Escalle et al. (2019) which are not mentioned in the PNG assessment. It is important to bear in mind that the assessment of this PI is done at the UoA level, thereby limiting the need for harmonisation (see https://mscportal.force.com/interpret/s/article/What-are-the-MSC-requirements-on-harmonisation-multiple-questions-1527586957701) unless the fisheries are identical, which is not the case here. We maintain that the scoring given in this assessment is appropriate.			
Traceability ISSF is concerned that given that some vessels from the UoC may fish in "other PNA waters which are outside the UoC area", in cases where there were both UoC-caught and non-UoC-caught fish aboard a vessel, the risk of mixing catches from UoC and non-UoC sets might jeopardize the final product's traceability. Pending further clarification in terms of monitoring of offloading activities to container vessels, ISSF is concerned this risk may also exist during offloading. In order for the fishery to achieve certification, it must be verified that the Chain of Custody is strong and starts at sea.			N/a		Accepted (no score change)
CAB response to stakeholder input		Please see the completed traceability risk assessment in Section 5: The risk of substitution between catches from within and outside the UoC areas 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 FSM EEZ or High Seas shall be classed as non-MSC.			

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		The team considered that the procedures described above, in conjunction with the 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 UoC areas, traceability back to the UoC can be demonstrated up to the point of landing (i.e. offloading of the fishing vessels onto reefer vessels). In this scenario, Western Central Pacific skipjack, yellowfin and bigeye caught by the vessels listed in Table 9 within the FSM EEZ and High Seas 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 point in the supply chain.** 2) CoC starts at the point of catch, at vessel level, where trips also include sets outside the UoC areas. Western Central Pacific skipjack, yellowfin and bigeye caught by the vessels listed in Table 9 within the FSM EEZ and High Seas 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.**			
HS advocacy actions According to the ACDR preliminary scores, the CAB will likely set conditions towards the implementation by WCPFC of robust Harvest Strategies and HCR for Western Pacific tropical tuna stocks. As regards the Client Action Plan to meet these conditions, ISSF would like to suggest specific actions for the Client to consider: 1) Publicly support the high-level appeals for RFMOs developed by global NGOs that are participants in the NGO Tuna Forum (noting that while Liancheng signed onto the Forum's global RFMO appeal letter in 2019 that was sent directly to RFMOs, CFC and Da Yang did not; (https://www.wcpfc.int/node/44923). For 2020, the global appeal letter was focused on key asks for each RFMO this year. We note that, as for 2019, Liancheng signed the letter this year, but CFC and Da Yang did not. This letter that contains the Forum's high-level appeal to the tuna RFMOs, along with all the logos of current and new company signatories, will be a living public statement of support available on the NGO Tuna Forum's website. (https://ngotunaforum.org/global-tuna-advocacy-appeal/) CFC and Da Yang should publicly support the high-level appeals for RFMOs developed by the global NGO Tuna Forum and attach its logo to the living statement of support. In order to be included in the 2020 version, please contact Mr. Robin Teets (robin.teets@ariastrategies.com). In 2020 and 2021, companies will also have the opportunity to engage in other direct RFMO advocacy tactics to demonstrate market support for specific tuna sustainability asks. NGO participants in the		' - https://www.wcpfc.int/node/44923 - https://ngotunaforum.org/global-tuna-advocacy-appeal/ - https://iss-foundation.org/what-we-do/influence/position-statements	N/a	N/a

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
NGO Tuna Forum will be reaching out to market partners with these opportunities in the coming months. 2) Advocate for accelerated progress on the adoption and implementation of Harvest Strategies and Harvest Control Rules through WCPFC, such as through continued direct engagement with national delegations to WCPFC. ISSF also encourages LianCheng, CFC and DYS to directly engage in the WCPO MSC Alignment Group and the Group's advocacy initiatives for harvest strategies and other priorities. 3) Urge the FSM delegation at WCPFC to take a strong public position on advancing harvest strategies as part of the deliberations WCPFC will undertake virtually this year and at future in-person meetings, including by making proposals for the development of harvest strategies including harvest control rules, in the WCPFC, and to underscore that the MSC has established hard deadlines for P1 conditions for certified tuna fisheries, which for WCPO skipjack HS and for WCPO yellowfin HCR is by 2021. If these deadlines are not met, the corresponding WCPO skipjack and yellowfin MSC certifications will be suspended. 4) Have meetings, calls or other direct contact with all other relevant WCPFC delegations where LianCheng, CFC and DYS have business interests to advocate for the adoption of Harvest Strategies and HCR; and 5) Publicly support ISSF Position Statements that contain detailed asks on Harvest Strategies and Harvest Control Rules to the virtual sessions of the WCPFC in 2020 as well as WCPFC future in-person meetings, and document that support (e.g. by submitting a letter or some other communication citing the Position Statement).				
CAB response to stakeholder input	Client response to ISSF comment: 1) To ensure that this MSC fishery is represented on joint letters to WCPFC related to harvest strategy advocacy asks, our Client Action Plan calls for at least one of the 3 companies that make up the client group of this MSC fishery to co-sign available joint letters. 2) Our client action plan for conditions related to PIs 1.2.1 and 1.2.2 include ensuring that the FSM delegation to WCPFC, and possibly other delegations and stakeholders, are aware of the MSC MegVar deadlines, as well as the content of the WCPFC chair's letter of 15 April 2020 and the preamble to the WCPFC harvest strategy workplan. As recommended to participants of the NGO Tuna Forum in the past, in addition to advocacy activities, a more effective approach to expedite the implementation of the WCPFC harvest strategy workplan might be the approach that PNA effectively implemented when they achieved MSC certification of purse seine skipjack – to fund SPC to advance needed harvest strategy development for this stock. For instance,				

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
		during the regular annual session in Dec. 2020, WCPFC did not assign a specific task to SPC for additional analyses to inform the WCPFC members on TRPs for yellowfin or bigeye tuna stocks during 2021 – and therefore SPC is not advancing on this work despite it being scheduled in the current Dec. 2020 WCPFC HS workplan. We encourage ISSF, MSC and other members of the NGO Tuna Forum to consider replicating PNA's approach, or otherwise at a minimum to consult with SPC (WCPFC's science provider) to determine their institutional and financial constraints and possible remedies to expedite harvest strategy development. Please note that the WCPO Tuna MSC Alignment Group ended in June 2020. We notified Holly Koehler of ISSF of this earlier this year. Therefore, our CAP includes actions to seek opportunities to coordinate with other client groups and CABs as the Alignment Group had arranged in the past. 3) The client action plan includes working with the FSM delegation to WCPFC to pursue the implementation of robust harvest strategies for stocks of the principal market tuna species. 4) The CAP for HS and HCR conditions calls for the client group to participate, "…in WCPFC meetings as part of the FSM government delegation, where the client will communicate to the FSM and possibly other delegations to WCPFC and other stakeholders the relevant MSC MegVar deadlines and consequences of a deadline not being met", and to "…disseminate the NGO Tuna Forum annual RFMO advocacy letter, and an annual ISSF WCPFC Position Statement, by sending these 2 documents via email to the head of the FSM and possibly other government delegations to WCPFC". So, in addition to ensuring that the FSM and possibly other WCPFC delegations are aware of the MSC MegVar deadlines, and importance of WCPFC adopting harvest strategies (which include HCRs), we will also consider that the objective is not just to adopt a HS but to ensure that it is robust and meets the socioeconomic and ecological objectives as agreed by WCPFC. 5) The client group is cautiously optimistic that this approach – of having mass support for a single set of robust, science-based recommendations on WCPFC HS elements – is promising. Therefore, the client group has included distribution of ISSF's WCPFC Position Statement to relevant WCPFC delegations and other stakeholders, this in addition to the annual NGO Tuna Forum joint letter to tuna RFMOs.			
Letter(s) of support The ACDR states that the CAB will likely set conditions regarding PI 1.2.1 (Harvest strategy), 1.2.2 (Harvest control rules & tools. Taking into account that NORMA will probably have a relevant role in the action plan for these conditions, ISSF is concerned that, without a letter of support from them, there is no clear expectation that the Client Action Plan will achieve its objectives. For your reference, please consult formal letters included in PCDRs or Final Reports for other tuna fisheries that have obtained MSC certification in recent years. These are formal letters from the corresponding national fisheries agency or ministry of fisheries, in which they state their conformity and commitment to the milestones and actions described in the Client's Action Plan (see for example			'Final Report of the Solomon Islands longline albacore and yellowfin tuna fishery: see link.	N/a	N/a

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
the PCDR of the Usufuku Honten Northeast Atlantic longline bluefin tuna fishery (Appendix 9, p.251), or the Final Report of the Solomon Islands Skipjack and Yellowfin Tuna Purse Seine Anchored FAD, Purse Seine Unassociated, and Pole and Line (Appendix 7, p.314)).					
CAB response to stakeholder input		Please see Appendix 8 for the NORMA letter of support.			

Appendix 4.2 Post PCDR publication

Following publication of the PCDR, additional comments were submitted by ISSF and Technical Oversight was received from MSC. The comments and responses are shown below.

Appendix 4.2.1 ISSF submission

PI follow-up comments

Note: these are follow-up comments to the initial comments submitted at the ACDR stage.

1.2.1 - Harvest strategy (SKJ, YFT)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our agreement with Medley et al. (2021) that the fishery does not meet SG100 for scoring issue (d): "According to CMM 14-06, a formal harvest strategy for bigeye, yellowfin and skipjack should be put in place by WCPFC, with provision for periodic review (see 14-06, Annex 1, para. 9). This has, however, not yet been achieved. Meanwhile, the existing harvest strategy, currently set out in 2018-01 and rolled over into 2020-01, has been more or less the same for several years; although it is not clear that improvement is required as a matter of urgency. SG100 is not met."	Medley et al. (2021)	No (minor score reduction expected)	Accepted (no score change - additional evidence presented)
CAB response	The wording of the SI is 'reviewed and improved as necessary'. In relation to yellowfin and skipjack, Medley et al. note that there is no evidence from stock assessments that the harvest strategy needs improvement in the short term. (In the long term the work is ongoing under 14-06 to completely revise it.) So the question under this scoring issue is: Is there regular review in order to evaluate whether improvement is needed to the harvest strategy for yellowfin or skipjack, pending completion of the 14-06 process? It is evident that there is. Each year, SPC present a set of indicators and projections for each stock, and these are discussed by the SC; the SC conclusions are presented to and discussed by the plenary. So in order to score this SI as met, it is not required that there be improvements to the harvest strategy come what may, only 'as necessary'. The rationale has however been improved to specify some of the review elements in more detail.		

1.2.1 - Harvest strategy (SKJ, YFT, BET)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our agreement with Medley et al. (2021) that scoring issue (f) should be scored, and that the fishery meets SG80: ""A joint meeting of the tuna Regional Fisheries Management Organisations (tRFMOs) in Brisbane 2010 as part of the Kobe process, specifically focused on bycatch and discarding, although this mainly dealt with non-tuna species. Discards are routinely estimated for all target species where possible, but discarding of target tunas is not generally considered significant compared to other mortality. Monitoring depends upon the presence of at-sea observers, however. The main concern with discards of tuna appears to apply to the purse seine fleet. WCPFC has in place CMM 2009-02 which aims to limit discard mortality and requires reporting of discard events. In addition, recent CMMs on tropical tunas (2018-01, 2017-01) aim to reduce undesirable catch of juvenile bigeye through control of effort on FADs and require purse seine to retain of yellowfin, bigeye and skipjack on board for landing. On this basis, discarding is clearly subject to review and that controls are being implemented, meeting SG80. It is not clear this review is sufficiently frequent to meet SG100.".	Medley et al. (2021)	No (scoring implications unknown)	Accepted (no score change - additional evidence presented)
CAB response	This SI relates to the UoA specifically, so the analysis in Medley does not apply here. An assessment of a specific fisheries needs to consider the rate of unwanted catch for that fishery, and if necessary the actions taken by that fishery specifically to reduce it. We have revised the rationales for this SI to provide the actual discard rates for each target species for the last five years (by set type and overall). On this basis, our argument for considering unwanted catch to be negligible is now more robust.		
ISSF reviewed the Client Action Plan for conditions 1-6 on the adoption of robust Harvest Strategies and HCR and tools for Western Pacific skipjack, yellowfin and bigeye tuna. ISSF commends the Client Group's thorough plan and all advocacy actions described in it and suggest the following items are also included: • Have all three companies in the Client Group sign joint advocacy letters directed at WCPFC • Urge the delegation of FSM and of all other parties associated with the Client Group at WCPFC to support establishing a scientist/manager dialogue group that will hold its first meeting in 2022. • The Client Group could provide further assistance to the ongoing efforts of ISSF, MSC, the NGO Tuna Forum, by engaging in supporting the technical work of WCPFC/SPC, as well as capacity workshops	Medley et al. (2021)	No (scoring implications unknown)	N/a

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
on Management Strategy Evaluation in the WCPO region so as to increase the leverage of WCPFC members for the discussion and adoption of robust Harvest Strategies.			

CAB response	The CAB was provided with the following client response: We thank ISSF for the suggestion to have all 3 companies that make up the client group sign joint advocacy letters. We have decided to retain the existing CAP action to have at least 1 of the companies sign on behalf of the MSC certified fishery, but in some cases all 3 companies may decide to co-sign. The broad action to work with the FSM and other delegations could include making narrow recommendations such as the ISSF recommendation on the scientist/manager dialogue, but we do not include that level of detail in the action plan, and in particular for this recommendation are not convinced that forming yet another WCPFC working group would expedite the process to put harvest strategies in place. We thank ISSF for the suggestion to have the client group companies support the technical work of WCPFDC and SPC, including workshops on MSE. For the same rationale as described in our response to the previous comment, the broad CAP actions to work with the FSM and other WCPFC delegations to put robust harvest strategies in place may include specific actions that may arise such as contributing to the commission's science provider tasks. We have inquired with SPC about whether they require additional technical support related to preparing the scientific basis for options for WCPFC to consider for single and multi-stock harvest strategies and were informed that the WCPFC progress in adopting harvest strategies is not being affected by scientific advice.

1.2.2 - Harvest control rules and tools

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
Same comment as above re: CAP for P1 conditions	Medley et al. (2021)	No (scoring implications unknown)	N/a

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
CAB response	Please see the client's response above under 1.2.1 - Harvest strategy (SKJ, YFT, BET).		

1.2.2 - Harvest control rules and tools (YFT)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our agreement with Medley et al. (2021) that scoring issue (a) SG60 is not met: "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): • 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. MSC's second requirement for an 'available' HCR is met for yellowfin by CMM 2014-06. In terms of the first requirement, for WCPO yellowfin, stock biomass has not previously been reduced below the MSY level, according to the most recent stock assessment. The probability of either spawning biomass being below or F above 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 majority time series, and there is no guarantee that it will stabilise above BMSY under the current management regime, bearing in mind that a target reference point has not yet been agreed.	Medley et al. (2021)	No (score reduction expected to <60, PI fails)	Not accepted (no change)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
However, the case of bigeye raises the question as to what actions WCPFC could be relied on to take, should any future 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, although in both stocks there is evidence that the stock biomass has been stabilising in recent years. Because there is no direct evidence that any 'available' HCR is able to reduce the exploitation rate as the PRI is approached, 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. 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. 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 original timetable. Progress is being made at least for some species (WCPFC HS, 2019). Limit reference points have been agreed for bigeye and yellowfin, but not yet target reference points. Interim targets have been agreed for South Pacific albacore, for which HCR are now being developed. In contrast, progress with skipjack has led to the final stage, developing the monitoring strategy. 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.			

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We note however that a variation request was granted in 2018 to extend the timeline for meeting the condition on this performance indicator.			
CAB response	The answer is contained in paragraph 5 of the above comment: '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.'		

1.2.2 - Harvest control rules and tools (BET)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our agreement with Medley et al. (2021) that scoring issue (a) SG60 is not met: "summarised below are met (for full list see SA2.5.2, 2.5.3): • 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. For WCPO bigeye, the first requirement is met because the stock biomass has not previously been reduced below the MSY level, according to the 2020 stock assessment. The second of MSC's	Medley et al. (2021)	No (score reduction expected to <60, PI fails)	Not accepted (no change)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
requirements to score a HCR as 'available' is met via CMM 2014-06. The updated 2018 stock assessment gives narrower confidence intervals for B/BMSY, 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 an HCR to be 'available' at SG60 are met. The current harvest strategy (CMM 2017-01, 2018-01, 2020-01) 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. The most recent stock assessment work (2020) puts the stock in the Kobe plot green zone, there is clear evidence that the stock has been declining and no evidence that management is able to limit this decline yet, although it has decelerated. On this basis, the HCR has not yet worked to address the perception of stock status, and there is no justification that it will work now to avoid further declines, although this is clearly the management intent. Because there is no evidence that the HCR will reduce the exploitation rate as the PRI is approached, 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 WCPFC16 on this issue. 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. 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			

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
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 original timetable. Progress is being made at least for some species (WCPFC HS, 2019). Limit reference points have been agreed for bigeye and yellowfin, but not yet target reference points. Interim targets have been agreed for South Pacific albacore, for which HCR are now being developed. In contrast, progress with skipjack has led to the final stage, developing the monitoring strategy. 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. We note however that a variation request was granted in 2018 to extend the timeline for meeting the condition on this performance indicator."			
CAB response	Please see our response under 1.2.2 - Harvest control rules and tools (YFT).		

1.2.3 - Information and monitoring (BET)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our agreement with Medley et al. (2021) that the fishery does not meet SG100 for scoring issue (a): "In relation to SG100, while much of the data are comprehensive, there still remain some data problems that could apply to bigeye (e.g., longline observer coverage, limited data from some countries). Furthermore, uncertainties remain about the biology of the species, which have an impact on	Medley et al. (2021)	No (minor score reduction expected)	Not accepted (no change)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
determination of stock status (e.g., the definition of stock boundaries in the Pacific Ocean, age and growth and environmental drivers of recruitment). On this basis, SG100 is not met."			
CAB response	As the reviewer points out, much of the data are comprehensive and a considerable amount of work has been conducted to address relevant issues such as reducing uncertainty in bigeye age and growth (i.e. projects 35, 81 and 94). Considerable improvements have been achieved about this issue and the Western Pacific bigeye growth curve is now robust and more useful to be incorporated in the stock assessment. Likewise, although the definition of stock boundaries is difficult, extensive tagging and genetic data has been collected to improve such definitions. The team has made a judgement call in the sense that enough comprehensive information is available to support management as required in SI at SG100 on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information.		

2.3.1 - ETP species outcome

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our comment re: cumulative impacts, which we have also submitted to MSC through the Fisheries Standard Review process. Best practices to meet MSC certification should include a joint assessment of cumulative impacts with all other relevant fisheries, including FIPs. Although some fisheries do not meet the MSC guidance requirements that trigger the evaluation of cumulative impacts, this does not mean that existing cumulative impacts are not significant. This is especially evident in terms of ETP species, as current guidance considers that the combined impact needs to be evaluated "only in cases where either national and/or international requirements set catch limits for ETP species". However, we consider that cumulative impacts to ETP species mortality should be assessed in reference to the species' biological limits, stock assessment results, and management advice, regardless of whether catch limits are in place or not (e.g. when management advice requests to reduce catches but catch limits are not agreed).	https://fisheryprogress.org/directory	No (scoring implications unknown)	Not accepted (no change)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
Additionally, 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, as well as other P2 components such as habitats) and managed for all tuna fisheries with MSC aspirations. All currently certified and prospective MSC tuna fisheries should conduct a joint assessment for cumulative impacts on ETP species and habitats in the Western and Central Pacific Ocean and prepare a joint management strategy. The fishery client could coordinate with already certified fisheries, fisheries under assessment, and also seek support on this task from Western and Central Pacific Ocean FIPs.			
CAB response	Our initial response remains valid: Cumulative impacts were considered as per MSC procedure and were not triggered for this assessment. For ETP species, cumulative impacts are only assessed under 2.3.1a where there are limits in place, which is not the case here. Please see this interpretation for further information on what constitutes a limit in MSC terms. For habitats, cumulative impacts intervene at SG100 under 2.4.2 only, which is not considered met for this fishery. While we do not disagree with the points raised by ISSF, it would be more useful to address these to MSC directly so that this can be considered in their policy and standard reviews.		

2.4.2 - Habitats management strategy

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
Same comment as for 2.3.3 re: assessment of cumulative impacts	https://fisheryprogress.org/directory	No (scoring implications unknown)	Not accepted (no change)

Input detail		Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
CAB response	Please see our comment above.			
ISSF notes all FAD management measures currently in place for the UoA, and recommends that the Client Group adds other specific actions to their plan (or that they are considered during Year 1 of the CAP for Condition 9 "The client will consult with NORMA and other stakeholders and compile publications recommending improvements in WCPFC dFAD management to identify candidate measures to improve the dFAD management system to reduce both the proportion and magnitude of dFADs that become derelict and that run aground on coral reefs and other vulnerable coastal and marine ecosystems, identify alternative measures that hold the most promise".) • FAD retrieval: While we understand that FAD and buoy recovery programs may be difficult to implement due to the long-distances where abandoned FADs end up, this should not prevent the fishery from committing to retrieve from the water any entangling FADs they encounter, including encountered FADs not owned by the fishery client. • FAD numbers: The fishery could commit to reducing the number of FADs per vessel to the limit of 100 FADs/year set by the FSM FAD management plan, regardless of the plan not having legal effect at the moment. • Transition to fully NE biodegradable FADs: The PCDR incorrectly describes the trials of biodegradable FADs as "not successful" (page 33). From a point of view of developing more sustainable fishing technology, the initial trials were very successful as they allowed for the identification of critical changes that needed to be implemented. These changes will be trialed in a second phase that is starting now. We request the CAB to correct this, or to qualify what it means by not successful (e.g., because of the amount of tunas caught or the number of sets made). ISSF acknowledges CFC's engagement in the joint project with ISSF to test new designs of fully non-entangling biodegradable FADs. While there is still room for improvement in these designs, there has been significant progress to date. During the first trials, three different prototypes were compared: traditional FADs, FADs with a traditional design but made of biodegradable materials, and another biodegradable design referred to as 'Jelly-FAD' (Moreno et al. 2020 and 2021). Trials so far have shown a better performance of the Jelly-FAD compared to the traditional FAD made of biodegradable materials, and have proved that the Jelly-FAD had the ability to attract large aggregations of tuna (a set on a Jelly-		• Moreno G., J. Salvador, J. Murua, N. B. Phillip, H. Murua, L. Escalle, B. Ashigbui, I. Zudaire, G. Pilling, V. Restrepo. (2020). A multidisciplinary approach to build new designs of biodegradable Fish Aggregating Devices (FADs). WCPFC-SC16-2020/EB-IP-08. https://meetings.wcpfc.int/node/11726 • Moreno et al. (2021) (sent as attachment) • Compendium of ISSF research activities to reduce FAD structure impacts on the ecosystem. ISSF Technical Report 2020-13. International Seafood Sustainability Foundation, Washington, D.C., USA https://iss-foundation.org/download-monitor-demo/download-info/issf-2020-13-compendium-of-issf-research-activities-to-reduce-fad-structure-impacts-on-the-ecosystem/ • https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2019-11-recommended-best-practices-for-fad-management-in-tropical-tuna-purse-seine-fisheries/	No (scoring implications unknown)	N/a

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
FAD fished 95 tons of tuna). As described in the PCDR, these outcomes will be used in subsequent phases of the project, during which an improved version of the Jelly-FAD will be tested (e.g. using stronger materials for the main rope to improve durability and submerging the raft to reduce structural tension). Given the positive outcomes so far, ISSF encourages CFC to continue participating in these trials, and also encourages all other vessels in the UoC (Da Yang) to start testing non-entangling and biodegradable FADs using the knowledge already acquired by ISSF and CFC. The best strategy would be to conduct a trial collaboratively by the fleets participating in the UoA with the ultimate objective of moving towards fully non-entangling biodegradable FADs in the near future. For more details on these and other FAD management measures identified by ISSF as recommended best practices for FAD management in tropical tuna purse seine fisheries, please see ISSF technical reports 2019-11 and 2020-11.	• https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2020-11-recommended-best-practices-for-tropical-tuna-purse-seine-fisheries-in-transition-to-msc-certification-with-an-emphasis-on-fads/		

CAB response	The CAB received the following client response: The recommendation to have the purse seine vessels commit to retrieve derelict FADs that they encounter at sea is problematic because: (1) it is not feasible to determine if a FAD that they encounter is in use vs. derelict, and (2) there are crew health safety risks with storing biofouled gear on the vessel for long periods. Furthermore, the vessel-based FAD limit may affect FAD ALDFG retrieval activities. We will discuss this further and reconsider options during the year 1 surveillance audit, including options for disabling derelict and IUU FADs – such as by sinking them (cut the buoy lines, and retrieve just the float and satellite buoys), and to determine the feasibility of reporting to FSM NORMA the location of FADs encountered in the FSM EEZ to enable the FSM government to determine if it is IUU gear and can be removed or disabled. We will consider voluntary industry reductions in the number of drifting FADs deployed per vessel at the year 1 surveillance audit. Discussions with FSM and other WCPFC delegations will include potential improvements to WCPFC's FAD design requirements. The client companies will consider the commercial uptake of biodegradable FAD designs once research and development and evidence from pilots have progressed, and will discuss this at annual surveillance audits. The client group companies note that all FAD designs pose a risk of habitat degradation if they ground on sensitive coastal habitats – thus, transitioning to non-entangling and biodegradable designs address some but not all adverse risks posed by in-use and derelict FADs. CFC plans to continue to participate in the ISSF trials of biodegradable FADs. We have not revised the action plan, in part, because biodegradable FAD designs, while reducing plastic ocean inputs, also pose a risk of habitat degradation if they ground on sensitive coastal habitats.

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
	Note: regarding the comment on the success of the biodegradable FADs, the CAB made the statement of the trials 'not being successful' following interviews with the client group. We changed the wording and added the additional detail provided by ISSF.		

3.2.2 - Decision-making processes (WCPFC)

Input detail	Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
We reiterate our agreement with Medley et al. (2021) that the fishery would not meet SG80 for SI 3.2.2.b at the RFMO level (WCPFC): "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. 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."	Medley et al. (2021)	No (score reduction expected to 60-80, condition raised)	Not accepted (no change)

Input detail		Evidence or references	Is the CAB response to the original comment adequate?	CAB response code
CAB response	A 2018 assessment indicated that the South Pacific albacore not to be in an overfished condition and that overfishing was not taking place. (Tremblay-Boyer et al. 2018). WCPFC adopted an interim target reference point (TRP) for South Pacific albacore. Therefore the team has decided that SG80 is achieved for this SI.			

PI input – New at PCDR stage

2.3.3 - ETP species information

Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
We suggest the CAB take into account not only existing uncertainties in terms of post-release mortality rates and entanglement mortality, but also shark mortality from purse seine encirclement itself	Given the higher probability of catching silky sharks (and higher catch rates) in dFAD and log sets (Peatman et al. 2017), ISSF suggests the CAB pay special attention to the scoring of PIs 2.3.1 and 2.3.3 in order to reflect the larger impact that fishing on associated sets has on silky sharks and other species (e.g. oceanic whitetip shark). While we are aware that the scoring of the silky shark and oceanic whitetip shark elements is not harmonized across dFAD fisheries, and that P2 indicators are assessed at the fishery level, which may explain some of the differences in scoring; we suggest the CAB take into account not only existing uncertainties in terms of post-release mortality rates and entanglement mortality, but also shark mortality from purse seine encirclement itself, and revise these scores to make sure they incorporate the impact of fishing on associated sets on ETP shark species.	'Peatman et al. (2017) https://meetings.wcpfc.int/node/10174	No (scoring implications unknown)	Not accepted (no change)

Input summary	Input detail	Evidence or references	Suggested score change	CAB response code
CAB response	The impact assessment not only scores each shark species separately for associated and unassociated sets but also assumes 100% mortality of all sharks encountered by the fishery according to observer data. In that respect, we consider the assessment to be sufficiently precautionary.			

Appendix 4.2.2 MSC Technical Oversight

CERTIFIED SUSTAINABLE SEAFOOD

Date: 6/11/2021

SUBJECT: MSC Technical Oversight for Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery - Public Comment Draft Report

Dear Chrissie Sieben (Control Union UK)

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
30947	Minor	157	FCP-7.17.9.1 v.2.1	A rationale shall be presented to support the team's conclusion.	PI 2.1.1, SI a - In relation to unobserved mortality, the team outline the mitigation in place to reduce entanglement (the use of lower entanglement risk FADs by the fishery), but it is unclear how/whether the team have considered the risk of entanglement and associated impact on species mortality within the scoring rationale (for example, through number of FAD types, deployment rates and significance of impacts on the relevant scoring elements).	2.1.1,

We have made clearer that the rationale on unobserved mortality due to entanglement applies to all scoring elements for the associated UoAs and have expanded the rationale to cover the points raised in the TO.

30948	Major	40-41; 178-179; 184-187	FCP-7.17.9.1 v.2.1	A rationale shall be presented to support the team's conclusion.	PI 2.3.1, SI b - All scoring elements - It is unclear how the team have assessed unobserved mortality as per SA3.1.8 and relevant guidance (GSA3.1.8). For example, the report highlights that cetaceans interact with fisheries operations (Page 40, Page 179) and highlight that post capture motality is unclear (Page 184-187). It is unclear how the team have considered these impacts in the context of scoring issue b. Linked crticial guidance on post capture mortality, GSA3.4.3, should also be considered here.	2.3.1,

We have made clearer that the rationale on unobserved mortality due to entanglement applies to all scoring elements for the associated UoAs. Although a condition was raised under 2.3.3 (ETP species information) in relation to the need for better quantitative data on unobserved mortality due to entanglement, the combination of low risk (i.e. lesser entangling FAD designs are in use which have been demonstrated to greatly reduce entanglement, with low incidences being reported only if the sausage nets become unravelled – this is explained in the rationale), and the low number of deployments

(140 per year per vessel) provided the team with sufficient confidence that the direct impacts of the fishery through unobserved mortality would not hinder recovery of any of the ETP species concerned.

30949	Minor	29	FCP-7.9.1.5.b v.2.1	7.9.1.5 The CAB shall identify and document in the Announcement Comment Draft Report: b. The point of intended change of ownership of product.	As per FCP 7.9.1.5.b, the CAB shall identify and document the point of intended change of ownership of product.	

Ownership changes when the reefer reaches its destination. This has been clarified.

30950	Minor	29	FCP-7.9.1.5.c v.2.1	7.9.1.5 The CAB shall identify and document in the Announcement Comment Draft Report: c. The point from which subsequent Chain of Custody certification is required.	As per FCP 7.9.1.5.c, the CAB shall identify and document the point from which subsequent CoC certification is required. The CAB suggested two scenarios for where CoC should begin, but it is unclear which scenario is recommended? In what situation the fishery would opt for different CoC starting point? Note that the buyers from the fishery will use this information to determine how and from where they can buy product from certified UoC, and rely on the CAB's clarity here.	

This follows the approach that has been used for other fisheries with overlapping client groups (e.g. SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore, yellowfin and bigeye longline fishery) and stems from the risk of mixing UoC and non-UoC catch by going into non-UoC waters during the same trip. To mitigate for this risk, the client fleet can either get CoC from the point of harvest (i.e. at vessel level) or elect to only consider trips that are exclusively in the UoC area as MSC certified. As for the longline fisheries, the certificate would have the list of vessels that are CoC certified and those that aren't. At the time of drafting, the client had indicated that CoC certification would be pursued for its entire fleet. This has been clarified in the report.

30951	Minor	27	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.	As per FCP 7.9.1.4, with the risk factors identified, the CAB shall also detail the risk mitigation or management measures. Table 7 rows 2 & 3 identified risk of mixing with catch from multiple, non-UoC geographic area i.e. PNA waters (which overlap with FSM EEZ), and from multiple vessels at the point of unloading and loading of containers. However the mitigation measures on board vessels that also fish for PNA eligible catch while operating within this Micronesia fishery's UoC are not described, especially in the situation when CoC does not begin at the point of harvest. Further, third party SGS audit is presented as a risk mitigation, but it is unclear what SGS audit involved and how it ensures effective segregation, identification, no mixing and traceability back to certified UoC catch. Please clarify.	

As stated above, the client intends for all vessels in the fleet to have CoC certification. Regarding a potential conflict between this fishery and any supply to the certified PNA fishery, if the companies were to make use of the PNA CoC certificate, they will need to declare that trip to PNA (prior to the trip taking place) in order to get a unique PNA identifier. It should therefore be possible to trace catch back to either fishery, with the vessels in both having separate MSC CoC. We have added this clarification to the report.

Regarding SGS, the fishery certificate only goes up to the point of landing (i.e. when the catch is transhipped in-port onto a reefer). The report states that "Separate CoC certification will be required from this point onwards and before transportation to the next point in the supply chain." Therefore any processes that follow should not be considered as mitigation for any traceability risks identified under the fishery certificate and we have amended this reference to avoid confusion.

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

Appendix 5 Conditions, Recommendations and Client Action Plan

Table 40. Condition 1 – Harvest strategy skipjack (UoAs 1, 2)

Performance Indicator	PI 1.2.1
Score	70
Justification	Scoring issue a (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. See Scoring table 3.
Condition	By the end of Year 1, WCPO skipjack needs a harvest strategy that is responsive to the state of the stock, with a harvest control rule and management actions, such that the strategy is responsive to the status of the stock and the elements of the harvest strategy (monitoring, stock assessment, harvest control rules and management actions) working together to achieve stock management objectives. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.
Milestones	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) and with the CAB-wide Variation Request that has been submitted for alignment of P1 conditions and timelines on HMS stocks. Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023. Year 1 (2022), extended to June 2023: The client will provide evidence that the harvest strategy for WCPO skipjack 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.
Client Action Plan	Noting that the current December 2020 version of the WCPFC Harvest Strategy Workplan is scheduled to adopt a harvest control rule for WCPO skipjack tuna at the 2022 regular session of the Commission (December 2022), the client is cautiously optimistic that WCPFC will meet the current MSC MegVar deadline of June 2023 (Appendix 9) to have a 'harvest strategy in place' for this stock. However, noting the 15 April 2020 letter from the WCPFC chair to WCPO tuna MSC certificate holders, which explains that, "The WCPFC Harvest Strategy Workplan…has always been viewed as a 'living document' that could be amended from time to time, given the complexity of the work and the decisions to be taken (see the WCPFC14 Summary report, paragraphs 146-160 and 214). The workplan document is therefore updated annually to reflect actual progress as well as emerging needs", and that the preamble of the Harvest Strategy Workplan explicitly states, "parties are cautioned against an expectation that harvest strategy elements will be completed in specific years. Completion dates have changed in the past and may change in the future". MSC may have been unaware of this and did not consult with WCPFC prior to authorizing the MegVar.

	With this background in mind, 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 (1) participating in WCPFC meetings as part of the FSM government delegation, where the client will communicate to the FSM and possibly other delegations to WCPFC and other stakeholders the relevant MSC MegVar deadlines and consequences of a deadline not being met. (2) The client will seek opportunities to have at least one of the 3 companies that make up the client group to co-sign joint letters to WCPFC that advocate for putting in place and implementing a robust harvest strategy for WCPO skipjack, bigeye and yellowfin tuna stocks, such as have been organized in the past by the NGO Tuna Forum. (3) The client will disseminate the NGO Tuna Forum annual RFMO advocacy letter, and an annual ISSF WCPFC Position Statement, by sending these 2 documents via email to the head of the FSM and possibly other government delegations to WCPFC. (4) The client will meet during WCPFC in-person annual sessions with MSC staff and with clients and CABs of other MSC fisheries with the same conditions of certification to discuss opportunities to align and coordinate Client Action Plan activities to address these conditions, such as had been organized in the past by the WCPO Tuna MSC Alignment Group.
Consultation on condition	The client will consult with (1) FSM NORMA in implementing this activity. A support letter from NORMA is included in Appendix 8. Furthermore, the client will consult with (2) participants of the NGO Tuna Forum, including ISSF and SFP; (3) MSC staff; (4) WCPFC secretariat staff and commission chair; and (5) clients and CABs of other MSC fisheries with the same conditions of certification.

Table 41. Condition 2 – Harvest control rules skipjack (UoAs 1, 2)

Performance Indicator	PI 1.2.2
Score	60
Justification	Scoring issue a (SG80): 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. Scoring issue b (SG80): The HCRs are likely to be robust to the main uncertainties. Scoring issue c (SG80): Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs. See Scoring table 4.
Condition	By the end of Year 1, WCPO skipjack needs a harvest control rule that ensures that the exploitation rate is reduced as the PRI is approached and is expected to keep the stock fluctuating around the target level and is robust to the main uncertainties. The tools used to implement the HCR should be effective in achieving the required exploitation levels.
Milestones	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) and with the CAB-wide Variation Request that has been submitted for alignment of P1 conditions and timelines on HMS stocks. Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023. Year 1 (2022), extended to June 2023: The client will provide evidence that a well-defined regional-level harvest control rule is in place for WCPO skipjack, 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.
Client Action Plan	With the background described in the CAP for condition 1 in mind, the client's planned actions to address condition 1 are the same for this condition.
Consultation on condition	The clients' planned consultation for this condition are the same as for condition 1.

Table 42. Condition 3 - Harvest strategy yellowfin (UoAs 3, 4)

Performance Indicator	**1.2.1**
Score	70
Justification	Scoring issue a (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. See Scoring table 9.
Condition	By the end of Year 1, 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. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.
Milestones	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) and with the CAB-wide Variation Request that has been submitted for alignment of P1 conditions and timelines on HMS stocks. Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023.

	Year 1 (2022), extended to June 2023: The client will provide evidence that the harvest strategy for WCPO yellowfin 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.
Client Action Plan	Noting that the current December 2020 version of the WCPFC Harvest Strategy Workplan (1) does not contain a deadline for HCR adoption for WCPO yellowfin, and (2) is currently scheduled to adopt a TRP for WCPO yellowfin tuna at the 2021 regular session of the Commission (December 2021), but noting (3) that at the regular annual session in Dec. 2020, WCPFC did not assign a specific task to SPC for additional analyses to inform the WCPFC members on TRPs for yellowfin or bigeye tuna stocks during 2021, therefore WCPFC adoption of a yellowfin TRP might be pushed to Dec. 2022. This would mean that a HCR might then be adopted in Dec. 2023 and therefore the current MSC MegVar deadline of June 2023 to have a 'harvest strategy in place' for this stock is at risk of not being met. However, recognizing that MSC currently (as of March 2021) has a fisheries standard review in progress, where Harvest Strategies Performance Indicator in Principle 1 is a topic, which may affect existing fisheries in the MSC program, this introduces uncertainty over this MegVar deadline. With this background in mind, the client's planned actions to address condition 1 are the same for this condition, inserted below: The client will implement harvest strategy advocacy activities by (1) participating in WCPFC meetings as part of the FSM government delegation, where the client will communicate to the FSM and possibly other delegations to WCPFC and other stakeholders the relevant MSC MegVar deadlines and consequences of a deadline not being met. (2) The client will seek opportunities to have at least one of the 3 companies that make up the client group to co-sign joint letters to WCPFC that advocate for putting in place and implementing a robust harvest strategy for WCPO skipjack, bigeye and yellowfin tuna stocks, such as have been organized in the past by the NGO Tuna Forum. (3) The client will disseminate the NGO Tuna Forum annual RFMO advocacy letter, and an annual ISSF WCPFC Position Statement, by sending these 2 documents via email to the head of the FSM and possibly other government delegations to WCPFC. (4) The client will meet during WCPFC in-person annual sessions with MSC staff and with clients and CABs of other MSC fisheries with the same conditions of certification to discuss opportunities to align and coordinate Client Action Plan activities to address these conditions, such as had been organized in the past by the WCPO Tuna MSC Alignment Group.
Consultation on condition	The clients' planned consultation for this condition are the same as for condition 1.

Table 43. Condition 4 - Harvest control rules and tools yellowfin (UoAs 3, 4)

Performance Indicator	**1.2.2**
Score	60
Justification	Scoring issue a (SG80): 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. Scoring issue b (SG80): The HCRs are likely to be robust to the main uncertainties.

	Scoring issue c (SG80): Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs. See Scoring table 10.
Condition	By the end of Year 1, 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).
Milestones	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) and with the CAB-wide Variation Request that has been submitted for alignment of P1 conditions and timelines on HMS stocks. Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023. Year 1 (2022), extended to June 2023: The client will provide evidence that a well-defined regional-level harvest control rule is in place for WCPO yellowfin, 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.
Client Action Plan	With the background described in the CAP for condition 3 in mind, the client's planned actions to address condition 1 are the same for this condition.
Consultation on condition	The clients' planned consultation for this condition are the same as for condition 1.

Table 44. Condition 5 - Harvest strategy bigeye (UoAs 5, 6)

Performance Indicator	**1.2.1**
Score	70
Justification	Scoring issue a (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. See Scoring table 15.

Condition	By the end of Year 1, 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. The key missing element of the harvest strategy at present is a well-defined harvest control rule with associated reference points and management actions.
Milestones	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) and with the CAB-wide Variation Request that has been submitted for alignment of P1 conditions and timelines on HMS stocks. Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023. Year 1 (2022), extended to June 2023: The client will provide evidence that the harvest strategy for WCPO bigeye 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.
Client Action Plan	Noting that the current December 2020 version of the WCPFC Harvest Strategy Workplan (1) does not contain a deadline for HCR adoption for WCPO bigeye tuna, and (2) is currently scheduled to adopt a TRP for WCPO bigeye tuna at the 2021 regular session of the Commission (December 2021), but noting (3) that at the regular annual session in Dec. 2020, WCPFC did not assign a specific task to SPC for additional analyses to inform the WCPFC members on TRPs for yellowfin or bigeye tuna stocks during 2021, and therefore WCPFC adoption of a WCPO bigeye tuna TRP will most likely be pushed to Dec. 2022. This means that a HCR could at the earliest be adopted in Dec. 2023 and therefore the client is concerned that the current MSC MegVar deadline of June 2023 to have a 'harvest strategy in place' for this stock is at risk of not being met. However, recognizing that MSC currently (as of March 2021) has a fisheries standard review in progress, where Harvest Strategies Performance Indicator in Principle 1 is a topic, which may affect existing fisheries in the MSC program, this introduces uncertainty over this MegVar deadline. With this background in mind, the client's planned actions to address condition 1 are the same for this condition, inserted below: The client will implement harvest strategy advocacy activities by (1) participating in WCPFC meetings as part of the FSM government delegation, where the client will communicate to the FSM and possibly other delegations to WCPFC and other stakeholders the relevant MSC MegVar deadlines and consequences of a deadline not being met. (2) The client will seek opportunities to have at least one of the 3 companies that make up the client group to co-sign joint letters to WCPFC that advocate for putting in place and implementing a robust harvest strategy for WCPO skipjack, bigeye and yellowfin tuna stocks, such as have been organized in the past by the NGO Tuna Forum. (3) The client will disseminate the NGO Tuna Forum annual RFMO advocacy letter, and an annual ISSF WCPFC Position Statement, by sending these 2 documents via email to the head of the FSM and possibly other government delegations to WCPFC. (4) The client will meet during WCPFC in-person annual sessions with MSC staff and with clients and CABs of other MSC fisheries with the

	same conditions of certification to discuss opportunities to align and coordinate Client Action Plan activities to address these conditions, such as had been organized in the past by the WCPO Tuna MSC Alignment Group.
Consultation on condition	The clients' planned consultation for this condition are the same as for condition 1.

Table 45. Condition 6 - Harvest control rules bigeye (UoAs 5, 6)

Performance Indicator	**1.2.2**
Score	60
Justification	Scoring issue a (SG80): 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. Scoring issue b (SG80): The HCRs are likely to be robust to the main uncertainties. Scoring issue c (SG80): Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs. See Scoring table 15.
Condition	By the end of Year 1, 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)
Milestones	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) and with the CAB-wide Variation Request that has been submitted for alignment of P1 conditions and timelines on HMS stocks. Note: as a result of the Covid-19 pandemic, MSC have issued a derogation which extends the deadlines for all existing conditions by one year. This condition is harmonised with other fisheries in the MSC programme and is extended to June 2023. Year 1 (2022), extended to June 2023: The client will provide evidence that a well-defined regional-level harvest control rule is in place for WCPO bigeye, 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.

Client Action Plan	With the background described in the CAP for condition 5 in mind, the client's planned actions to address condition 1 are the same for this condition.
Consultation on condition	The clients' planned consultation for this condition are the same as for condition 1.

Table 46. Condition 7 – ETP species information (UoAs 2, 4, 6)

Performance Indicator	**PI 2.3.3** – ETP species information
Score	70
Justification	Scoring issue a (SG80) for UoAs 2, 4, 6: 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. Extract: For the associated set types (UoAs 2, 4, 6), although the observer data provide quantitative data on UoA related observed mortality, impacts related to unobserved mortality (caused by entanglement in dFADs) are estimated based on FAD design and FAD buoy deployment (see 2.3.1b). Therefore, although this qualitative information is adequate to estimate the UoA related mortality on ETP species (and SG60 is therefore met), quantitative data on this type of unobserved mortality are lacking. SG80 is not met.
Condition	By the end of year 4, some quantitative, independently verified information on unobserved mortality of ETP species through entanglement in dFADs should be available 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: - Review options for collecting independently verified information on unobserved mortality of ETP species through entanglement in dFADs (note this condition has been raised across all WCPO dFAD fisheries currently in the MSC programme). Score: 70. Year 2: - Implement data collection programme. Score: 70. Year 3: - Continued implementation data collection programme: Score: 70. Year 4: - Some quantitative, independently verified information on unobserved mortality of ETP species through entanglement in dFADs is available 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. Score: 80.
Client Action Plan	Year 1: The client will consult with the groups identified below to (1) compile and review past research on estimates of species-specific capture rates, including of ETP species, in drifting FADs to determine the methods employed and any available findings for less-entangling designs of drifting FADs that are used by the client group's vessels; (2) If step 1 identifies that there is a gap in knowledge in entanglement/catch rates in less entangling dFADs, then the client will develop a research plan to produce a robust estimate of ETP entanglement rates in less-entangling dFADs in the client's fishery operating in the FSM EEZ and possibly in other WCPO purse seine fisheries. (3) The client will review information on the

	performance of non-entangling FAD designs relative to less entangling designs, and consider trialling use of non-entangling designs. Years 2 and 3: The client will consult with and request information from the groups identified below as the client implements the research plan. Year 4: Produce study results estimating mean species-specific entanglement rates in less entangling dFADs and variance.
Consultation on condition	FSM NORMA (see Appendix 8). Additional consultation may occur with ISSF, SPC, IFREMER, client groups of other MSC certified dFAD tuna fisheries.

Table 47. Condition 8 – Habitats outcome (UoAs 2, 4, 6)

Performance Indicator	**PI 2.4.1** – Habitats outcome
Score	70
Justification	Scoring issue a (SG80) for UoAs 2, 4, 6: 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. Extract: In relation to scoring of SG80, the team identified the following issues: - In the context of the Seychelles FAD Watch programme, Balderson and Martin (2015) found that 37% of dFADs had corals entangled in the structure and 100% of these were using nets as the aggregator. 46% of dFADs using sausage nets (i.e. those used by the UoA) were found with corals entangled in the nets. Although considered as lower-entanglement risk FADs, the risk of entanglement and habitat damage of these FAD types increases as the sausage nets begin to unravel. ISSF (2012) also noted that the problem of drifting FADs encountering islands and coral reefs was much more significant when non-biodegradable materials such as nylon netting and rope are used in the FAD construction. In their review of FAD designs for the PNAO, MRAG_Asia_Pacific (2018) found that the main components are typically made from petroleum products such as nylon netting, plastic and PVC which degrade slowly and, if not retrieved, will accumulate in the environment as marine debris. The use of biodegradable materials (apart from natural attachments such as coconut fronds) appears to be very limited. According to Moreno, Murua, et al. (2020), until a 100% biodegradable FAD structure is found, a progressive replacement of some plastic components, such as the submerged appendage, would still be a significant step to decrease the FAD impacts on the marine habitat. Although work on developing biodegradable FAD materials is ongoing in the UoA (see Section 6.7.4), the fact remains that nearly all FADs in use today by the UoA are made of synthetic materials. - With 7.4% of UoA FADs projected to beach per annum (Escalle et al. (2020a) estimate) and without any measures for recovery in place, even at a local level, the cumulative effects of FAD beaching events over several years are likely to increase the severity of impacts on coral reefs within FSM and other WCPO Pacific Island states. It is important to add that Escalle et al. (2020a) estimate that 43.4% of buoys are unmonitored within PNA waters with an unquantified amount ending up stranded. Although a FAD tracking programme is in place at PNA level, the PNAO state that compliance (albeit voluntary for the moment) is not complete, with data being provided with a 60-day lag as well as being geo-

	fenced (where they have their satellite buoy service provider report positional data only when they are in the EEZs of PNA member countries, and not when they are on the high seas). This limits the programme's ability to contribute to risk mitigation in terms of tracking of lost or abandoned FADs and develop associated management responses (e.g. through recovery). Overall, the team therefore concludes that evidence to demonstrate that the UoA is highly unlikely to lead to reductions in habitat structure and function of coral reef habitat in the WCPO below 80% of the unimpacted level is lacking and that SG80 is not met for UoAs 2, 4 and 6.
Condition	Within 4 years, the client fishery needs to demonstrate that the risk of reducing structure and function of VMEs (in particular coral reef habitats) to a point where there would be serious or irreversible harm, associated with lost and/or abandoned UoA FAD beaching events, is sufficiently low for SG80 to be met.
Milestones	Year 1: - Carry out review of available data sources to determine risk and identify additional monitoring needs to support partial strategy. Develop monitoring programme. - Also see Year 1 actions under Condition 9 Score: 70. Year 2: - Implement monitoring programme and commence data analysis. - Also see Year 2 actions under Condition 9 Score: 70. Year 3: - Monitoring programme is up and running with continued data analysis. - Also see Year 3 actions under Condition 9 Year 4: It can be demonstrated that the risk of reducing structure and function of VMEs (in particular coral reef habitats) to a point where there would be serious or irreversible harm, associated with lost and/or abandoned UoA FAD beaching events, is sufficiently low for SG80 to be met. Score: 80.
Client Action Plan	Year 1: (1) The client will confer with leads of completed research that estimated the fate of drifting FADs in PNA waters – including by the client group's dFADs, and assess any new available data sources, to determine risk and identify additional monitoring needs. (2) The client will continue to supply PNA with satellite buoy data for client dFADs and will discuss with PNA and NORMA about potential improvements to this sub-regional drifting FAD monitoring program so that the fate (retrieved, sunk, grounded, stolen) of all dFADs by the client fishery can be accurately estimated. (3) Consistent with the PNG PIA client action plan for this PI, the client will review available information on the difference in risk to VMEs from biodegradable vs. conventional less-entangling dFAD designs. Years 2 and 3: (4) The client will work with NORMA to design a study that will analyze satellite buoy data of dFADs deployed by the client vessels to estimate their fate, and by the end of year 2 the research will commence.

	Year 4: (5) The client will provide study results estimating the fate of dFADs deployed by the client group vessels and estimating the risk of reducing structure and function of vulnerable marine ecosystems, including coral reefs.
Consultation on condition	FSM NORMA (Appendix 8). Additional consultation may take place with ISSF, SPC, PNA

Table 48. Condition 9 – Habitats management (UoAs 2, 4, 6)

Performance Indicator	**PI 2.4.2** – Habitats management
Score	70
Justification	Scoring issue b (SG80) for UoAs 2, 4, 6: 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. Extract: UoAs 2, 4, 6: As already mentioned, the risk of a drifting FAD beaching event occurring is determined by the number of drifting FADs in the ocean, the deployment location, dispersal patterns, the extent of efforts to prevent beaching events from occurring and FAD design. The likelihood and severity of beaching events can be mitigated through limiting FAD deployments, simplifying FAD structure, avoiding FAD deployment areas that imply high risk of stranding, using FADs that remain in the fishing area (e.g. FADs with navigation capability, FADs that could be sunk, anchored FADs), recover FADs at sea, and recover FADs from the coast (Davies et al., 2017). As has already been explained in scoring issue a and in Section 6.7.4, the Client fishery in combination with the regional (WCPFC and PNA) management system is implementing or striving towards implementation of a number of these measures as part of their partial strategy, including deployment of FAD numbers well below regional limits, changing FAD design towards biodegradable and non-entangling FADs and monitoring FAD trajectories with associated beaching event risk analysis (Escalle et al., 2018, 2019). This provides plausible argument that the partial strategy will work. SG60 is met. However, in relation to SG80, the team concludes that an objective basis for confidence that the partial strategy will work is lacking on the basis of the following: - The low number of FAD deployments at UoA level appears to be done on a voluntary basis and it is not clear that the current legally binding limits on buoy numbers (350 per vessel at any one time as per CMM 2018-01) go far enough to ensure an SG80 outcome score for VMEs. There is particular concern that the 350 buoy limit may in fact lead to an increase in the number of FADs being deployed in the WCPO. In this context, the team was provided with the following statement by the PNAO: *PNA does not support FAD limits since were vessels to apply 350 FADs, it actually caters for a significant increase in FAD deployments. PNA's focus on FAD management is explicitly to follow the recommendations in Banks and Zaharia to transition to Non Entangling FADs, and thereafter to biodegradable FADs. These would most likely reduce the impact of coastal and benthic habitats, and eliminate the impact of FADs on unobserved catch. ;* - While a dFAD tracking programme is in place at PNA level, the PNAO state that compliance (albeit voluntary for the moment) is not complete, with data being provided with a 60-day lag as well as being geo-fenced (where they have their satellite buoy service provider report positional data only when they are in the EEZs of PNA member countries, and not when they

	are on the high seas). This limits the programme's ability to contribute to risk mitigation in terms of tracking of lost or abandoned FADs and develop associated management responses (e.g. through recovery). The discrepancy between the dFAD PNAO tracking data for UoA vessels and the UoA buoy deployment data (Section 6.2.1) also needs to be investigated; - The UoA fishery is using lower-entanglement risk FADs rather than fully non-entangling FADs, with use of biodegradable materials still in its testing phase; - Other than generic conditions under MARPOL Annex V, which makes discharge of fishing gear into the water where there is no intention to retrieve it an offence, there are no specific requirements obliging vessel operators to retrieve all FADs or pay costs associated with environmental remediation. In practice this means little 'discipline' is imposed on vessel operators with respect to the number of FADs deployed (MRAG_Asia_Pacific, 2018). - According to Escalle et al. (2020a), the number of buoys with an uncertain fate (i.e. final position at-sea and within the main purse seine fishing grounds) increased over the four years studied (from 35% in 2016 to 46% in 2019). In contrast, the number of buoys recovered or abandoned decreased. This may be due to earlier deactivation of buoys by fishing companies when buoys are no longer considered usable by their vessels (i.e. having drifted far from their fishing grounds), but could also be linked to the implementation of the WCPFC limit in the number of active buoys per vessel at any given time of 350 in 2018 (CMM-2018-01). To avoid exceeding this limit, vessels or fishing companies may therefore tend to deactivate buoys sooner than they did previously and then deploy new FADs back in their main fishing grounds (Escalle et al., 2020a), potentially leading to an increase in FAD deployments overall. SG80 is not met. <u>Scoring issue c (SG80) for UoAs 2, 4, 6:</u> There is some quantitative evidence that the measures/partial strategy is being implemented successfully. FAD design is monitored via the observer Gen 5 forms, however monitoring of FAD deployments is partial. Although there is the PNA tracking programme, the UoA data are submitted with a 60-day lag which prevents any mitigating measures to be put in place such as recovery. The discrepancy between the dFAD PNAO tracking data for UoA vessels and the UoA buoy deployment data (Section 6.2.1) is also a concern. Furthermore, FAD buoy data are not necessarily an accurate representation of actual FAD deployments. Observer anecdotal information indicates that no markings of 'ownership' or identification are applied to the FAD structure (raft or appendages) by most companies. This is likely driven by the high level of buoy exchange between FADs and makes tracking the full 'life history' of the FAD difficult (MRAG_Asia_Pacific, 2018). Industry concerns over maintaining the confidentiality of data on the recent positions of their dFADs, which might reveal the location of good fishing grounds to competitors, is an incentive for non-compliance (FAO, 2018). For example, the systematic modification of buoy transmissions to PNA with information outside PNA EEZs being removed prior to data transmissions (i.e. "geo-fenced" FADs) occurred throughout the whole 2016–2020 period in the Escalle et al. (2020a) study. Although PNA Members have agreed to require all FAD buoys to be registered and transmit regular position data to the PNA while a vessel is licensed to a PNA Member, including transmitting data from

	high seas areas between 20° North and 20° South of the WCPFC convention area (Escalle et al., 2020a), this was not in force at the time of the assessment. Overall, the team concludes that quantitative evidence that the partial strategy is being implemented successfully is lacking. SG80 is not met.
Condition	By the end of Year 3, there should be an objective basis for confidence that the partial strategy in place for managing UoA impacts on VME habitats (in particular coral reefs), associated with lost and/or abandoned UoA FAD beaching events, will work based on information directly about the UoA and/or habitats involved, and some quantitative evidence should be presented that it is being implemented successfully.
Milestones	Year 1: - Carry out review of management options to provide some objective basis for confidence that the partial strategy will work based on information directly about the UoA and/or habitats involved. - Carry out review of available quantitative evidence to demonstrate that the partial strategy is being implemented successfully. Score: 70. Year 2: - Present partial strategy which has some objective basis for confidence that it will work based on information directly about the UoA and/or habitats involved. - Collect quantitative evidence to demonstrate that the partial strategy is being implemented successfully. Score: 70. Year 3: - Partial strategy that has some objective basis for confidence that it will work, based on information directly about the UoA and/or habitats involved has been implemented. - Some quantitative evidence is available to demonstrate that the partial strategy is being implemented successfully. Score: 80.
Client Action Plan	Year 1: (1) The client will review findings from analyses of satellite buoy data from client dFADs to quantify how the partial strategy is currently not being successful. (2) The client will consult with NORMA and other stakeholders and compile publications recommending improvements in WCPFC dFAD management to identify candidate measures to improve the dFAD management system to reduce both the proportion and magnitude of dFADs that become derelict and that run aground on coral reefs and other vulnerable coastal and marine ecosystems, identify alternative measures that hold the most promise. Year 2: (3) The client will present information on the dFAD management framework for the client's dFADs including measures that mitigate the production of derelict FADs and reduce the risk of grounding on and damaging VMEs. (4) From the client action plan activity 4 under PI 2.4.1 of condition 8, during years 2 and 3, "The client will work with NORMA to design a study that will analyze satellite buoy data of dFADs deployed by the client vessels to estimate their fate, and by the end of year 2 the research will commence." Year 3: (5) Using the initial benchmark of the adverse effects of derelict dFADs from the UoA on the structure and function of vulnerable marine ecosystems, including coral reefs (activity 4 under condition 8), the client will conduct a performance assessment of the dFAD management system to determine if there has been a

	change in predicted adverse effects, providing an empirical, objective basis to determine whether the dFAD management framework (partial strategy) has been successful in preventing serious or irreversible harm to habitats.
Consultation on condition	FSM NORMA (Appendix 8). Additional consultation may take place with ISSF, SPC, PNA

Table 49. Condition 10 – Habitats information (UoAs 2, 4, 6)

Performance Indicator	**PI 2.4.3** – Habitats information
Score	75
Justification	Scoring issue b (SG80) for UoAs 2, 4, 6: 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. Extract: UoAs 2, 4, 6: FAD design is monitored via the observer Gen 5 forms and modelling and simulations of dFAD beaching events in PNA waters (Escalle et al., 2019) provide a broad understanding of the most likely coastal zones to be impacted and how these beaching events may affect coral reef habitat (e.g. Balderson and Martin (2015)). SG60 is met. There is, however, a lack of understanding about the exact scale of the problem for the UoA: i.e. how many FADs are used by the fishery - including appropriated FADs, how many FADs are lost/abandoned or discarded, how many of those beach or sink and in turn how many of those impact on coral reef habitat and in which areas. Furthermore, although the PNA FAD tracking programme is beginning to provide valuable data on FAD use, the data are still incomplete, with portions of trajectories outside PNA waters removed by buoy companies ("geofencing") prior to submission to PNA (Escalle et al., 2020a). Therefore, although information is adequate to allow for identification of the main impacts of the UoA on the main habitats, reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear is lacking. SG80 is not met.
Condition	By the end of Year 3, information availability is adequate to allow for identification of the main impacts of the UoA on VMEs (in particular coral reef habitats), associated with the beaching of lost and/or abandoned UoA FADs, and provides reliable information on the spatial and temporal extent of UoA FAD beaching events.
Milestones	Year 1: - Carry out review of available data sources to determine the risk of the UoA reducing structure and function of VMEs (in particular coral reef habitats) to a point where there would be serious or irreversible harm, associated with lost and/or abandoned UoA FAD beaching events, and identify additional monitoring needs to support partial strategy. Develop monitoring programme. Score: 75. Year 2: - Implement monitoring programme and commence data analysis. Score: 75. Year 3:

	- A monitoring programme is in place with associated analyses that is adequate to allow for identification of the main impacts of the UoA on coral reef habitats, associated with lost and/or abandoned UoA FAD beaching events, and provides reliable information on the spatial and temporal extent of these types of events. Score: 80.
Client Action Plan	Same activities as planned to address conditions 8 and 9.
Consultation on condition	FSM NORMA (Appendix 8). Additional consultation may take place with ISSF, SPC, PNA

Table 50. Condition 11 – Compliance and enforcement (all UoAs)

Performance Indicator	**PI 3.2.3** – Compliance and enforcement
Score	65
Justification	Scoring issue a (SG80): 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. Extract: A monitoring, control and surveillance system exists and is implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules at regional level. However, the combination of low observer coverage throughout 2020 due to Covid-19 and lack of surveillance activities conducted by national patrol vessels in the high seas areas, means that although monitoring, control and surveillance mechanisms exist at national level and are implemented in the fishery, there is only a reasonable expectation that they are effective. Therefore, SG60 is met but not SG80. Scoring issue b (SG80): Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence. Extract: As sanctions to deal with non-compliance exist and there is some evidence that they are applied, SG60 is met. However, SG80 is not met as there is no evidence that sanctions are consistently applied. This information was requested from the FSM Department of Justice; however, no evidence was provided concerning sanctions that were applied for non-compliance. (…) Overall, only SG60 is met as evidence concerning national infractions committed and penalties awarded to purse seiners is lacking Scoring issue d (SG80): There is no evidence of systematic non-compliance. It is recognised that non-compliance continues to be an issue in the broader WCPO with a range of offences varying from minor to more serious. ~~According to Blyth-Skyrme et al., (2018), there is generally thought to be a good level of compliance by fishers in the PNA. An IUU report was commissioned by PNA and undertaken by MRAG (MRAG, 2016) that suggested IUU fishing occurs within the broader WCPO but certainly not within the PNA group .~~ PNA and its member's annual reports to WCPFC at TTC meetings indicate there is generally a high level of compliance by fishers in PNA waters. However, as evidence concerning national infractions committed and penalties awarded to purse seiners is lacking SG80 is not met.
Condition	By the end of year 4, the national monitoring, control and surveillance system implemented in the fishery should have demonstrated an ability to enforce relevant

	management measures, strategies and/or rules in both the FSM EEZ and High Seas areas. In addition, evidence should be provided that there is no systematic non-compliance in the fishery. Where there is non-compliance, evidence should be provided that sanctions are consistently applied and thought to provide effective deterrence.
Milestones	Year 1: - Review national monitoring, control and surveillance (MCS) system for purse seine operations in the FSM EEZ and High Seas areas and identify short-comings in the system's ability to enforce relevant management measures, strategies and/or rules in these areas. - Review available evidence to demonstrate that there is no systematic non-compliance in the fishery. Review evidence to demonstrate that sanctions are consistently applied and thought to provide effective deterrence. Score: 65. Year 2: - Develop a plan to address short-comings in the national MCS system's ability to enforce relevant management measures, strategies and/or rules for purse seine operations in the FSM EEZ and High Seas areas. - Provide evidence to demonstrate that there is no systematic non-compliance in the fishery and that sanctions are consistently applied and thought to provide effective deterrence. Ensure this evidence can be provided to surveillance audit teams on an annual basis. Score: 75 Year 3: - Implement plan to address short-comings in the national MCS system's ability to enforce relevant management measures, strategies and/or rules for purse seine operations in the FSM EEZ and High Seas areas. Score: 75 Year 4: Demonstrate that the national monitoring, control and surveillance system implemented in the fishery has an ability to enforce relevant management measures, strategies and/or rules in both the FSM EEZ and High Seas areas. Score: 80
Client Action Plan	Year 1: (1) The client will work with NORMA to review the FSM government's MCS framework for purse seine operations in both the FSM EEZ and on the high seas, and identify any deficits that prevent the framework from enforcing management measures, strategies or rules. (2) The client will work with NORMA to review available records on identified infractions to determine whether there is any evidence of systematic non-compliance by the client's vessels. (3) The client will work with NORMA to review available records to determine whether sanctions are consistently issued by the FSM government and whether the sanctions are sufficiently harsh so as to provide an effective deterrent of non-compliance. Year 2: (3) The client will work with NORMA to develop a plan to address any deficits with the FSM MCS system's ability to enforce relevant management measures, strategies and rules for purse seine operations in the FSM EEZ and on the high seas as identified in activity 1. (4) The client will work with NORMA to provide evidence to the MSC assessment team that demonstrates that there has been no systematic non-compliance by the client's vessels and that the FSM government consistently applies sanctions that are sufficiently harsh so as to provide an effective deterrent

	of non-compliance. The client will ensure that this same evidence can be provided annually to the MSC assessment team for annual surveillance audits. Year 3: (5) The client will work with NORMA to implement a plan that addresses any identified deficits with the FSM's MCS system's ability to enforce relevant management measures, strategies and rules for purse seine operations in the FSM EEZ and on the high seas. Year 4: (6) The client will work with NORMA to provide evidence to the MSC assessment team that demonstrates that the FSM MCS system for the purse seine fishery is able to enforce relevant management measures, strategies and rules in both the FSM EEZ and on the high seas.
Consultation on condition	FSM NORMA (Appendix 8)

Table 51. Client responses to recommendations

Recommendation 1	Logbook catch data are estimated during brailing and as the fish enter the wells onboard the vessels, and therefore inevitably carry a bias. Although sorting at the canneries allows for a more accurate assessment of landed catch, these data are not shared with any third parties such as SPC and WCPFC: comprehensive cannery receipts data from more than twenty processors (receiving WCPFC purse seine catch) have been provided on a voluntary basis to the WCPFC over the past 7–8 years as part of an initiative of the ISSF and their participating processing companies. Although there is clear potential for using cannery receipts data to validate/compare species and size composition breakdowns by fleet determined from observer-derived estimates, this is not straightforward (the catch from a given trip is sold to multiple processors and if some of them are not ISSF participating companies then the data sent to SPC are partial) (Williams, 2020). Cannery data are therefore not yet part of any formal reporting mechanisms. According to Williams (2020), *there has not been any increase in coverage of cannery data over recent years; despite the continued excellent cooperation of the ISSF-affiliated companies in submitting data, there remain gaps in processor/unloadings data from other sources (acknowledging there is no requirement for the provision of purse seine cannery receipt/unloading data at this stage*). The team therefore recommends that the client fishery explores whether unloadings data or cannery receipt data showing size composition breakdown by species is being/can be provided to SPC, either by the client group itself or by the processing companies that it supplies its catch to.
Client response 1	The client will work with NORMA to ensure that data on the length and weight of species-specific landed catch from FSM's port sampling program continue to be provided to SPC, and the client will initiate discussions with NORMA and SPC to determine the logistics for submitting cannery offloading data.
Recommendation 2	The overall observed encounter rates with marine mammals in the fishery were not thought to lead to unacceptable impacts for any of the species concerned (see scoring under 2.3.1b). High mortality rates upon release were, however, recorded for the common dolphin, rough-toothed dolphin and spinner dolphin for both unassociated and associated set types. The team therefore recommends that the client fishery investigates whether more can be done to reduce the mortality-upon-release for marine mammals encountered by the fishery (with particular attention to these species) and/or reduce marine mammal encounters altogether.

Client response 2	The client group will review the FAO 2019 *Technical Guidelines to Reduce Marine Mammal Bycatch in Capture Fisheries*, and discuss this recommendation with ISSF staff and advisors to determine if, beyond the guidance ISSF provides in their purse seine skipper training courses, and the ISSF *Purse Seine Skippers' Guidebook*, whether there are additional practices that the client vessels could implement to avoid and minimize marine mammal incidental capture, and increase at-vessel and release survival rates of captured marine mammals.

Appendix 6 Surveillance

Table 52. Fishery Surveillance Programme

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 4	On-site	Off site	On-site	Off-site

Table 53. Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
1	On-site	2	All information pertaining to the Principle 1 and Principle 2 conditions can be provided remotely by the stakeholders; however, the team recommends two on-site visits due to the complexity of some of the conditions. For the remote audits, remote conferencing should take place so that matters can be discussed in sufficient detail. Note: it is not proposed that the Year 4 surveillance happens at the same time as the reassessment site visit. This is because under the FCPv2.1 the drafting of the ACDR is likely to delay the site visit beyond the certificate anniversary.
2	Off site	2	
3	On-site	2	
4	Off site	2	

Table 54. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1	See certificate	30 days prior anniversary date of certificate	N/a
2	See certificate	30 days prior anniversary date of certificate	N/a
3	See certificate	30 days prior anniversary date of certificate	N/a
4	See certificate	30 days prior anniversary date of certificate	N/a

Appendix 7 Harmonised fishery assessments

For WCPO skipjack and yellowfin, Principle 1 has been harmonised with the fisheries listed in Table 56 and Table 57 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, and some scores were amended following the release of the 2020 stock assessments for bigeye and yellowfin. All scores have been harmonised. For WCPO bigeye, a similar comparison of scores was carried out as shown in Table 58. Note that bigeye was not discussed at the Hong Kong harmonization meeting.

For Principle 2, the team applied the following table in its harmonisation activities (from https://mscportal.force.com/interpret/s/article/What-are-the-MSC-requirements-on-harmonisation-multiple-questions-1527586957701):

PIs / SIs	Harmonise?	Comments
All P1 PIs	Yes	P1 always considers the impacts of all fisheries on a stock, so any fisheries which have the same P1 species (stocks) should be harmonised.
PI 2.1.1a	Partially	For stocks that are 'main' in both UoAs, harmonise status relative to PRI (at SG60, 80 and 100), and if below PRI, harmonise cumulative impacts at SG80 (not at SG60).
PI 2.2.1a	Partially	For stocks that are 'main' in both UoAs, harmonise status relative to BBL (at SG60, 80 and 100), and if below BBL, harmonise cumulative impacts at SG80 (not at SG60).
PI 2.3.1a	Partially	Harmonise recognition of any limits applicable to both UoAs (at SG60, 80 and 100), and cumulative effects of the UoAs at SG80 and SG100 (not at SG60).
PI 2.4.1b	Partially	Harmonise recognition of VMEs where both UoAs operate in the same 'managed area/s' (as in SA3.13.5).
PI 2.4.2a,c	Partially	Harmonise scoring at SG100, since all fishery impacts are considered (not at SG60 or 80).
All P2 PIs	Yes, if ->	Two UoAs are identical in scope, even if the UoCs are different (e.g. separate clients).
PIs 3.1.1-3	Yes, if ->	Both UoAs are part of the same larger fishery or fleet, or have stocks in either P1 or P2 which are at least partially managed by the same jurisdiction/s (nation states, RFMOs or others) or under the same agreements. Harmonisation may sometimes be possible for those management arrangements that apply to both UoAs (noting the limitations accepted in GPB3).
PIs 3.2.1-4	Yes, if ->	Both UoAs have stocks within either P1 or P2 which are at least partially managed by the same jurisdiction/s (nation states, RFMOs or others) or under the same agreements. Harmonisation is needed for those management arrangements that apply to both UoAs, e.g. at the RFMO level but not the national level in the case of two separate national fleets both fishing the same regional stock.

Table 55. Overview of P2 scoring among overlapping WCPO purse seine fisheries with FAD and free-school components.

PIs	AGAC four oceans Integral Purse Seine Tropical Tuna Fishery (ACDR)	PNA Western and Central Pacific skipjack, yellowfin and bigeye tuna purse seine fishery (FAD and non-FAD sets) (ACDR)	PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery (PCR)	This assessment	Rationale for scoring differences
2.1.1	>80	>80	FADs: 100 FSC: 100	FADs: 100 FSC: 100	N/a
2.1.2	>80	>80	FADs: 95 FSC: 95	FADs: 85 FSC: 85	N/a
2.1.3	>80	>80	FADs: 100 FSC: 100	FADs: 95 FSC: 95	N/a
2.2.1	>80	>80	FADs: 80 FSC: 80	FADs: 80 FSC: 80	N/a
2.2.2	>80	>80	FADs: 80 FSC: 80	FADs: 80 FSC: 80	N/a
2.2.3	>80	>80	FADs: 100 FSC: 100	FADs: 85 FSC: 85	N/a
2.3.1	>80	>80	FADs: 75 FSC: 75 (cetaceans)	FADs: 80 FSC: 80	PNG fishery has much higher cetacean interaction rates than this fishery. Fishery-specific difference, no further harmonisation required.
2.3.2	>80	60-79 (Mobulids, whale shark, cetaceans)	FADs: 75 FSC: 75 (whale shark, cetaceans)	FADs: 80 FSC: 80	Pre-existing condition in PNA free-school fishery on mobulids which is carried over into scope extension. Fishery-specific difference, no further harmonisation required. High number of whale shark encounters in PNA and PNG fishery which does not apply here. Same for cetaceans in PNA and PNG fishery which have much higher interaction rates. Fishery-specific difference, no further harmonisation required.
2.3.3	60-79 (Oceanic whitetip and silky shark)	>80	FADs: 75 FSC: 75 (cetaceans)	FSC: 80 FADs: 75	Scoring of FAD UoAs aligned with condition raised in relation to the lack of quantitative data on unobserved mortality of ETP species due to entanglement in dFADs. All other scoring differences are fishery-specific.

PIs	AGAC four oceans Integral Purse Seine Tropical Tuna Fishery (ACDR)	PNA Western and Central Pacific skipjack, yellowfin and bigeye tuna purse seine fishery (FAD and non-FAD sets) (ACDR)	PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery (PCR)	This assessment	Rationale for scoring differences
2.4.1	>80	>80	FSC: 100 FADs: 75 (VMEs) note: incorrect score, should be 70)	FSC: 80 FADs: 70 (VMEs)	Scoring of the other fisheries has not yet been finalised; however differences are likely fishery-specific. As per requirements, recognition of VMEs has been harmonised.
2.4.2	80	60-79	FSC: 95 FADs: 75 (VMEs)	FSC: 95 FADs: 70 (VMEs)	SG100 not met for any fishery, no further harmonisation needed.
2.4.3	60-79	>80	FSC: 100 FADs: 75 (VMEs)	FSC: 80 FADs: 75 (VMEs)	Fishery-specific scoring differences, no further harmonisation needed.
2.5.1	>80	>80	FSC: 100 FADs: 60	FSC: 80 FADs: 80	Combination of up-to-date literature cited in the rationale and UoA-specific circumstances (with the fishery taking place in a low FAD density hotspot – see rationale) lead to the scoring difference.
2.5.2	>80	>80	FSC: 100 FADs: 100	FSC: 80 FADs: 80	N/a
2.5.3	>80	>80	FSC: 90 FADs: 90	FSC: 95 FADs: 95	N/a

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 SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna fishery. The same Principle 3 assessor conducted both assessments ensuring harmonisation of relevant scores.

Table 56. Comparison of Principle 1 scores between this assessment and other WCPO skipjack 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 (HCRs)**	**1.2.3 (Information/ Monitoring)**	**1.2.4 (Stock assessment**
WPSTA western and central Pacific skipjack and yellowfin free school purse seine	2.0	100	N/a	-	70	60	90	95
Japanese pole and line skipjack and albacore tuna	Pre-2.0	100	90	N/a	70	60	90	95
PT Citraraja Ampat, Soring pole and line skipjack and yellowfin tuna	2.0	100	N/a	-	70	60	95	95
Talleys New Zealand skipjack tuna purse seine	2.0	100	N/a	-	70	60	90	95
Solomon Islands skipjack and yellowfin tuna purse seine and pole and line	Pre-2.0	100	90	N/a	70	60	90	95
Tri Marine western and central Pacific skipjack and yellowfin tuna	Pre-2.0	90	90	-	70	60	80	95
PNA western and central Pacific skipjack and yellowfin, unassociated/non-FAD set, tuna purse seine	2.0	100	N/a	-	70	60	90	95
Ishihara Marine Products albacore and skipjack pole and line fishery	2.0	100	N/a	-	70	60	90	95
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	2.0	100	N/a	-	70	60	90	95
PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery	2.0	100	N/a	-	70	60	90	95
This assessment	**2.01**	**100**	**N/a**	**-**	**70**	**60**	**90**	**95**

Table 57. Comparison of Principle 1 scores between this assessment and other WCPO yellowfin fisheries. Note: pre-FCR v2.0 performance indicators are shown in yellow. *Revised score due to new 2020 stock assessment. The new score was proposed to all CABs involved in overlapping MSC fisheries via email. Consensus was reached on the 2nd February 2021. The revised scores will be incorporated by the respective fisheries at the next available opportunity.

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	90	N/a	-	70	60	80	95
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	90	N/a	-	70	60	80	95
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	90	N/a	-	70	60	80	95
PNA Western and Central Pacific skipjack and yellowfin, unassociated / non FAD set, tuna purse seine	2.0	90	N/a	-	70	60	90	95

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**
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	90	N/a	-	70	60	90	95
Kiribati albacore, bigeye and yellowfin tuna longline fishery	2.0	90	N/a	-	70	60	90	95
French Polynesia albacore and yellowfin longline fishery	2.0	90	N/a	-	70	60	80	95
This assessment	**2.01**	**100***	**N/a**	**-**	**70**	**60**	**80**	**95**

Table 58. 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. *Revised score due to new 2020 stock assessment. The new score was proposed to all CABs involved in overlapping MSC fisheries via email. Consensus was reached on the 2nd February 2021. The revised scores will be incorporated by the respective fisheries at the next available opportunity.

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	100	N/a	70	60	90	100
Fiji Albacore, Yellowfin and Bigeye Tuna longline	100	N/a	70	60	90	95
Australian Eastern Tuna and Billfish Fishery (albacore tuna, yellowfin tuna, bigeye tuna and swordfish)	100	N/a	70	60	90	100
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore, yellowfin and bigeye longline	100	N/a	70	60	90	100
This assessment	**90***	**N/a**	**70**	**60**	**90**	**90***

Appendix 8 NORMA letter of support

National Oceanic Resource Management Authority
FSM NATIONAL GOVERNMENT
P.O. BOX PS122
PALIKIR, POHNPEI, FEDERATED STATES OF MICRONESIA 96941
Tel: (691) 320-5181/2700 Fax: (691) 320-2383 Email: norma@mail.fm Website: www.norma.fm

April 7, 2021

Chrissie Sieben
Control Union UK Ltd
Hampshire, SO41 9AH
UK

Re: Letter of commitment for implementation of the Client Action Plan of the MSC Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery

Dear Ms. Sieben,

The National Oceanic Resource Management Authority (NORMA) of the Federated States of Micronesia fully supports efforts by the client group of companies of the *Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery* to purse certification against the Marine Stewardship Council fisheries standard.

NORMA is committed to assist the client group to implement activities described in the Client Action Plan to address conditions of certification that require NORMA's assistance, if the fishery passes the assessment and is certified.

With regards,

Eugene Pangelinan
Executive Director

Appendix 9 MegVAR

29/10/2020

Stakeholder Notification: Confirmation of condition deadlines for Tuna stocks covered under the multi-fishery variation request accepted 14th January 2019

Affected fisheries in Appendix 1.

All Conformity Assessment Bodies (CABs) held a harmonisation meeting on 30th September 2020 to consider the request from the WCPO MSC Tuna Alignment Group and clients to amend the WCPFC Harvest Strategy workplan deadlines stated in the MSC-approved Mega Variation request (MEGVAR), which was accepted by the MSC on the 14th January 2019. This letter is written in response to the request received by each CAB from their respective clients (see appendix 3), noting that effects on other RFMO deadlines also need to be considered as part of this WCPFC-specific request.

Within the accepted MEGVAR the deadlines (Appendix 1) by stock were agreed and based on the RFMO workplans; for instance for the WCPFC the 2017 workplan for CMM 2014-06. The purpose of the deadline approach was to ensure consistency in timeframes for fisheries entering MSC assessment as well as encouraging MSC clients to work together to encourage the RFMO to keep to the agreed deadlines.
This notification is to confirm that, as informed by the applicable requirements of the current MSC fisheries standard and certification procedures:

a. The CABs agree that the deadlines detailed in Appendix 1 (here and in the original MEGVAR Request) should remain as the deadlines for those conditions.

b. However, given the MSC's March 2020 derogation extending all deadlines in response to the COVID-19 pandemic, CABs are required to extend these deadlines by 6 months. In Appendix 2 of this document this extension has been applied and must now be considered the deadlines for these conditions.

c. CABs will consider that evidence for whether the deadlines are met will be taken from the report which follows the relevant RFMO annual meeting for that stock (details of which are provided in Appendix 2). CABs will consider this evidence by organising a harmonised set of audits for all relevant fisheries which hold that certified stock.

    1. Will hold a harmonisation meeting to consider meeting reports from meetings conducted by the deadline stated in Appendix 2, to determine whether there is sufficient evidence that the conditions on the relevant PIs have met the agreed deadlines and can be rescored to pass the MSC Standard at SG80. As per MSC GCR v.2.4.1. § 7.4.2.b, a CAB shall suspend a fishery certificate if a client has not made adequate progress towards meeting conditions. ("*adequate progress*" in this case meaning the achievement of SG80 by the deadlines outlined in the MEGVAR request)

    2. As per MSC GCR v.2.4.1 § 7.4.3, CABs shall set the effective date for the fishery certificate suspension 30 days after the CABs' decision to suspend. The effective date for suspension will be harmonised between all UoAs for where that stock is the target species.

    3. As per MSC GCR v.2.4.1 § 7.4.3.e, clients shall provide CABs with a corrective action plan which is acceptable to the CAB as being able to address the cause for suspension, within 90 days from the date the Notice of Suspension is published on the MSC website.

    4. As per MSC GCR v.2.4.1 § 7.4.5, only when the CAB has verified that the fishery certificate holder has addressed the reason for suspension, the CAB shall reinstate the certificate.

This notification does not aim to judge the merit of the WCPO MSC Tuna Alignment Group request but sets out the CAB position in relation to the MEGVAR as it currently stands and updates it based on the MSC COVID derogation. Any further interpretation, change of process or standard as prescribed by the MSC will be applied by CABs in line with relevant normative requirements associated with the MSC accreditation.

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Amanda Stern-Pirlot, Director-Fisheries Certification Division, MRAG Americas, Inc.

Macarena García Silva, MSC Fisheries Program Manager, Bureau Veritas Certification

Appendix 1 – list of fisheries under the MEGVAR.

Table 1. List of all tuna fisheries (both in assessment and certified). Original MEGVAR condition deadlines and the actions required for each listed. ** WPO-BET was not part of the MSC program when MEGVAR was accepted by MSC but is included now as part of this revision.

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
North West Atlantic Canada Harpoon swordfish	Lloyds Register (Acoura)	AO-SWO-N	Yes	Full	n/a	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
North West Atlantic Canada Longline swordfish	Lloyds Register (Acoura)	AO-SWO-N	Yes	Full	n/a	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
US North Atlantic swordfish, yellowfin and albacore	MRAG Americas, Inc.	AO-SWO-N	Yes	Full	n/a	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
North Atlantic albacore artisanal fishery	Bureau Veritas Certification	AO-ALB-N	Yes	Reduced	n/a	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
US North Atlantic swordfish, yellowfin and albacore	MRAG Americas, Inc.	AO-ALB-N	Yes	Reduced	n/a	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery	Bureau Veritas Certification	AO-YFT	n/a	n/a	2023	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.1

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
US North Atlantic swordfish, yellowfin and albacore	MRAG Americas, Inc.	AO-YFT	Yes	Full for swordfish, reduced for YFT and ALB	2023	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	AO-YFT	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
ANABAC Atlantic unassociated purse seine yellowfin tuna	Bureau Veritas Certification	AO-YFT	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	AO-SKJ	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	AO-BET	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
Northeastern Tropical Pacific Purse Seine SKJ and YFT	Control Union UK	EPO-SKJ	Yes	Full*	n/a	Yes	P1 rescored against v2.0 at first opportunity (no alignment of condition timelines required)
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	EPO-SKJ	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	EPO-YFT	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
Northeastern Tropical Pacific Purse Seine SKJ and YFT	Control Union UK	EPO-YFT	Yes	Reduced	n/a	Yes	No conditions expected therefore no action
French Polynesia albacore and yellowfin longline fishery	Control Union UK	EPO-YFT	No	n/a	n/a	Yes	No P1 upgrade or alignment of condition timelines required
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	EPO-BET	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
Echebastar Indian Ocean Purse Seine Skipjack Tuna	Bureau Veritas Certification	IO-SKJ	No	n/a	n/a	Yes	No P1 upgrade or alignment of condition timelines required
CFTO Indian Ocean Purse Seine Skipjack fishery	Control Union UK	IO-SKJ	No	n/a	n/a	n/a	Condition timelines to be aligned with relevant proposed deadline within assessment
Maldives Pole and Line Tuna Skipjack	SAI Global	IO-SKJ	No	n/a	n/a	Yes	Condition timelines to be aligned with relevant proposed deadline at surveillance audit following FPC v2.1. Note that there was no condition on HS and HCR at the time of the MEGVAR.

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	IO-SKJ	n/a	n/a	n/a	No	Condition timelines to be aligned with relevant proposed deadline within assessment
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	IO-BET	n/a	n/a	n/a	No	Pending assessment
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	IO-YFT	n/a	n/a	n/a	No	Pending assessment
AAFA and WFOA North Pacific albacore tuna	MRAG Americas, Inc.	PO-ALB-N	No	n/a	2023	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Ishihara Marine Products albacore and skipjack pole and line fishery	Control Union UK	PO-ALB-N	n/a	n/a	2023	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Pan Pacific yellowfin, bigeye and albacore longline fishery	Control Union UK	PO-ALB-N	n/a	n/a	2023	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
CHMSF British Columbia albacore tuna North Pacific	SAI Global	PO-ALB-N	Yes	Reduced	2023	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
Japanese skipjack and albacore pole and line	Lloyds Register (Acoura)	PO-ALB-N	Yes	Reduced	2023	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline
Kiribati albacore, bigeye and yellowfin tuna longline fishery	Control Union UK	PO-ALB-N	n/a	n/a	2023	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
Kochi and Miyazaki Offshore Pole and Line Albacore and Skipjack fishery	Control Union UK	PO-ALB-N	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
American Samoa EEZ Albacore and Yellowfin Longline Fishery	Control Union UK	PO-ALB-S	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Fiji albacore, yellowfin and bigeye longline	Lloyds Register (Acoura)	PO-ALB-S	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Solomon Islands longline albacore and yellowfin tuna fishery	SCS Global Services	PO-ALB-S	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
French Polynesia albacore and yellowfin longline fishery	Control Union UK	PO-ALB-S	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
New Zealand Albacore Troll Fishery	Lloyds Register (Acoura)	PO-ALB-S	No	n/a	2021	Yes	No P1 upgrade or alignment of condition timelines required
AAFA and WFOA South Pacific albacore tuna	MRAG Americas, Inc.	PO-ALB-S	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Pan Pacific yellowfin, bigeye and albacore longline fishery	Control Union UK	PO-ALB-S	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore & yellowfin longline	Control Union UK	PO-ALB-S	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline
Kiribati albacore, bigeye and yellowfin tuna longline fishery	Control Union UK	PO-ALB-S	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
New Zealand Talley's skipjack purse seine	Lloyds Register (Acoura)	WPO-SKJ	No	n/a	2021	Yes	No P1 upgrade or alignment of condition timelines required
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline within assessment

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
PNA skipjack and yellowfin tuna	Lloyds Register (Acoura)	WPO-SKJ	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
WPSTA purse seine free school yellowfin and skipjack	SCS Global Services	WPO-SKJ	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Ishihara Marine Products albacore and skipjack pole and line fishery	Control Union UK	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
PT Citraraja Ampat, Sorong pole and line Skipjack and Yellowfin Tuna	DNV GL	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	Control Union UK	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Japanese skipjack and albacore pole and line	Lloyds Register (Acoura)	WPO-SKJ	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline
Solomon Islands skipjack and yellowfin tuna	SCS Global Services	WPO-SKJ	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
TriMarine Western and Central Pacific Skipjack and Yellowfin Tuna	SCS Global Services	WPO-SKJ	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline
Indonesia pole-and-line skipjack and yellowfin tuna of the Western and Central Pacific archipelagic waters	SAI Global	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery	Control Union UK	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
Kochi and Miyazaki Offshore Pole and Line Albacore and Skipjack fishery	Control Union UK	WPO-SKJ	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
American Samoa EEZ Albacore and Yellowfin Longline Fishery	Control Union UK	WPO-YFT	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Solomon Islands skipjack and yellowfin tuna	SCS Global Services	WPO-YFT	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific	Control Union UK	WPO-YFT	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
albacore & yellowfin longline							
TriMarine Western and Central Pacific Skipjack and Yellowfin Tuna	SCS Global Services	WPO-YFT	Yes	Reduced	2021	Yes	P1 rescored against v2.0 at first opportunity AND condition timelines to be aligned with relevant proposed deadline
WPSTA purse seine free school yellowfin and skipjack	SCS Global Services	WPO-YFT	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Fiji albacore, yellowfin and bigeye longline	Lloyds Register (Acoura)	WPO-YFT	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline within assessment
French Polynesia albacore and yellowfin longline fishery	Control Union UK	WPO-YFT	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
PNA skipjack and yellowfin tuna	Lloyds Register (Acoura)	WPO-YFT	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Pan Pacific yellowfin, bigeye and albacore longline fishery	Control Union UK	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
							assessment if possible or at 1st SA following FCP 2.2
PT Citraraja Ampat, Sorong pole and line Skipjack and Yellowfin Tuna	DNV GL	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	Control Union UK	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	Control Union UK	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Solomon Islands longline albacore and yellowfin tuna fishery	SCS Global Services	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
Indonesia pole-and-line skipjack and yellowfin tuna of the Western and Central Pacific archipelagic waters	SAI Global	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery	Control Union UK	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
Kiribati albacore, bigeye and yellowfin tuna longline fishery	Control Union UK	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna	Control Union UK	WPO-YFT	n/a	n/a	2021	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
Fiji albacore, yellowfin and bigeye longline	Lloyds Register (Acoura)	WPO-BET	No	n/a	2021	Yes	Condition timelines to be aligned with relevant proposed deadline at next surveillance audit
Pan Pacific yellowfin, bigeye and albacore longline fishery	Control Union UK	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline within assessment
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	Control Union UK	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline, within assessment if possible or at 1st SA following FCP 2.2

Fishery name	CAB	Stock	P1 upgrade required?	P1 upgrade type	Original MEGVAR Agreed condition deadline	Part of variation request?	Action required
Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery	Control Union UK	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore & yellowfin longline	Control Union UK	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
Kiribati albacore, bigeye and yellowfin tuna longline fishery	Control Union UK	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline, within assessment
MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna	Control Union UK	WPO-BET	n/a	n/a	2021**	No	Condition timelines to be aligned with relevant proposed deadline, within assessment

Table 2. Details of all tuna fisheries, including certification status, date certified and expiry date given the MSC March 2020 COVID-19 derogation.

Fishery Name	CAB	Fishery status	Species Certified	FAO Area(s)	Date first certified	Certified until (6 month extension)
Solomon Islands longline albacore and yellowfin tuna fishery	SCS Global Services	Certified	Albacore tuna, Yellowfin tuna	71 (Pacific, Western Central), Western Central Pacific (FAO Area 71)	28 Nov 2019	28 Nov 2024
Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery	Bureau Veritas Certification	Certified with Skipjack under assessment via Scope Extension (from P2 to P1)	Yellowfin tuna and Skipjack tuna (under assessment)	Eastern Central Atlantic (FAO Area 34), Southeast Atlantic (FAO Area 47)	05 Mar 2019	04 Sep 2024
ANABAC Atlantic unassociated purse seine yellowfin tuna fishery	Bureau Veritas Certification	In assessment	Yellowfin tuna	Atlantic Ocean Stock (FAO areas 34 and 47)		
Northeastern Tropical Pacific Purse Seine yellowfin and skipjack tuna fishery	Control Union UK	Certified	Skipjack tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77)	07 Sep 2017	06 Mar 2023
AAFA and WFOA North Pacific albacore tuna	MRAG Americas, Inc.	Certified	Albacore tuna	Eastern Central Pacific (FAO Area 77), Northeast Pacific (FAO Area 67)	24 Aug 2007	13 Dec 2023
AAFA and WFOA South Pacific albacore tuna	MRAG Americas, Inc.	Certified	Albacore tuna	Eastern Central Pacific (FAO Area 77), Southwest Pacific (FAO Area 81)	04 Sep 2007	14 024May 2
SZLC, CSFC & FZLC Cook Islands EEZ South Pacific albacore, yellowfin and bigeye longline	Control Union UK	Certified	Albacore tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Southwest Pacific (FAO Area 81)	09 Jun 2015	11 Feb 2026
Pan Pacific yellowfin, bigeye and albacore longline fishery	Control Union UK	Certified	Albacore tuna, Bigeye tuna, Yellowfin tuna	Southwest Pacific (FAO Area 81), Western Central Pacific (FAO Area 71)	26 Jun 2020	25 Dec 2025
Kiribati albacore, bigeye and yellowfin tuna longline fishery	Control Union UK	In Assessment	Albacore tuna, Bigeye tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)		

Fishery Name	CAB	Fishery status	Species Certified	FAO Area(s)	Date first certified	Certified until (6 month extension)
French Polynesia albacore and yellowfin longline fishery	Control Union UK	Certified	Albacore tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	19 Jun 2018	18 Dec 2023
Fiji Albacore, Yellowfin and Bigeye Tuna longline	Lloyds Register (Acoura)	Certified (with components in assessment)	Albacore tuna, Yellowfin tuna, Bigeye tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	13 Dec 2012	22 Jul 2023
PNA Western and Central Pacific skipjack and yellowfin, unassociated / non FAD set, tuna purse seine	Lloyds Register (Acoura)	Certified	Skipjack tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	21 Dec 2011	21 Sep 2023
Tri Marine Western and Central Pacific Skipjack and Yellowfin Tuna	SCS Global Services	Certified	Skipjack tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	02 Jun 2016	01 Jun 2021
WPSTA Western and Central Pacific skipjack and yellowfin free school purse seine	SCS Global Services	Certified	Skipjack tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	21 Jun 2018	20 Jun 2023
WPSTA Western and Central Pacific skipjack and yellowfin free school purse seine	SCS Global Services	Certified	Skipjack tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	21 Jun 2018	20 Jun 2023
PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery	SCS Global Services	Certified	Skipjack tuna, Yellowfin tuna	Eastern Central Pacific (FAO Area 77), Western Central Pacific (FAO Area 71)	11 May 2020	10 Nov 2025
Echebastar Indian Ocean purse seine skipjack tuna	Bureau Veritas Certification	Certified	Skipjack tuna	Eastern Indian Ocean (FAO Area 57), Western Indian Ocean (FAO Area 51)	09 Nov 2018	08 May 2024
North Atlantic albacore artisanal fishery	Bureau Veritas Certification	Certified	Albacore tuna	Northeast Atlantic (FAO Area 27)	07 Jun 2016	06 Dec 2021
Canada Highly Migratory Species Foundation (CHMSF) British Columbia Albacore Tuna North Pacific	SAI Global	Certified	Albacore tuna	Northeast Pacific (FAO Area 67)	23 Mar 2010	07 Dec 2025

Fishery Name	CAB	Fishery status	Species Certified	FAO Area(s)	Date first certified	Certified until (6 month extension)
US North Atlantic swordfish, albacore tuna and yellowfin tuna	MRAG Americas, Inc.	Certified	Albacore tuna, Swordfish, Yellowfin tuna	Northwest Atlantic (FAO Area 21), Western Central Atlantic (FAO Area 31)	28 Mar 2013	05 Sept 2023
Ishihara Marine Products albacore and skipjack pole and line fishery	Control Union UK	Certified	Albacore tuna, Skipjack tuna	Northwest Pacific (FAO Area 61), Western Central Pacific (FAO Area 71)	12 Mar 2019	11 Nov 2024
ACTEMSA-LEAL SANTOS pole and line West Atlantic skipjack fishery	Bureau Veritas Certification	Exiting	Skipjack tuna	Southwest Atlantic (FAO Area 41)		
New Zealand albacore tuna troll	Lloyds Register (Acoura)	Certified	Albacore tuna	Southwest Pacific (FAO Area 81)	16 May 2011	13 Aug 2022
Australian Eastern Tuna and Billfish Fishery (albacore tuna, yellowfin tuna, bigeye tuna and swordfish)	q.inspecta	Certified	Albacore tuna, Swordfish, Yellowfin tuna, Bigeye tuna	Southwest Pacific (FAO Area 81)	27 Aug 2020	26 February 2026
American Samoa EEZ Albacore and Yellowfin Longline Fishery	Control Union UK	Certified	Albacore tuna, Yellowfin tuna	Southwest Pacific (FAO Area 81)	24 Nov 2017	23 May 2023
Talleys New Zealand Skipjack Tuna Purse Seine	Lloyds Register (Acoura)	Certified	Skipjack tuna	Southwest Pacific (FAO Area 81)	28 Aug 2017	16 Feb 2023
Japanese Pole and Line skipjack and albacore tuna fishery	Lloyds Register (Acoura)	Certified	Albacore tuna, Skipjack tuna	Western Central Pacific (FAO Area 71)	17 Oct 2016	16 Apr 2022
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna	Control Union UK	Certified	Bigeye tuna, Yellowfin tuna	Western Central Pacific (FAO Area 71)	05 Oct 2018	06 Sep 2024
MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna	Control Union UK	Certified	Bigeye tuna, Yellowfin tuna	Western Central Pacific (FAO Area 71)	07 Oct 2019	06 Apr 2025

Fishery Name	CAB	Fishery status	Species Certified	FAO Area(s)	Date first certified	Certified until (6 month extension)
Tropical Pacific yellowfin and skipjack free-school purse seine fishery	Control Union UK	Certified	Skipjack tuna, Yellowfin tuna	Western Central Pacific (FAO Area 71)	18 Oct 2019	17 Apr 2025
PT Citraraja Ampat, Sorong pole and line Skipjack and Yellowfin Tuna	DNV GL	Certified	Skipjack tuna, Yellowfin tuna	Western Central Pacific (FAO Area 71)	22 Nov 2018	22 May 2024
Solomon Islands skipjack and yellowfin tuna purse seine and pole and line	SCS Global Services	Certified	Skipjack tuna, Yellowfin tuna	Western Central Pacific (FAO Area 71)	12 Jul 2016	11 Jul 2021
North Buru and Maluku Fair Trade Fishing Associations, Indonesian Handline Yellowfin Tuna	SCS Global Services	In Assessment	Yellowfin tuna	Western Central Pacific (FAO Area 71)		
Indonesia pole-and-line skipjack and yellowfin tuna of the Western and Central Pacific archipelagic waters	SAI Global	In Assessment	Skipjack tuna, Yellowfin tuna	Western Central Pacific (FAO Area 71)		
Maldives pole & line skipjack tuna	SAI Global	Certified	Skipjack tuna	Western Indian Ocean (FAO Area 51)	29 Nov 2012	28 May 2023
North West Atlantic Canada Harpoon Swordfish	Lloyds Register (Acoura)	Certified	Swordfish (*Xiphias gladius*)	Atlantic, Northwest (FAO Area 21)	18 June 2010	11 Jun 2023
North West Atlantic Canada Longline Swordfish	Lloyds Register (Acoura)	Certified	Swordfish (*Xiphias gladius*)	Atlantic, Northwest (FAO Area 21)	19 Apr 2012	11 Jun 2023
Owasebussan Co. Ltd. North Pacific Longline Tuna Fishery for Albacore, Yellowfin Tuna & Bigeye Tuna	SCS Global Services	In Assessment	Albacore tuna, Skipjack tuna, And Bigeye tuna	Western Central Pacific (FAO Area 71)		
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register (Acoura)	In Assessment	Yellowfin tuna, Skipjack tuna, and Bigeye tuna	31 (Atlantic, Western Central), 34 (Atlantic, Eastern Central), 41 (Atlantic, Southwest), 47 (Atlantic, Southeast), 51 (Indian Ocean, Western), 57 (Indian Ocean, Eastern), 71 (Pacific, Western		

Fishery Name	CAB	Fishery status	Species Certified	FAO Area(s)	Date first certified	Certified until (6 month extension)
				Central), 77 (Pacific, Eastern Central), 87 (Pacific, Southeast)		
Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery	Control Union UK	In Assessment	Yellowfin tuna, Skipjack tuna, and Bigeye tuna	FAO Area 71: Exclusive Economic Zone of the Federated States of Micronesia (FSM) and WCPFC High Seas		
Kochi and Miyazaki Offshore Pole and Line Albacore and Skipjack fishery	Control Union UK	In Assessment	Albacore and Skipjack tuna	Western and Central Pacific Ocean (WCPO) high seas and Japanese EEZ		
CFTO Indian Ocean Purse Seine Skipjack fishery	Control Union UK	In Assessment	Skipjack tuna	Indian Ocean (FAO 51 and 57) to include the Exclusive Economic Zones (EEZ) of the Seychelles, Mauritius, France (Mayotte and French Southern and Antarctic Lands (TAAF)) and the High Seas		

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). The six month extension to conditions is applied.

RFMO	Stock	RFMO workplan completion date at time of MEGVAR	Original condition end date as per the MEGVAR	Revised condition end date based on the MSC's March 2020 COVID-19 derogation
ICCAT	AO-SKJ-W	2020	2022 (HCR adopted)	
ICCAT	AO-YFT	2020	HCR adopted at the Regular Session of the Commission – November 2023	May 2024
IATTC/WCPFC	PO-ALB-N		HCR adopted at the Regular Session of the Commission – December 2023	May 2024
WCPFC/IATTC	PO-ALB-S	2021	HCR adopted at the Regular Session of the Commission – December 2021	June 2022
WCPFC	WPO-SKJ	2021	HS in place at the Regular Session of the Commission – December 2021	June 2022
WCPFC	WPO-YFT	2021	HCR adopted at the Regular Session of the Commission – December 2021	June 2022
WCPFC	WPO-BET	2021	HCR adopted at the Regular Session of the Commission – December 2021	June 2022
IOTC	SKJ	N/A (well-defined HCRs adopted in 2016)	N/A (well-defined HCRs adopted in 2016)	N/A (well-defined HCRs adopted in 2016)
				Note that new condition was raised due to the lack of evidence that tools are appropriate and effective in controlling exploitation.

Appendix 3 Letter from individual clients to their respective CABs.

In November 2018, all Marine Stewardship Council (MSC) - accredited Conformity Assessment Bodies (CABs) filed with MSC, and MSC subsequently approved, a variation request to harmonise the Principle 1 conditions and deadlines for MSC certified highly migratory species globally where multiple certified fisheries existed on the same stock. In the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area, this included fisheries for albacore, skipjack and yellowfin tunas. With this change, all MSC certified tuna fisheries in this region are required to align harvest strategy milestones and deadlines as set out in WCPFC's Conservation and Management Measure (CMM) 2014-06, as revised by WCPFC14 in 2017, with the milestones and deadlines in their client action plans.

As clients of the MSC certified Tuna fishery (clients specified their fishery in each letter) we support the harmonisation of Principle 1 conditions and deadlines and remain strongly committed to use our unified voice to pursue having WCPFC put robust harvest strategies in place as soon as possible. However, the variation request was flawed in not recognizing and accounting for WCPFC's intent for the Harvest Strategy Workplan to serve as a living document, to periodically adapt the content and schedule. WCPFC recognised that the preliminary schedule included in the early versions of the Workplan would require adjustment, as substantial research and evaluation of alternative terms for each Harvest Strategy element, and negotiation amongst WCPFC's parties, would be necessary to develop and adopt robust Harvest Strategies.

It was therefore inappropriate and unrealistic for the Variation Request to adopt static deadlines pinned to WCPFC's CMM 2014-06 as revised by WCPFC14 in 2017. WCPFC has amended the Harvest Strategy Workplan annually since its adoption in 2014, including revisions to the schedule in all but one of the five years since adoption. In fact, the revised version of the workplan that WCPFC adopted in 2018 explicitly planned for changes again in 2019: "A more substantial review of the Harvest Strategy Workplan, with inclusion of more detail, is anticipated during SC15 and WCPFC16." At the December 2019 annual session of the commission (WCPFC16), WCPFC agreed to transition from developing single-stock harvest strategies to instead work to adopt harvest strategies that account for mixed fisheries interactions using a hierarchical approach based on a collection of single species models. With this major change to a more robust approach, WCPFC16 once again modified the Harvest Strategy Workplan, including the schedule, which is appropriate for a living document. WCPFC16 added a preamble to the Workplan, explicitly explaining that the Commission deliberately included an ambitious schedule in the initial version of the Harvest Strategy Workplan and always intended to update the plan annually, and thus, as a living document, the planned completion dates for individual harvest strategy elements should reasonably be expected to change as the commission annually adapts the Workplan.

We therefore request that the MSC-accredited CABs submit a new joint variation request to MSC that recognises that the WCPFC Harvest Strategy Workplan is a living document and that the Workplan deadlines were never intended by WCPFC to be static. While the tuna stocks of this region remain in a healthy state, the variation request should allow for adjustments to the harmonised deadlines for P1 milestones of WCPO tuna MSC certified fisheries when WCPFC amends the deadlines of their Harvest Strategy Workplan.

Unlike in other regions, all principal market tuna stocks within the WCPFC Convention Area are currently healthy (none are overfished nor are experiencing overfishing), reducing the urgency for MSC-defined harvest strategies to be put in place. Suspending MSC certified WCPFC tuna fisheries would result in a major disruption to the global supply of MSC certified tuna products and the growing global retail market for MSC certified seafood products and would disincentivise future participation by tuna fisheries in the MSC programme. Mass suspension of WCPFC tuna fisheries would result in a tremendous loss in environmental sustainability if gradual improvements to address identified deficiencies against the MSC fisheries standard ceased to progress.

Thank you for your consideration of this urgent request. We look forward to your feedback and to continuing our joint efforts to improve the sustainability of global tuna fisheries.

Regards

Appendix 10 Objection Procedure

No objections were received.