

PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery

Final Report Scope Extension to include Bigeye tuna

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3 Glossary

AW	Archipelagic Waters
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMMs	Conservation and Management Measures
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened or Protected species
EwE	Ecopath with Ecosim
FADs	Fishing Aggregation Devices
FAO	Food and Agriculture Organization of the United Nations
FAO	Food and Agriculture Organization
FCM	Fisheries Certification Methodology
FFA	Forum Fisheries Agency
FFA	Forum Fisheries Agency
FFC	Forum Fisheries Committee
FIMS	Fishery Information Management System
HTTP	Hawaii Tuna Tagging Project
iFIMS	Fisheries Information Management System
IFQ	Individual Fishing Quota
ITQ	Individual Transferable Quota
Kg	kilogram
Lb.	Pound, equivalent to roughly 2.2 kg
LBFV	Locally Based Foreign Fishing Vessels
LL VDS	Longline Vessel Day Scheme
LOA	Length Over-All
M	Million (lbs.)
MP	Management Plan
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSE	Management Strategy Evaluation
NFA	National Fisheries Authority
nm	nautical mile
OFL	Over-Fishing Level
PAE	Party Allowable Effort
PI	Performance Indicator
PNA	Parties to the Nauru Agreement
PS VDS	The Purse Seine Vessel Day Scheme
PTTP	Pacific Tuna Tagging Program
ROP	Regional Observer Programme
RTT	Regional Tuna Tagging Project
SCS	SCS Global Services
SI	Scoring Issue
SIDS	Small Island Developing States

SPC	Secretariat of the Pacific Community
SSAP	Skipjack Survey and Assessment Programme
SSB	Spawning Stock Biomass
t and mt	metric ton
TAC	Total Allowable Catch
TAE	Total Allowable Effort
UNCLOS	United Nations Convention on the Law of the Sea
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System
WCPFC	Western and Central Pacific Fisheries Commission
WWF	World Wildlife Fund

4 Executive Summary

This report presents the Marine Stewardship Council (MSC) scope extension assessment of the currently certified Papua New Guinea Fishing Industry Association (PNG-FIA) purse seine Skipjack & Yellowfin Tuna Fishery. The fishery was initially certified on May 8 2020.

The scope extension is to include bigeye tuna (*Thunnus obesus*) as a target species under Principle 1. Bigeye was previously evaluated as a Principle 2 species under the existing certificate. This scope extension is restricted to evaluating Principle 1 for bigeye. There are no changes to the Principle 2 or Principle 3 scores or existing Principle 1 scores for yellowfin or skipjack. The PNG-FIA fishery is a commercial fishing operation that targets skipjack tuna (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacares*) as well as bigeye in the north coast of Papua New Guinea, in both its Exclusive Economic Zone (EEZ) and Archipelagic Waters (AW), using a variety of purse seines fishing strategies; unassociated sets (free school), anchored FAD sets, and drifting FAD sets. The fishery operates in the north coast of Papua New Guinea (PNG), in both its Exclusive Economic Zone (EEZ) and Archipelagic Waters (AW). All vessels are either flagged to PNG or other countries that operate under bilateral agreements or are licensed as Locally Based Foreign Fishing Vessels (LBFV)¹ under PNG. The initial PCR assessment covered 64 vessels; 32 vessels were PNG-flagged, and 32 vessels were Philippines-flagged, and the latter are licensed as LBFV. Following the initial certification, a gap analysis was conducted and the certificate was expanded to cover the re-flagging of ten currently certified vessels (4 to Federated States of Mironesia and 6 to Nauru), and the addition of 10 vessels flagged to PNG (1), Philippines (9), Taiwan (6) and Vanuatu (4).² All fishing for the new vessels takes place within the PNG EEZ, operate under bilateral arrangement with strict domestic management and reporting arrangements implemented by the PNG Government and the structure of the fishing arrangements (foreign flagged vessels fishing for and landing catch to be processed by locally based companies) are such that flag State involvement is minimal.

There are two currently certified target species considered to be separate Units of Assessment (UoAs); the two distinctive fishing methods (free school and FAD sets) are also assessed as separate UoAs under Principle 2 and 3, thus functionally there are four UoAs. There are now a total of six UoAs including bigeye as a target species. The assessment was conducted and prepared by SCS Global Services (SCS), an MSC-accredited, independent, third-party Conformity Assessment Body (CAB), in accordance with the MSC Principles and Criteria for sustainable fishing. The assessment complies with the MSC Fishery Certification Process v2.2 (September 2020) and the guidance to the Certification Requirements Version 2.01 (August 2018).

¹ LBFV flagged vessels have obligations to the coastal state (PNG), the involvement of the flag state is minimal, thus the assessment focused on the management of the regional management system and the domestic coastal management system

² Results of the gap analysis and determination can be found here: <https://fisheries.msc.org/en/fisheries/png-fishing-industry-associations-purse-seine-skipjack-yellowfin-tuna-fishery/@assessments>

Table 1. Unit of Certification(s) and Unit of Assessment(s). Bigeye is the subject of the scope extension under Principle 1.

	Stock/Species (FCR V2.0 7.4.7.1)	Method of Capture (FCR V2.0 7.4.7.2)	Fishing fleet (FCR V2.0 7.4.7.3)
1	Skipjack tuna (<i>Katsuwonus pelamis</i>)	Purse seine fishing; free school ³ sets	Select vessels (see <i>revised Addendum</i>) fishing in the North coast of Papua New Guinea’s Economic Exclusive Zone and Archipelagic Waters flagged to either Papua New Guinea (PNG), or the Philippines (PH), and <i>Federated States of Micronesia (FM) Nauru (NA), Taiwan (TW) and Vanuatu (VU)</i> operating under a PNG domestic purse seine licenses and <i>bilateral agreements within PNG’s EEZ.</i>
2	Yellowfin tuna (<i>Thunnus albacares</i>)		
3	Bigeye tuna (<i>Thunnus obesus</i>)		
4	Skipjack tuna (<i>Katsuwonus pelamis</i>)	Purse seine fishing FAD sets (drifting FADs and anchored FADs) ⁴	
5	Yellowfin tuna (<i>Thunnus albacares</i>)		
6	Bigeye tuna (<i>Thunnus obesus</i>)		

Assessment Overview

The team selected to undertake the scope extension assessment includes two team members that collectively meet the requirements for MSC assessment teams. These are:

- Gabriela Anhalzer⁵, Team Leader
- Dr. Gerard DiNardo Principle 1 Expert

Summary of Findings

In this report, we provide detailed rationales for scores presented for only the scope extension portion under Principle 1 (Stock status and Harvest strategy) for bigeye tuna. There were no changes in scoring for the other Principle 1 target species or for Principle 2 (Ecosystem Impact) and Principle 3 (Governance, Policy, and Management system) as a result of the scope extension. Readers are directed to the Public Certification Report (PCR) for more information on skipjack, yellowfin and the scoring for Principles 2 & 3.

For bigeye tuna, the draft scores for the ACDR are all above the minimum Scoring Guidepost (SG) of 60. Two Performance Indicators (PIs)—harvest strategy (1.2.1) and harvest control rule (1.2.2)—fall below 80 at the ACDR stage. These scores are a result of the lack of clear harvest control rules linked to the status of the WCPFC bigeye stock. All other PIs are currently above 80.

³ Free School sets, according to WCPFC, including unassociated sets and sets associated with baitfish.

⁴ The FAD sets in this assessment include those classified by the WCPFC Regional Observer Program (ROP) for the purse seine school association as: 1) drifting log/debris or dead animal, 2) drifting, raft, FAD or payao, and 3) anchored raft FAD or payao.

5 Report Details

5.1 Authorship and peer review details

Audit Team

Gabriela Anhalzer – SCS Global Services – Lead Auditor

Gabriela Anhalzer received a Master's degree in coastal environmental management from Duke University. Ms. Anhalzer has several years of experience in marine conservation and fisheries, she has worked as an independent consultant conducting evaluations of fishery improvement projects and as a fisheries policy and stakeholder specialist. She has also worked as an associated researcher in Latin America for sea turtle population studies, sea bird census, and supporting stakeholder engagement in participatory management of marine protected areas. Ms. Anhalzer has provided technical support for numerous MSC assessment and possess a comprehensive understanding of MSC fisheries standard and stages; meeting MSC's team leader qualifications and competency criteria.

Gabriela Anhalzer meets the Team leader qualifications, in that she has:

- Completed training meeting requirements in Table 1 of GCRV2.4, as evidenced by the certificate of passing auditor training for the ISO course 19011
- Holds a Masters degree in coastal environmental management, and has over five years' experience in the fisheries sector related to stakeholder management and facilitation.
- Completed of the latest MSC training modules applicable to this assessment within the past five years (V2.2 Team Leader MSC modules in January 2021) .
- Has undertaken several MSC fishery assessment and surveillance site visits as a team member in the last 5 years including: Surveillance for the southern Gulf of California Thread Herring Fishery in Sinaloa & Nayarit Mexico, the Small pelagics fishery in Sonora, Gulf of California, US Atlantic Sea Scallop Fishery, US Atlantic Spiny Dogfish Fishery, and the North-eastern Tropical Pacific Purse Seine Yellowfin and Skipjack Tuna Fishery.
- Has demonstrated experience in applying different types of interviewing and facilitation techniques, as verified by SCS records audit witness records and previous audit reports.
- Is competent in the MSC Standard and current Certification Requirements, auditing techniques, and communication and stakeholder facilitation techniques, as verified by the completion of ISO 19011 auditor training.
- Has affirmed she holds no conflict of interest

Gerard DiNardo – SCS Global Services – Principle 1 Expert

Dr. Gerard DiNardo has over 25 years of experience as a research fishery scientist and senior manager for NOAA Fisheries in the United States, as well as extensive knowledge, understanding, and involvement in fishery issues and processes of tuna-RFMOs and RFOs. Ensuring sustainable development and management of fisheries, including the identification of research and plans of action

to support effective management decision making has been the focus throughout his career, and with a strong background and understanding of international fisheries and MSC. He holds an MSc from Long Island University, C.W. Post Center and a Ph.D from University of Maryland, where his dissertation topic was FISHMAP: An Expert System for Sampling Fish Populations.

Gerard was appointed as the Fisheries Resources Division Director of the Southwest Fisheries Science Center in San Diego, CA from 2015 to 2019. Previously, he held several positions at NMFS, including Supervisor of the Stock Assessment Program in the Fisheries Research and Monitoring Division at the Pacific Islands Fisheries Science Center. Dr. DiNardo has multiple publications related to the assessment of pelagic species, including tuna. He's held positions as Co-Chair of the Joint PICES/ISC Working Group on Ocean Conditions and the Distribution and Productivity of Highly Migratory Fish for the North Pacific Marine Science Organization, standing member of the NMFS National Stock Assessment Methods Steering Committee, science expert on the U.S.A. Delegation to the Western Central Pacific Fisheries Commission and Chair of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

Dr. DiNardo's experience satisfies the MSC requirements for a Team Member as described in PC2 (FCP v2.2).

Peer Reviewers

The Peer Review Draft Report, incorporating conditions, scores, weightings, and a draft determination was sent on July 2021 to the MSC Peer Review College.

SCS obtained confirmation from the Peer Review College that the selected peer reviewer, who did not have any conflicts of interest in relation to the fishery and that the competencies of the peer reviewers match the required competencies

The peer reviewer 'A' comments, incorporated in this report (Section 9.3 Peer Review reports), were addressed by the assessment team, the team responses to those comments are also included in this section.

1.2 Version details

Table 2. Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.2
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.3
MSC Reporting Template	Version 1.2

6 Unit(s) of Assessment and Certification and results overview

6.1 Unit(s) of Assessment (UoA) and Unit(s) of Certification

6.1.1 Unit(s) of Assessment and Unit(s) of Certification

The currently certified Unit of Assessment includes 84 vessels within the Fishing Industry Association of Papua New Guinea operating in the north coast of Papua New Guinea, in both its Exclusive Economic Zone (EEZ) and Archipelagic Waters (AW), targeting skipjack tuna (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacares*) using a variety of purse seines fishing strategies; unassociated sets (free school), anchored FAD sets, and drifting FAD sets. Bigeye is being evaluated as a target species under this scope extension. All vessels are either flagged to PNG or other countries that operate under bilateral agreements or are licensed as Locally Based Foreign Fishing Vessels (LBFV)⁶ under strict domestic requirements from PNG. The initial PCR assessment covered only PNG-flagged and Philippines-flagged vessels licensed as LBFV. Following the initial certification, a gap analysis was conducted and the certificate was expanded to cover the re-flagging of ten currently certified vessels (4 to Federated States of Mironesia and 6 to Nauru), and the addition of 10 vessels flagged to PNG (1), Philippines (9), Taiwan (6) and Vanuatu (4).⁷ The gap analysis determined that all the assessment tree components of the new flag states under bilateral arrangements were the same as for the certified fishery, and these components were considered as an other eligible fisher (FCP 2.2 7.27.5). All fishing for the new vessels takes place within the PNG EEZ, and non-PNG flagged vessels operate under bilateral arrangement with strict domestic management and reporting arrangements implemented by the PNG Government and the structure of the fishing arrangements (foreign flagged vessels fishing for and landing catch to be processed by locally based companies) are such that flag State involvement is minimal. The applicable management structures are at the WCPFC, PNA, and PNG level.

Including bigeye, there are six Units of Assessment (UoAs), with the target species (bigeye, yellowfin and skipjack) comprising separate UoAs. The fishery uses purse-seine gears types, employing both free-school and FAD sets.⁸ These set types have been assessed as separate UoAs under both Principle 2 and Principle 3. The fleet uses the same gear type/operations, and management system, and only differ regarding the Principle 1 target stock. For this reason, both Principle 2 is scored jointly for the two target species UoAs, and P1 species of UoA1 and UoA2 are not scored a second time as primary species. A target species that are certified under Principle 1 and has obtained an overall score >80 for P1, will have already be assessed under a higher standard of performance than those for main retained/primary under Principle 2. Thus, it is expected to obtain a score >80 for the relevant Principal

⁶ LBFV flagged vessels have obligations to the coastal state (PNG), the involvement of the flag state is minimal, thus the assessment focused on the management of the regional management system and the domestic coastal management system.

⁷ Results of the gap analysis and determination can be found here: <https://fisheries.msc.org/en/fisheries/png-fishing-industry-associations-purse-seine-skipjack-yellowfin-tuna-fishery/@assessments>

⁸ The assessment team has used the WCPFC Regional Observer Program (ROP) purse-seine school association classifications to distinguish set types. Only sets classified as numbers 1-5 are included in this assessment. Free school sets include both unassociated with any other object or animal and unassociated but feeding on bait fish only. FAD sets evaluated include 1) drifting log/debris or dead animal, 2) drifting, raft, FAD or payao, and sets made around 3) anchored raft FAD or payao.

Indicators under P2. If in a subsequent assessment one of the targets P1 target species fails and is no longer considered as certified, it will then be scored under Principle 2.

This fishery has been found to meet scope requirements (FCP v2.2 7.4) for MSC fishery assessments as it

- Does not operate under a controversial unilateral exemption to an international agreement, use destructive fishing practices, does not target amphibians, birds, reptiles or mammals and is not overwhelmed by the dispute. (FCP 7.4.2.1, 7.4.2.2, 7.4.3, 7.4.5)
- The fishery does not include an entity successfully prosecuted for shark finning within the last 2-years (FCP 7.4.2.10)
- There are mechanisms for resolving disputes in place (FCP 7.4.5.1), and the fishery has not previously failed assessment or had a certificate withdrawn.
- Is an enhanced fishery based on the use of FADs⁹, is not based on an introduced species and does not represent an inseparable or practically inseparable species (FCP 7.5.1, 7.5.2, 7.5.8-13).
- Does overlap with other MSC certified or applicant fishery (7.5.14), the details of overlapping fisheries are included in the Harmonization section.
- And does not include an entity successfully prosecuted in respect of violation of a forced or child labour law within the last 2 years. (FCP 7.4.2.4)
- The Unit of Assessment, the Unit of Certification, and eligible fishers have been clearly defined, traceability risks characterized, and the client has provided a clear indication of their position relative to certificate sharing (FCP 7.5).

Table 3. Unit of Assessment (UoA) and Unit of Certification (UoC).

Units of Assessment 1, 2, 3, 4, 5 and 6	
UoA: Species & Stock (FCR V2.0 7.4.7.1)	UoA 1 and 2: Skipjack tuna (<i>Katsuwonus pelamis</i>) UoA 3 and 4: Yellowfin tuna (<i>Thunnus albacares</i>) UoA 5 and 6: Bigeye tuna (<i>Thunnus obesus</i>)
UoA: Gear Type (FCR V2.0 7.4.7.2)	UoA 1, 3, 5: Purse seine; free school sets UoA 2, 4, 6 : Purse seine; FAD sets including drifting (log/debris or dead animal or drifting) and anchored (anchored, raft, FAD or payao)
UoA: Vessels (FCR V2.0 7.4.7.3)	UoA 1-6: Vessels flagged to Papua New Guinea and Philippines under the Locally-Based Foreign Fishing Vessel (LBFV) license agreements. Vessels flagged to Vanuatu, Federated States of Micronesia, Nauru, and Taiwan operating under bilateral agreements fishing within PNG’s EEZ and AW are also included in the UoA.

⁹ Fish Aggregating Devices (FADs) are considered by the MSC (FCP v2.2 G7.4.2.12) as habitat modifications in enhanced fisheries. SCS determined, using the criteria in Table 1, that the fishery is an eligible enhanced fishery. More details in Section 5.1.3

Further information: Geographic Area	The north coast of Papua New Guinea, in both its Exclusive Economic Zone (EEZ) and Archipelagic Waters (AW)
Further information: Management System	Tuna fisheries within the UoA operate within a governance and policy framework under management by Parties to the Nauru Agreement (PNA) and Western and Central Pacific Fisheries Commission (WCPFC). These include governance systems and mechanisms in place at the regional and national level, including in Papua New Guinea national legislation.
Unit of Certification: Defined as the vessels allowed to use the MSC ecolabel for catch from the Unit of Assessment (defined as the species, location and gear assessed against the MSC standard).	
Client Group	Fishing Industry Association of Papua New Guinea
Fishers in the UoC for the chosen stock	Select vessels flagged fishing in the North coast of Papua New Guinea’s Economic Exclusive Zone and Archipelagic Waters flagged to either Papua New Guinea (PNG), or the Philippines (PH), and Federated States of Micronesia (FM) Nauru (NA), Taiwan (TW) and Vanuatu (VU) operating under a PNG domestic purse seine licenses and bilateral agreements within PNG’s EEZ.
Other Eligible Fishers that may join the certificate for the chosen stock	At the moment no other eligible fishers have been identified.

6.1.3 Scope of Assessment in Relation to Enhanced Fisheries or Introduced Fisheries

This fishery involves fish aggregation devices (FADs) deployed which under G7.4.2.12 (FCP v 2.2) are considered a “habitat modification” and for subject to fishery enhancement considerations. Thus, the assessment team evaluated the use of FADs in the UoA against the MSC eligibility criteria in Table 1, and determined that FADs meet the requirements under Table 1 of the FCP:

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.

Following clause 7.7.1.2 d in the MSC FCP v2.2 , the CAB shall assess:

The impacts of habitat modification under the habitats and ecosystems components in Principle 2. The CAB shall consider environmental impacts including: 

- i. Whether serious or irreversible harm may be caused to the natural ecosystem’s structure and function, including the natural food chains of predator and/or prey species.
- ii. The types and extent of habitat modifications and the possibility of these causing serious or irreversible harm

As per the recent ACDR published Eastern Pacific Yellowfin and Skipjack Tuna Purse Seine fishery (Andrews et al 2020), the team considered the following two issues in particular:

Reversible modification of habitat: FADs are deployed in the epipelagic zone often in relatively deep waters, where there is no habitat impact, however, FADs may also

transition into derelict and/or stranded gear that may entangle with benthic habitat when lost and/or not recovered. These potential indirect impacts of drifting FADs are considered reversible once FADs are removed. Additionally, the assessment team considered the possibility of drifting FADs causing serious or irreversible harm in PIs 2.4.x. Derelict FADS are considered abandoned fishing gear. The MSC intent regarding impacts from gear loss on habitat is described in Box GSA7 (MSC Standard v2.01), indicating that the impacts of gear loss on habitats are considered under the Habitats components, specifically at the SG100 level for PI 2.4.2, where fisheries are required to have a management strategy in place even for gears that do not regularly contact benthic habitats since gear loss could occur. Considering a broader interpretation of the MSC's intent (in line with clause 7.7.1.2) the assessment team took a more precautionary approach categorizing coral reefs that are impacted by abandoned fishing gear as VMEs.

The assessment team noted that the use of FADs are subject to management measures and controls at both national and WCPFC levels. Though measures are in place, evidence of habitat impacts on VMEs and other habitat types due to lost or derelict FADs require actions by the UoA to ensure actions are implemented... As a result, the assessment team issued conditions to ensure adequate progress for implementation of relevant management measures and controls within the UoA (see section 7.3.6 for background; 7.3.8 for scoring).

Serious or irreversible harm to ecosystem structure and function is not caused by FAD modifications: the assessment team has reviewed relevant and credible resources and scientific publications on the subject of the "ecological trap" hypothesis. This hypothesis is centered on potential evidence of disproportionate aggregation and/or changes of behavior of certain species due to FADs. The assessment team carefully considered the evidence presented on fish residence times in particular and concluded there is no unequivocal evidence of irreversible harm to ecosystem structure and function (see Section 7.3.7 PI 2.5.1).

There is no evidence of species introduction in this fishery.

6.2 Assessment results overview

6.2.1 Determination, formal conclusion and agreement

With the information available, this fishery meets the minimum requirements for being awarded certification which includes meeting the SG60 for all Performance Indicators and an average score of 80 or greater for all three Principle scores. The team discussed the merits and shortfalls of the fishery and by consensus recommended certification for the fishery.

In accordance with MSC Certification Requirements, the findings will be made open to objection by interested parties for a period of 15 working days from publication of the Final Report with the Certification Determination. Please see the Final Report Stakeholder Announcement on the MSC website for the announcement detailing the objection period and dates.

6.2.2 Principle level scores

Table 4. Principle level scores

Principle	FREE			FADs		
	SKJ	YFT	BET	SKJ	YFT	BET
Principle 1 – Target Species	85.83	80.80	80.0	85.83	80.80	80.0
Principle 2 – Ecosystem	91.00	91.00	91.00	83.67	83.67	83.67
Principle 3 – Management System	81.67	81.67	81.67	80.42	80.42	80.42

6.2.3 Summary of conditions

A summary of the conditions currently open under the PCR are included below. Conditions for bigeye tuna UoA component (1-5 and 1-6) are also included.

Table 5. Summary of Conditions (Conditions apply to both FAD sets and Free school sets unless otherwise indicated).

Condition number	Condition	PI	Related to previously raised condition? (Y/N/NA)
1-1	By the second surveillance audit, demonstrate that the harvest strategy for skipjack tuna is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points	1.2.1	NA
1-2	SI a) By the second surveillance audit, demonstrate that well defined HCRs are in place for skipjack tuna 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. SI b) By the second surveillance audit, provide evidence that the selection of the harvest control rules for skipjack tuna are robust to the main uncertainties. SI c) By the second surveillance audit, provide evidence that indicates that the tools in use for skipjack tuna are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	1.2.2	NA
1-3	By the second surveillance audit, demonstrate that the harvest strategy for yellowfin tuna is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points	1.2.1	NA
1-4	SI a) By the second surveillance audit, demonstrate that well defined HCRs are in place for yellowfin tuna 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. SI b) By the second surveillance audit, provide evidence that the selection of the harvest control rules for yellowfin tuna are robust to the main uncertainties. SI c) By the second surveillance audit, provide evidence that indicates that the tools in use for yellowfin tuna are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	1.2.2	NA
1-5 (New-Bigeye)	PI 1.2.1., Si a: By the second surveillance audit (Extended to June 2023), demonstrate that the harvest strategy for bigeye tuna 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	1.2.1	NA
1-6 (New Bigeye)	By the second surveillance audit (Extended to June 2023) the client must be in a position to demonstrate that the SG80 requirements for bigeye tuna have been met:	1.2.2	NA

Condition number	Condition	PI	Related to previously raised condition? (Y/N/NA)
	<p>SI a) 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.</p> <p>SI b) evidence that the selection of the harvest control rules are robust to address the main uncertainties.</p> <p>SI c) the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</p>		
2-1	FAD sets and Free school sets: By the fourth surveillance audit, provide evidence that the direct effects of the UoA are highly likely to not hinder recovery of Cetacean species.	2.3.1	NA
2-2	By the fourth surveillance audit provide at least some evidence that the measures/strategies for whale sharks and cetaceans are being implemented successfully	2.3.2	NA
2-3	FAD sets and Free school sets: By the fourth surveillance audit, provide some quantitative information that 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 Cetaceans.	2.3.3	NA
2-4	FAD sets: By the fourth surveillance audit provide 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.	2.4.1	NA
2-5	FAD sets: By the fourth surveillance audit, provide at least 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.	2.4.2	NA
2-6	<p>For FAD sets: By the fourth surveillance audit, provide evidence that the information available 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;</p> <p>OR</p> <p>That some quantitative information is available that is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	2.4.3	NA
2-7	By year four the fishery must provide 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.	2.5.1	NA
3-1	Provide evidence to demonstrate that clear and transparent processes exist to regularly seek and accept “relevant information” provided via consultative processes and that any such information is considered in management decision making at national and regional levels.	3.1.2	NA
3-2	By the fourth year, the client shall present evidence that 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, for free school sets.	3.2.1	NA

Condition number	Condition	PI	Related to previously raised condition? (Y/N/NA)
3-3	SI b) By the fourth surveillance audit, provide evidence that 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. SI d) By the fourth surveillance audit, provide evidence that Information on the fishery’s performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	3.2.2	NA

7 Traceability

7.1 Eligibility Date

The fishery was certified on May 8, 2020. The current target eligibility date for bigeye will be at the date of the publication of the PCR for the scope extension.

Based on the information provided by the client, SCS has determined that the fishery client currently has in place sufficient systems of tracking and tracking to ensure the separation of any certified product from the non-certified product.

At present, this specific UoA does not use the blue MSC ecolabel on the product. Some of the processing companies that are members of the Fishing Industry Association of PNG are currently MSC CoC certified as they source product from other certified fisheries.

7.2 Traceability within the Fishery

No change in traceability is expected with the scope extension and the text below is taken from the PCR. Below we've listed the main stages of the supply chain within the PNG FIA fishery and the relevant tracking, tracing and segregation systems at each step:

Prior to departure from port, each vessel is issued a FIA PNG MSC fishing trip number that is used to track the vessel via the FIA PNG Fisheries Integrated Management System (FIMS) portal.

1. There is 100% observer coverage of all purse-seine fishing activity undertaken in the WCPFC.
2. WCPFC mandates on data provision require that vessel logs are completed for every sets, with specific minimum data requirements for the fishing operation, including:
 - a. Vessel identifiers: name of vessel and country of registration
 - b. Trip information: Port or place of departure, date of departure, port or place of unloading, date of arrival in port, transshipment at sea activity
 - c. Weight of fish caught per set
 - d. School association (either FAD or freeschool)
3. At the point of setting, the skipper records the set type (School association) in the logbook. The observer will also record the set type, lat. and long, and will record species once the catch is brought onboard the deck.
4. The catch will then be sorted by the crew and retained species will be placed in a pre-designated well. The well will either be pre-designated as MSC eligible, or if non-MSC fish is already in the well, a double net will be used to separate the catch.
 - a. MSC eligible sets:

- i. Identified as: Free Schools, Drifting log/debris or dead animal, or Drifting, Raft, FAD or Payao and Anchored Raft FAD or Payao
 - ii. Sets taking place within PNG’s EEZ and AW
5. Both the observer’s report and captain’s logbook record the well the catch was placed in. An observer must be present if fish is moved between wells while the fishing trip is underway.
 6. Upon offloading observers are present to monitor separation of MSC-eligible catch from MSC non-eligible catch is maintained.
 7. No auctioning of tuna occurs, and fish are transferred directly from the vessel to the processing plant/carrier vessel. This point is considered to be the change of ownership.

Table 6 Traceability risk factors in the fishery

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear/s to be used within the fishery	<p>No non-certified gear is used in the fishery. Vessels in the UoA employee uniquely purse seine gear. There are several regulations and traceability systems in place to ensure there is no mixing between certified and non-certified product.</p> <p>The vessels within the UoA are under the regulation of NFA. Vessels comply with real time catch traceability systems, that begin from the point of capture to offload onshore. Traceability systems and relevant regulations include:</p> <ul style="list-style-type: none"> ▪ 100% observer coverage (MSC Standards trained) ▪ Real time E-reporting and e-monitoring by observers ▪ Vessel logbook/ Catch Documentation scheme ▪ VMS, ▪ And dockside and port enforcement controls. <p>WCPFC regulations require that both the observer and vessel logbook report information on school association. Following on-board protocols only sets identified as 1-5 are stored in wells pre-designated as MSC eligible, or if non-MSC fish is already in the well, a double net is used to separate the catch.</p> <p>The observers record which wells the fish enter. Observers must be present any time fish is transferred between wells. These traceability platforms and processes currently meet and satisfy EU’s market import requirements.</p> <p>The following records will be passed to the first receivers: captains’ statement, fishing logbook for all sets for the fishing trip, and well chart identifying the fish as MSC or non-MSC.</p> <p>The systems in place are considered appropriate to manage the risk of mixing between non-certified and certified fishing methods.</p>
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	<p>There is a potential for vessels in the UoA/UoC to fish outside the UoA geographic area (PNG’s EEZ and AW) and mixed trips do occur. The risk of mixing is mitigated via:</p> <ol style="list-style-type: none"> 1) WCPFC regulations require that both the observer and vessel logbook report latitude and longitude information for every set. 2) Vessels are required to have VMS tracking

	<p>3) Each fishing boat will be under a FIA PNG MSC fishing trip number, which enables tracking of the vessel through the FIA PNG Fisheries Integrated Management System (FIMS) portal</p> <p>4) Following on-board segregation protocols, any fish caught outside of the geographic area of the UoA, will be placed in a separate well or segregated employing a double net. MSC-eligible fish is not mixed with non-MSC eligible fish if the wells are shared.</p> <p>The following records will be passed to the first receivers: captains’ statement, fishing logbook, and well chart. Only fish offloaded in PNG is considered MSC eligible.</p> <p>The systems in place are considered appropriate to manage the risk of mixing between non-certified fish caught outside the UoC and certified fish caught inside the UoC.</p>
<p>Potential for vessels outside of the UoC or client group fishing the same stock</p>	<p>All vessels that possess eligible purse-seine fishing licenses to fish within the EEZ or Archipelagic Waters of PNA are included in the UoA. Only select vessels (i.e. those identified by the client, Fishing Industry Association) are included in the UoC.</p> <p>Several regulations in place require the capture of vessel identification information, including, the Fishing logbook, Well chart, observer report, etc. This information allows the receiver at offload to verify if the catch is coming from an MSC eligible vessel, and segregate accordingly. The first receiver will be able to verify with these documents that the product is sourced from vessels in the UoA (See Appendix 6 Vessel List).</p> <p>There is a risk that products from vessels outside the UoC may be sold as MSC certified, to address this risk the assessment team has opted to start CoC at offload (not landing). A transshipment event is considered as offloading.</p>
<p>Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)</p>	<p>There is a potential risk of mixing between certified and non-certified catch that comes from non-eligible MSC sets (sets taking place outside PNG’s EEZ and AW and from non-eligible associations).</p> <p>As described in the sections above there are systems in place mitigating this potential risk. Fishing, transport, storage and transshipment stages in the fishery are covered under the regulatory framework, and 100% observer coverage on-board, port observers, and VMS and NFA traceability system.</p> <p>The traceability systems described in the sections above regarding potential of non-certified gear/geographic area help ensure segregation between certified and non-certified fish at all stages during the fishing trip.</p>
<p>Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)</p>	<p>While there is a risk of non-certified fish mixing with certified fish when vessels fish both inside and outside the certified region, or on associations outside the UoA, the traceability mechanisms such as well segregation or double netting, combined with 100% observer coverage, ensure mixing will not occur.</p>
<p>Risks of mixing between certified and non-certified catch during transshipment</p>	<p>Transshipment is allowed at sea and in port, but always monitored by observers and enforcement officers.</p> <p>WCPFC/CMM 2009-06 and NFA’s Fisheries Management (Amendment) Act and Regulation 2016 requires fishermen to request permission prior to conducting transshipment and is only undertaken under the supervision and this activity must</p>

	be monitored by observers and port enforcement officers. Thus, risk of mixing during transshipment is minimal.
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	None identified.

7.3 Eligibility to Enter Further Chains of Custody

The team has concluded and determined that the product originating from the UoC will be eligible to enter further certified chains of custody and be sold as MSC certified or carry the MSC ecolabel. Chain of Custody begins once the fish is offloaded from the fishing vessel. Separate Chain of Custody will be required for the first receivers of the fish, including processing plants or carrier vessels/transshipment vessels. Any vessels receiving product via transshipment will require their own CoC certificate.

To ensure that certified products are sourced from MSC-eligible source, the CoC auditor will be need to solicit the following documentation:

- Captains’ statement
- Fishing logbook for each set throughout the fishing trip
- Well chart

In order to verify that:

1. Product is sourced from vessels in the UoA
2. Product is sourced from eligible sets identified as: Free Schools or Drifting log/debris or dead animal, Drifting, Raft, FAD or Payao and Anchored Raft FAD or Payao
3. Product is sourced from sets taking place within PNG’s EEZ and AW

Eligible landing points:

- Lae
- Rabaul
- Madang
- Wewak
- Port Moresby

Once the fishery is certified, the processors that are members of the Fishing Industry Association of Papua New Guinea will be eligible to use the fishery certificate . The processors will require to be MSC CoC certified to sell product as MSC certified with the blue eco-label.

List of PNG-FIA processors that are part of the Client Group:

- Frabelle (PNG) Ltd

- International Food Corporation Ltd
- Majestic Seafood Corporation Ltd
- Nambawan Seafoods PNG Ltd
- RD Tuna Cannery Ltd
- South Seas Tuna Corporation Limited

7.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody

No IPI species were identified in this fishery.

Tuna species, including skipjack, yellowfin and bigeye are stored in the same wells. While there is a concern of the risk that Bigeye may not be distinguishable from yellowfin. The client explained that sorting takes place once the product is offloaded and prior to any processing activity. Most of the processing plants that are part of the client group, are already certified under MSC CoC as they source product from other MSC certified tuna fisheries, where this risk has already been identified, thus the sorting and subsequent segregation process is already in place. For this reason, bigeye is not considered an IPI species. Pending a positive certification decision for Bigeye, the MSC CoC procedures will still remain in place however Bigeye will be an eligible species to enter the chain of custody.

8 Scoring

8.1 Summary of Performance Indicator level scores

Table 7. Summary of Performance Indicator Scores and Associated Weights Used to Calculate Principle Scores.

Principle	Component	Performance Indicator (PI)	FREE			FADs		
			SKJ	YFT	BET	SKJ	YFT	BET
One	Outcome	1.1.1 Stock status	100	90	90	100	90	90
		1.1.2 Stock rebuilding						
	Management	1.2.1 Harvest strategy	70	70	70	70	70	70
		1.2.2 Harvest control rules & tools	60	60	60	60	60	60
		1.2.3 Information & monitoring	90	80	80	90	80	80
		1.2.4 Assessment of stock status	95	95	90	95	95	90
Two	Primary species	2.1.1 Outcome	100	100	100 ¹⁰	100	100	100
		2.1.2 Management strategy	95	95	95	95	95	95
		2.1.3 Information/Monitoring	100	100	100	100	100	100
	Secondary species	2.2.1 Outcome	80	80	80	80	80	80
		2.2.2 Management strategy	80	80	80	80	80	80
		2.2.3 Information/Monitoring	100	100	100	100	100	100
	ETP species	2.3.1 Outcome	75	75	75	75	75	75
		2.3.2 Management strategy	75	75	75	75	75	75
		2.3.3 Information strategy	75	75	75	75	75	75
	Habitats	2.4.1 Outcome	100	100	100	75	75	75
		2.4.2 Management strategy	95	95	95	75	75	75
		2.4.3 Information	100	100	100	75	75	75
	Ecosystem	2.5.1 Outcome	100	100	100	60	60	60
		2.5.2 Management	100	100	100	100	100	100
		2.5.3 Information	90	90	90	90	90	90
Three	Governance and policy	3.1.1 Legal &/or customary framework	85	85	85	85	85	85
		3.1.2 Consultation, roles & responsibilities	75	75	75	75	75	75
		3.1.3 Long term objectives	90	90	90	90	90	90
	Fishery specific management system	3.2.1 Fishery specific objectives	75	75	75	75	75	75
		3.2.2 Decision making processes	75	75	75	75	75	75
		3.2.3 Compliance & enforcement	90	90	90	80	80	90
		3.2.4 Monitoring & management performance evaluation	80	80	80	80	80	80

¹⁰ The Principle 2 and Principle 3 scores are identical for the Bigeye tuna scope extension as for the currently certified target species.

Table 8. Final Principle Scores

	FREE			FADs		
Principle	SKJ	YFT	BET	SKJ	YFT	BET
Principle 1 – Target Species	85.83	80.80	80.0	85.83	80.0	80.8
Principle 2 – Ecosystem	91.00	91.00	91.00	83.67	83.67	83.67
Principle 3 – Management System	81.67	81.67	81.67	80.42	80.42	80.42

8.2 Overview of the Fishery

8.2.1 Location and History of the Fishery

Fishing for tuna in the western and central Pacific region began in the late 1960s by the Japanese (Gillett, 2007). By the 1970s, vessels from the US started operating in the west of the Pacific region and in 1983, 62 US purse seiners caught 179,000 tons of tuna (Gillett, 2007). The Western and Central Pacific purse seine fishery is now the largest tuna fishery in the world.

At present, approximately 80% of tuna in the western and central Pacific region is caught using purse seine gear. Annual catches of skipjack and yellowfin have been in excess of one million tones since 1998 with a peak with the 2014 catch of 1.96 million tones, the highest recorded to date. Vessels from several distant water fishing nations fish in the region, including vessels from Japan, China and Taiwan, Korea, and the USA. Approximately 300 vessels are covered by licensing arrangements, the most common form of which are bilateral access arrangements and domestic licenses. The exception is the United States fleet (40 vessels) which operates under the terms and conditions of a Multilateral Treaty with FFA members (Dunn et al., 2006). The USA Multilateral Tuna Treaty was signed in 1987 and became effective in 1988. This move allowed a wide degree of access to the region for their purse seine fleet (Gillett, 2007).

Because of the many vessels from a large number of countries fishing in the western and central Pacific region, and growing unease over the health of the tuna stocks, the Parties to the Nauru Agreement (PNA) was formed. A sub-regional agreement concerned with Cooperation in the Management of Fisheries of Common Interest and sets the terms and conditions for tuna purse seine fishing licenses in the region. Formed in February of 1982, the coalition was originally formed following concerns of over-exploitation of yellowfin tuna in the region. The eight member countries account for most of the region's tuna catch throughout their collective EEZ. Since its inception, the PNA have sought to coordinate management measures with a view to enhancing economic benefits from the fishery. Specifically, the PNA have strived to harmonise terms and conditions of access for distance water fishing vessels/fleets and to grant preferential access to vessels of the Parties in order to encourage domestic participation in the fishing industry (Dunn et al, 2006).

Sets on free schools have been the predominant form of fishing (74% of all sets between 2013 and 2017) followed by log sets (12%), sets on other drifting FADS (9%) and anchored FADs (5%) (Figure 1). On average, UoA vessels made 5 sets on anchored FADs, 13 on logs or drifting FADs and 43 on free schools each year.

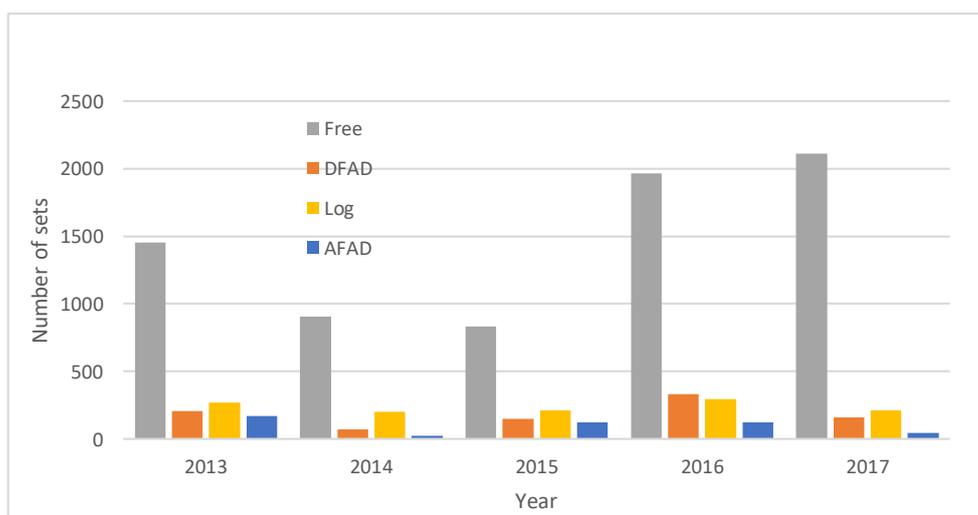


Figure 1. Number of sets made by UoA vessels per year by set type (2013-17). DFAD- Drifting FAD, AFAD- Anchored FAD

8.2.2 Organization and User Rights

Tuna fisheries within the unit of certification operate within a governance and policy framework under management by Parties to the Nauru Agreement (PNA) and Western and Central Pacific Fisheries Commission (WCPFC). These include the strong governance systems and mechanisms in place at the regional and national level, including in Papua New Guinea. Long term objectives are clearly established in the WCPFC Convention. The principal management tools used are Conservation and Management Measures (CMM) and each CMM has specific short-term objectives. Both long-term and short-term objectives are defined in the National Tuna Fishery Management and Development Plan and these include provision for specific actions to support the purse seine fishery.

8.2.3 Description of Fishing Practices: Gear

Skipjack tuna and yellowfin tuna are harvested using purse seines that employ three distinct fishing strategies. In free school sets, visible schools of tuna are encircled with the seine, the net is pursed and catch brought on board the fishing vessel. With anchored FADs, a floating FAD is anchored to the substrate and after enough time, animals in the vicinity of the FAD are encircled with the net, the net pursed, and the catch brought on board the fishing vessel. An illustration of one type of anchored FAD is seen in Figure 2. With drifting FADs, FADs are deployed from the fishing vessel and allowed to drift. After a sufficient time, animals in the vicinity of the FAD are encircled with the net, the net pursed, and the catch brought on board the fishing vessel. Sets are also made on natural floating objects.

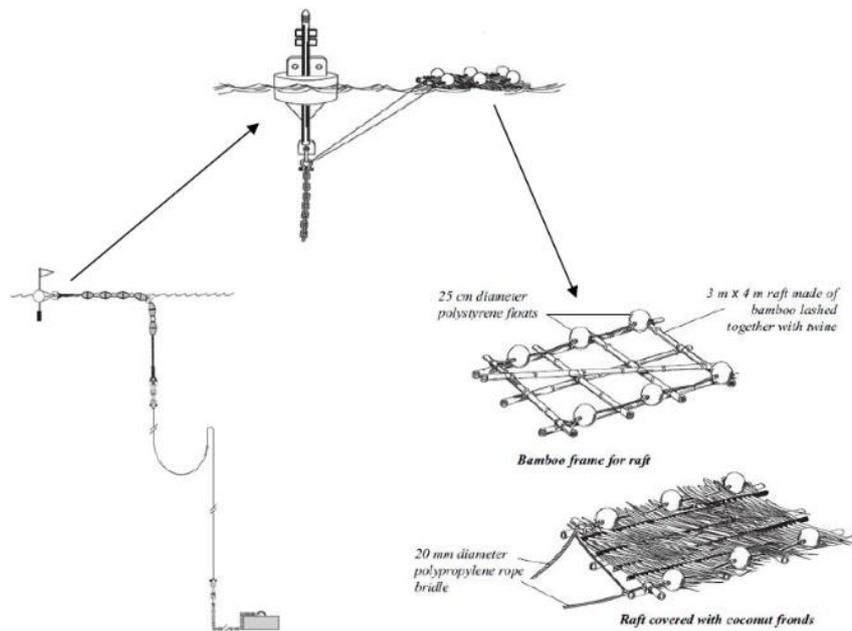
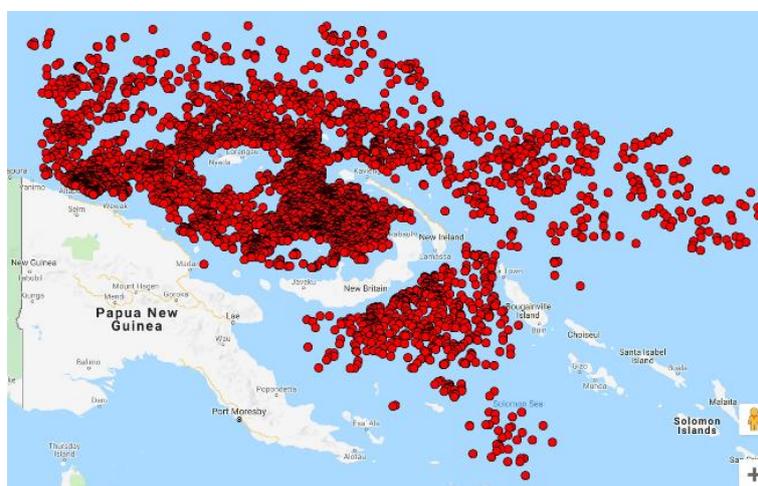


Figure 2. Traditional fixed FAD design from the Pacific (from MRAG 2009).

8.2.4 Areas

The fishery operates off the north coast of Papua New Guinea (PNG) in both its Exclusive Economic Zone (EEZ) and Archipelagic Waters (AW). Purse seines are not permitted to operate within 12 NM of the coast.

There is an area known as the Mogardo Square which is closed to tuna fishing (and named after an early proprietor in the pole and line fishery who was a key industry advocate for this closure). It is in an area of the Bismarck Sea that was initially thought to be a tuna spawning ground, and important feeding area for juvenile tuna because of natural aggregations of debris and nutrients from rivers that made the area productive for small fish. Although it was subsequently found that this was not a particularly unusual area, a closure on fishing with anchored FADs has remained and is included in the 2014 National Tuna Fishery Management and Development Plan.



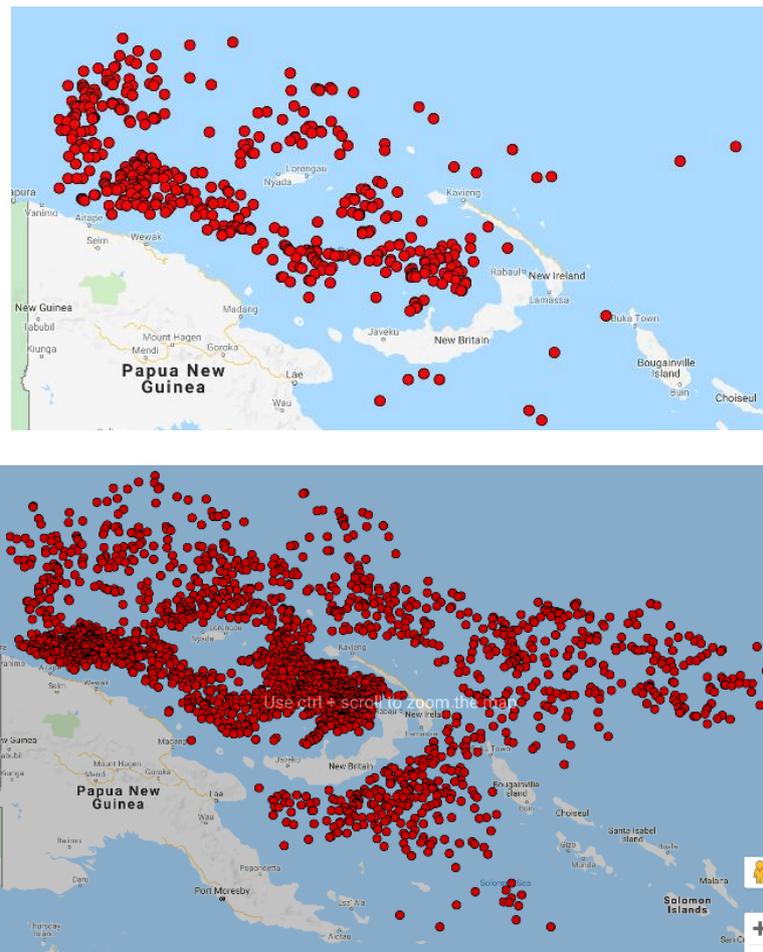


Figure 3. Location purse seine sets within the PNG’s Exclusive Economic Zone (EEZ) and Archipelagic Waters (AW) by UoA vessels, 2013-2017 (top) Free school sets (centre) Anchored FAD sets and (bottom) Drifting FAD sets (Data from SPC)

8.3 Principle 1

The reader is directed to the PCR for background and rationales for Yellowfin and Skipjack tuna. Information on Bigeye tuna, the target species covered under the scope extension, is provided below.

8.3.1 Principle 1 background

8.3.1.1 Life History Information Western and Central Pacific Bigeye Tuna

Taxonomic classification

Class: Actinopterygii

Order: Scombriformes

Family: Scombridae

Genus: *Thunnus*

Species: *obesus*

Behavior

Bigeye tuna primarily feed on epipelagic and mesopelagic fish, crustaceans and cephalopods. They exhibit distinct diel shifts in vertical behavior, generally descending at dawn to deeper, cooler waters and returning to shallower, warmer waters at dusk. Results from tagging studies show that bigeye tuna are capable of traversing ocean basins, but can also show a high degree of site fidelity to some regions (Figure 4 **Error! Reference source not found.**).

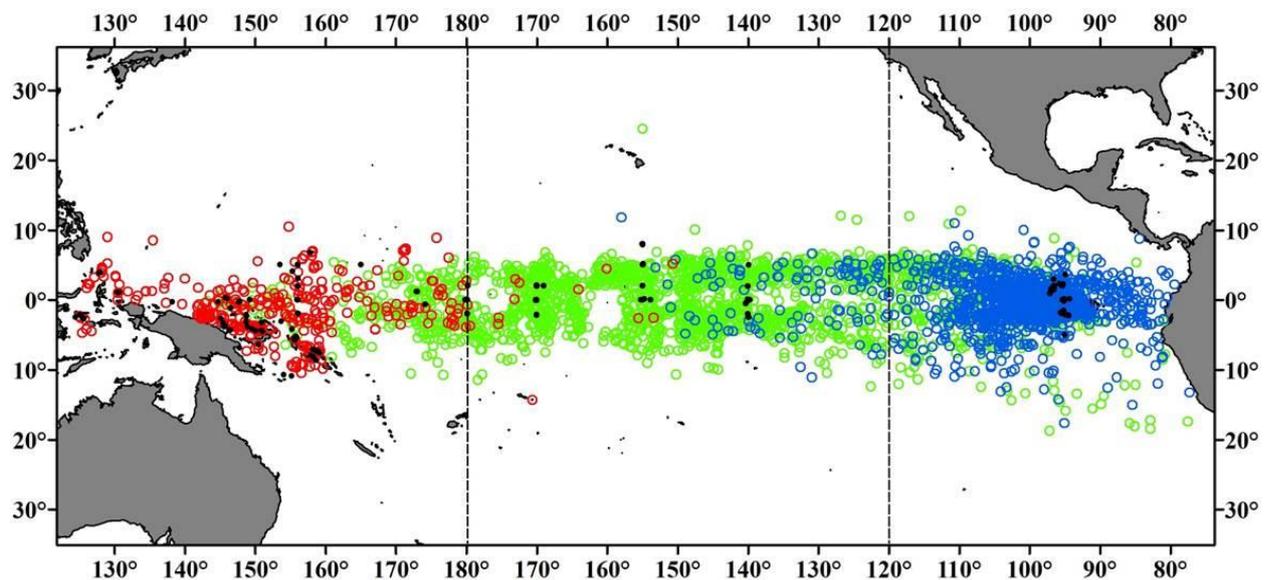


Figure 4. Movements of tagged bigeye, divided into three regions. Black points are release locations; red are recapture locations for fish released in the western region; green for recaptures of fish released in the central region; blue for recaptures of fish released in the eastern region. Figure taken from McKechnie, Pilling, et al. (2017a) who in turn took it from Schaefer et al. (2015).

Growth and Natural Mortality

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

Bigeye age and growth in the WCPO have been revisited and revised in recent years ('Project 35'; Farley et al. (2017b), followed by 'Project 81'; Farley, Eveson, et al. (2018)). Initially, the 3321R05A | Control Union Pesca Ltd. 26 MSC Full Assessment Reporting Template FCR v2.0 (8th October 2014) MEC V1.2 (2nd October 2017) authors sectioned otoliths from 1039 fish caught from 2013-16, in the age range 0.25-13.7 years, mainly from the equatorial regions, and for the 2018 update included a further 237 age estimates, including 188 from fish >130cm FL, to address concerns expressed at SC13 regarding the accuracy of the revised growth curve at larger sizes, as well as 11 for small fish (31-39cm).

This work has allowed a new growth curve for bigeye to be estimated, which had a significantly lower asymptotic length than the curve previously used in the stock assessment model (e.g. from 2014),

which was more similar to the EPO growth curve (see McKechnie, Pilling, et al. (2017a). The new growth curve from Project 35 was used in the 2017 stock assessment (alongside the old one; see Sections 3.3.1 and 3.3.9) and considerably affected the conclusions of the assessment. The updated 2018 stock assessment incorporated the results of Project 81 as well, but this made very little difference to the 2017 growth curve (Figure 5Error! Reference source not found.).

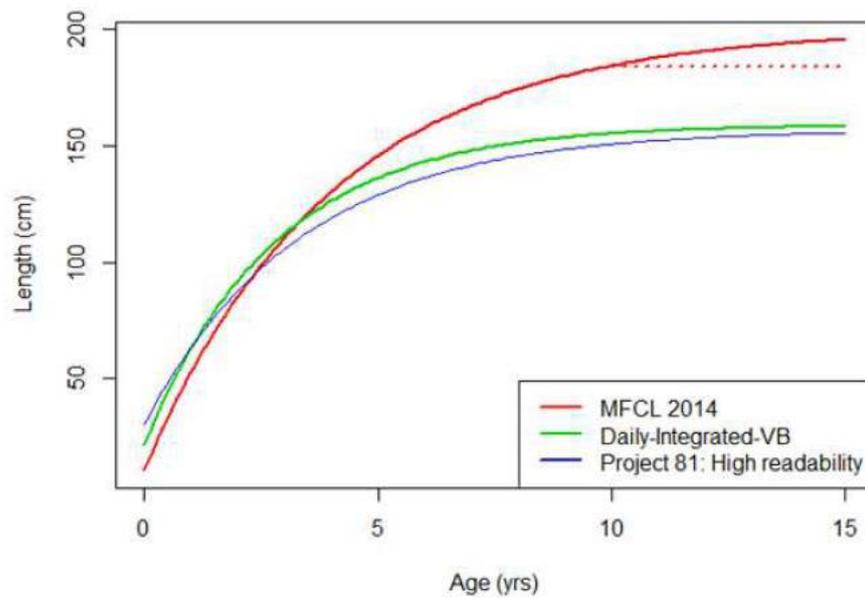


Figure 5. Bigeye growth curves used in the current and previous stock assessments: red – used in previous stock assessments up to 2014; green – used for 2017 assessment (McKechnie et al., 2017) based on the work presented in Farley et al. (2017b); blue – as green, incorporating additional work as set out in Farley, Eveson, et al. (2018); used in the 2018 update assessment.

For the 2020 stock assessment a number of investigative models were run with growth, such as: 1) Oto-Only, a growth curve that was a fixed Richards growth curve based on high-readability otoliths, 2) Tag-Int: a growth curve that was a fixed Richards growth curve based on the same high-readability otolith data-set in addition to bigeye tuna tag-recapture data, and 3) Est-Richards: A conditional age-length data-set was constructed from the combined daily and annual otolith dataset. The Oto-Only growth model predicted very high levels of biomass and corresponding low level of depletion. The Est Richards growth model showed sensitivity to the initial values given for the estimated growth parameters. The implausible results from the Oto-Only growth and differing results from the Est-Richards indicate questions still remain regarding bigeye tuna growth. The 2020 assessment tested the two fixed growth curves, Oto-only and Tag-Int in the one-off sensitivities.

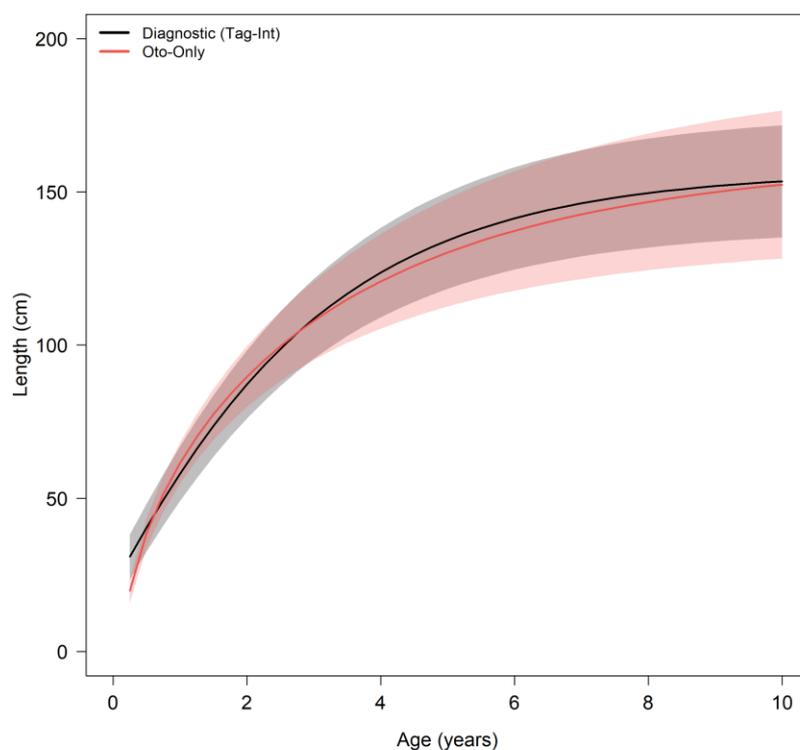


Figure 6. The two-fixed growth curves and estimated variability considered in the one-off sensitivities. The uncertainty shown as 2 standard deviations away from the mean is shown by the corresponding shaded region.

Natural mortality (M) is assumed to be high for the smallest size classes before declining to approximately 0.5/yr for fish >40cm. Based on tagging data significant numbers of fish reach at least 8 years and the longest period at liberty for a recaptured bigeye in the WCPO was approximately 14 years, for a fish released at age 1-2 years. For females, M is thought to increase after maturity because of the physiological stress of spawning and sex ratios of larger size classes tend to be mostly male (McKechnie et al., 2017a). M curves in the stock assessment are sex-specific (see below).

Reproduction and Recruitment

Recorded lengths at which sexual maturity is attained varies geographically with a length at which 50% of fishes sampled are mature at 135 cm in the eastern Pacific Ocean and 102–105 cm in the western Pacific Ocean. This translates to an age of maturity of 2 – 4 years. Bigeye tuna spawn throughout the year in tropical waters and seasonally in cooler waters and spawn almost daily, releasing millions of eggs each time which are found in the top layer of the ocean. Spawning takes place across most months of the year in tropical regions of the Pacific Ocean, becoming seasonal at higher latitudes when sea surface temperatures are above 24 °C.

Distribution and Stock Structure

Bigeye are distributed throughout the tropical and sub-tropical Pacific, so the question arises as to whether it is appropriate to treat the WCPO as a stock separate from the EPO. Genetic analysis does not suggest significant population differentiation (Grewe and Hampton, 1998). Tagging suggests that while some individuals may move very large distances (up to 4000 nautical miles over one or more

years), most were recaptured much closer to the tagging point. Tagging also suggests that east-west movement is more significant than north-south movement (which is one reason why the regional structure of the stock assessment has been adjusted. The working hypothesis is that bigeye in the far east and far west Pacific have little exchange, but there is likely to be mixing in the central Pacific and there is certainly extensive movement over the nominal WCPFC/IATTC management boundary at 150°W. The consequences of this mixing for stock assessment has been evaluated via a Pacific-wide stock assessment (McKechnie et al., 2015b), the results of which suggest that the current approach is robust to this mixing.

Reference points and harvest strategy

There is an agreed Limit Reference Point (LRP) for all the key tuna species including bigeye tuna at a spawning biomass depletion ratio ($SB/SB_{F=0}$) of 0.2. This metric is relatively insensitive to the steepness of the stock recruitment relationship provided the relevant life-history and fishery information (natural mortality, maturity, growth) offers a robust basis for comparisons.

There is also an agreed WCPFC workplan to progress the development of harvest strategies for key tuna stocks, including bigeye tuna, but a TRP and Harvest Control Rules are yet to be agreed. 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), and the workplan for 2020 sets a date for agreeing to a TRP for bigeye in 2021 and a date for agreeing to a HCR (now called a management procedure) to sometime later than 2022.

As noted above harvest strategies and interim objectives have been established for bigeye, yellowfin and skipjack in CMM 2018-01. This measure is intended to create a bridge to the adoption of a harvest strategy for tropical tuna stocks and fisheries in accordance with the workplan and indicative timeframes set out in the agreed work plan under CMM 2014-06. This measure (CMM 2018-01) replaced CMM 2017-01 and came into effect on 13 February 2019 and will remain in effect until 10 February 2021 unless earlier replaced or amended by the Commission. CMM 2018-01 provides a series of management measures aimed at constraining purse seine fishing effort on tropical tunas including:

- A three months (July, August and September) prohibition of deploying, servicing or setting on FADs each year for all purse seine vessels, tender vessels, and any other vessels operating in support of purse seine vessels fishing in exclusive economic zones and the high seas in the area between 20°N and 20°S; with some exemptions for PNA vessels operating under the Vessel Day Scheme (VDS).
- An additional 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.
- Non-SIDS (except Philippines) to restrict the level of purse seine effort on the high seas in the area 20oN to 20oS. CMMs 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.

- 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 fresh fish longliners targeting bigeye (with additional exemption for countries with a domestic quota system). Any replacement of purse seine vessels should not increase overall capacity.

CMM 2018-01 also sets longline bigeye catch limits by flag (including charter vessels) for the distant water nations. Bigeye longline catch limits for Japan, Korea, Chinese Taipei, China, Indonesia, and USA are 18,265, 13,942, 10,481, 8,224, 5,889, and 3,554 tonnes, respectively. Other fisheries (i.e. not purse seine or longline) are limited to the reported catch level of 2004 or the average catch for the period 2001-2004, except for those taking <2,000 t who may take up to this level.

The MSC standard requires that a Harvest strategy contain a combination of monitoring, stock assessment, harvest control rules and management actions and that these should work together to maintain stocks at target levels. The absence of an agreed TRP and HCRs that could be expected to maintain stocks at these levels, means that available the current elements of a Harvest Strategy for Western and Central Pacific bigeye tuna are not yet sufficient to meet MSC requirements.

There are WCPO bigeye tuna fisheries that have completed assessments against the MSC standard and given the similar state of development of their harvest strategies, it would be expected to be scored the same and to require conditions for PIs 1.2.1 and 1.2.2. Given the similar status of harvest strategies for yellowfin tuna in the WCPO, it would be expected to be scored the same as bigeye and require conditions for PI 1.2.1 and PI 1.2.2.

8.3.1.2 Status of stocks

The most recent full assessment was conducted in 2020 (Ducharme-Barth et al. 2020) and an additional three years of data were available since the last full stock assessment conducted in 2017 (McKechnie et al., 2017) and the model includes data through 2018. New developments in the model include (a) incorporating an updated growth curve resulting from analysis of an enhanced set of otolith data, tag recaptures, and implementation of the Richards growth model (Farley et al. 2020; Eveson et al. 2020). Key, (b) updates on reproductive potential, (c) enhancements to regional CPUE indices (Ducharme-Barth and Vincent, 2020), and (d) based on recommendations from the 2020 PAW only the 10°N spatial structure was considered within the assessment.

As per adopted practice of the WCPFC Scientific Committee, management advice is formulated from the results of the structural uncertainty grid whose aim is to provide an approximate understanding of variability in model estimates due to assumptions in structural and parameter uncertainty that are not accounted for by statistical uncertainty estimated by a single model run. In addition to the diagnostic case model, one-off sensitivity models are used to explore the relative impacts of key data

and model assumptions for the diagnostic case model on the stock assessment results and conclusions. Following the adoption of the updated growth information and the 10°N regional structure, the most important factor contributing to the uncertainty around the estimated stock status was the level of data-weighting given to the size-frequency data in the model. The description of the updated structural sensitivity grid used to characterize uncertainty in the 2018 assessment is given in Table 9.

Table 9. Description of the updated structural uncertainty grid used to characterize uncertainty in the assessment. The starred levels denote those assumed in the model diagnostic case. (from Ducharme-Barth et al. 2020).

Axis	Value 1	Value 2	Value 3	Value 4
Steepness	0.65	0.8 *	0.95	
Natural mortality	Diagnostic* (0.112)	M-hi (0.146)		
Size frequency weighting	20*	60	200	500

The spatial structure used in the 2020 stock assessment overlaid on bigeye tuna catches from 2009 to 2018 is shown in Figure 7. The reported total annual catch of bigeye tuna by fishing gear for the assessment period is shown in Figure 8. Estimated annual average recruitment, spawning potential, and total biomass by model region is shown in Figure 12. Juvenile and adult fishing mortality rates from the diagnostic model is shown in Figure 13. The trajectory of the annual estimates of MSY for the diagnostic model compared with annual catch by the main gear types is shown in Figure 14. Prior to 1970, the WCPO bigeye fishery was almost exclusively conducted using longline gear, with a low exploitation of small bigeye. The precipitous decline in MSY results from the targeting of the small-fish in region 7 combined with the rapid expansion of the purse seine fishery which caught younger aged fish before they have the chance to reproduce (from Ducharme-Barth et al. 2020). Table 10 provides a summary of reference points over the 24 models in the structural uncertainty grid.

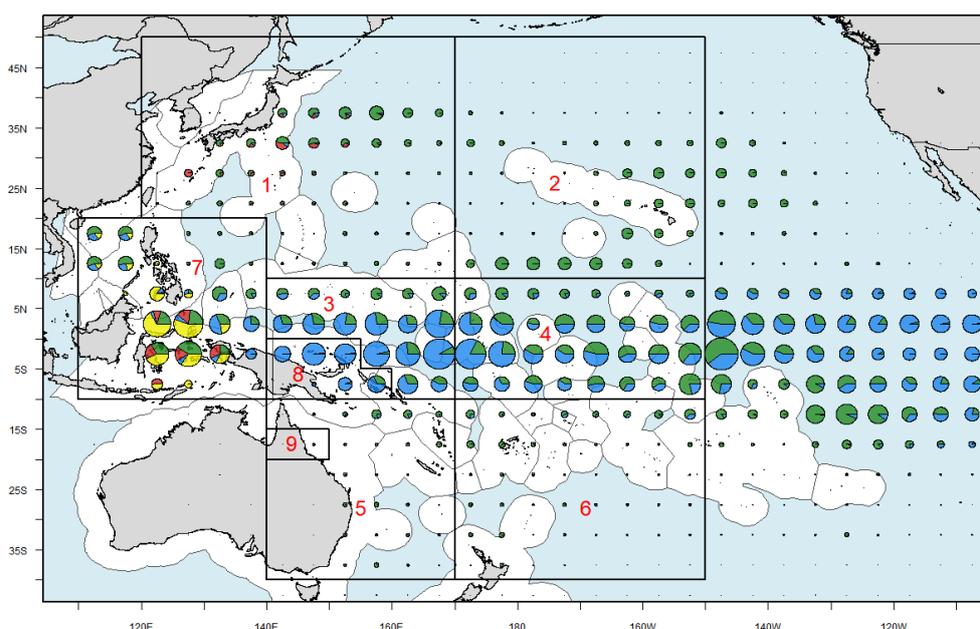


Figure 7. Distribution and magnitude of bigeye tuna catches for the most recent decade of the stock assessment (2009-2018) by 5° square and fishing gear: longline (green), pole-and-line (red), purse seine

(blue) and miscellaneous (yellow), for the WCPO and part of the EPO. Overlaid are the regional boundaries for the stock assessment (from Ducharme-Barth et al. 2020).

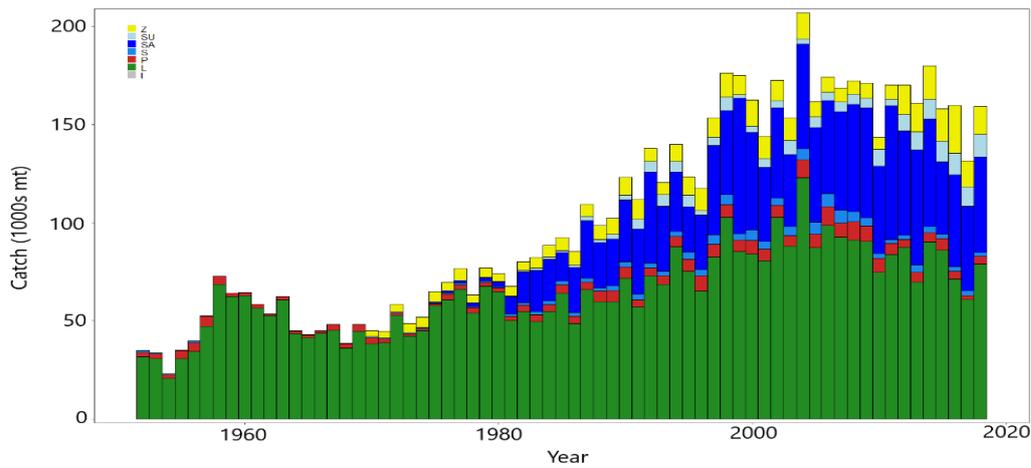


Figure 8. Total annual catch (1000s mt) of bigeye tuna by fishing gear for the full assessment period. The different colors refer to longline (green), pole-and-line (red), purse seine (blue), purse seine associated (dark blue), purse seine unassociated (light blue), miscellaneous (yellow), and index (gray). Note that the catch by longline gear has been converted into catch-in-weight from catch-in-numbers and so may differ from the annual catch estimates presented in (Williams et al. 2020), however these catches enter the model as catch-in-numbers (from Ducharme-Barth et al. 2020).

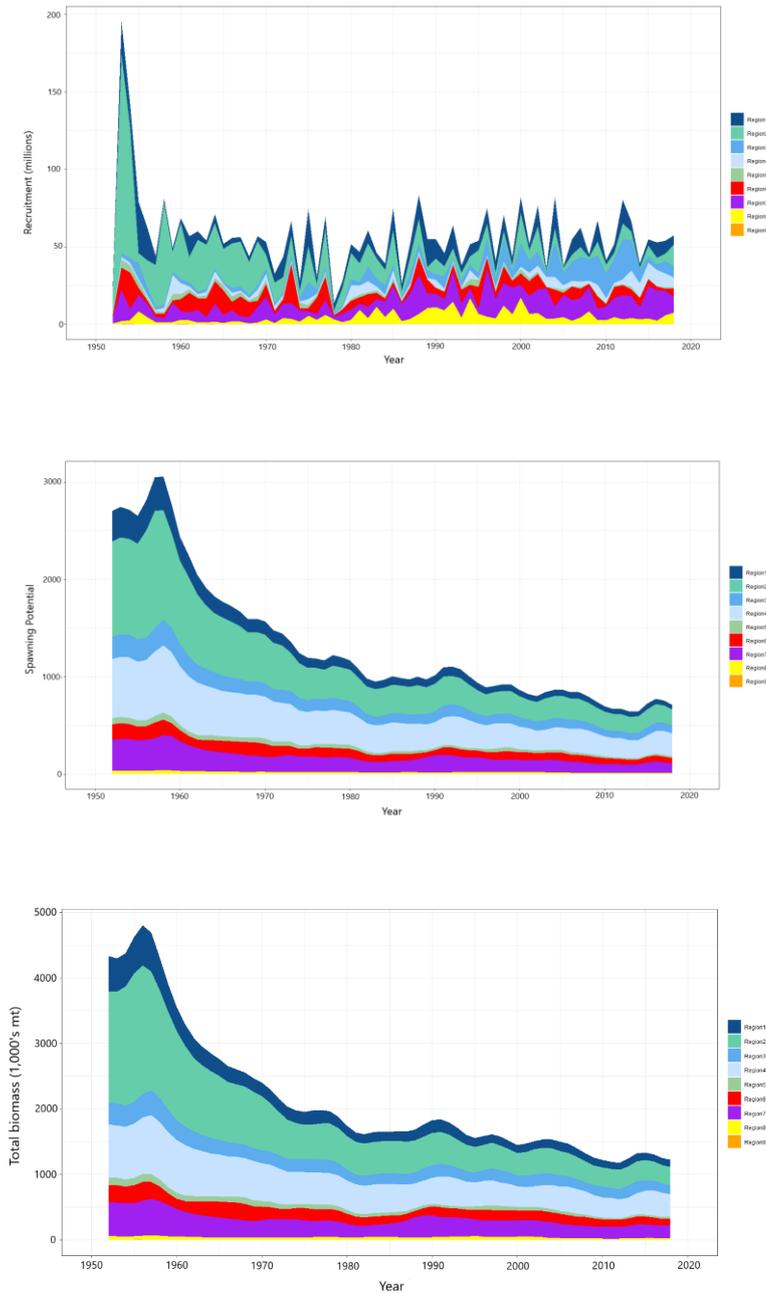


Figure 9. Estimated annual average recruitment (top), spawning potential (middle) and total biomass by model region for the diagnostic model (bottom), showing the relative sizes among regions (from Ducharme-Barth et al. 2020).

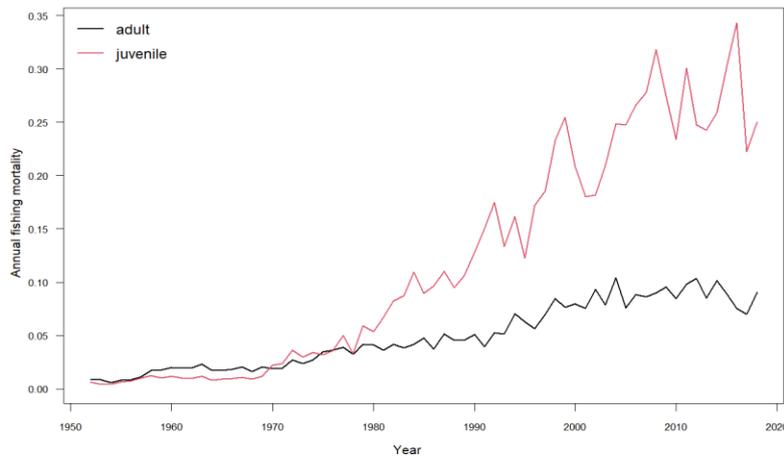


Figure 10. Estimated annual average juvenile and adult fishing mortality for the diagnostic model (from Ducharme-Barth et al. 2020).

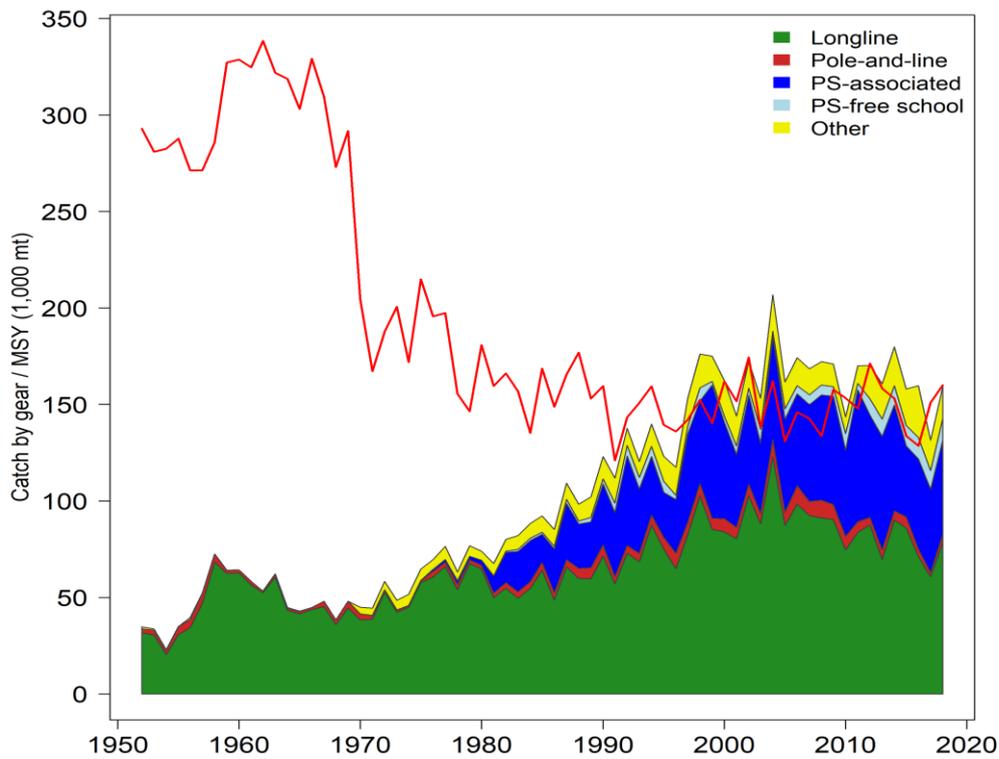


Figure 11. History of the annual estimates of MSY (red line) for the diagnostic model compared with annual catch by the main gear types (from Ducharme-Barth et al. 2020).

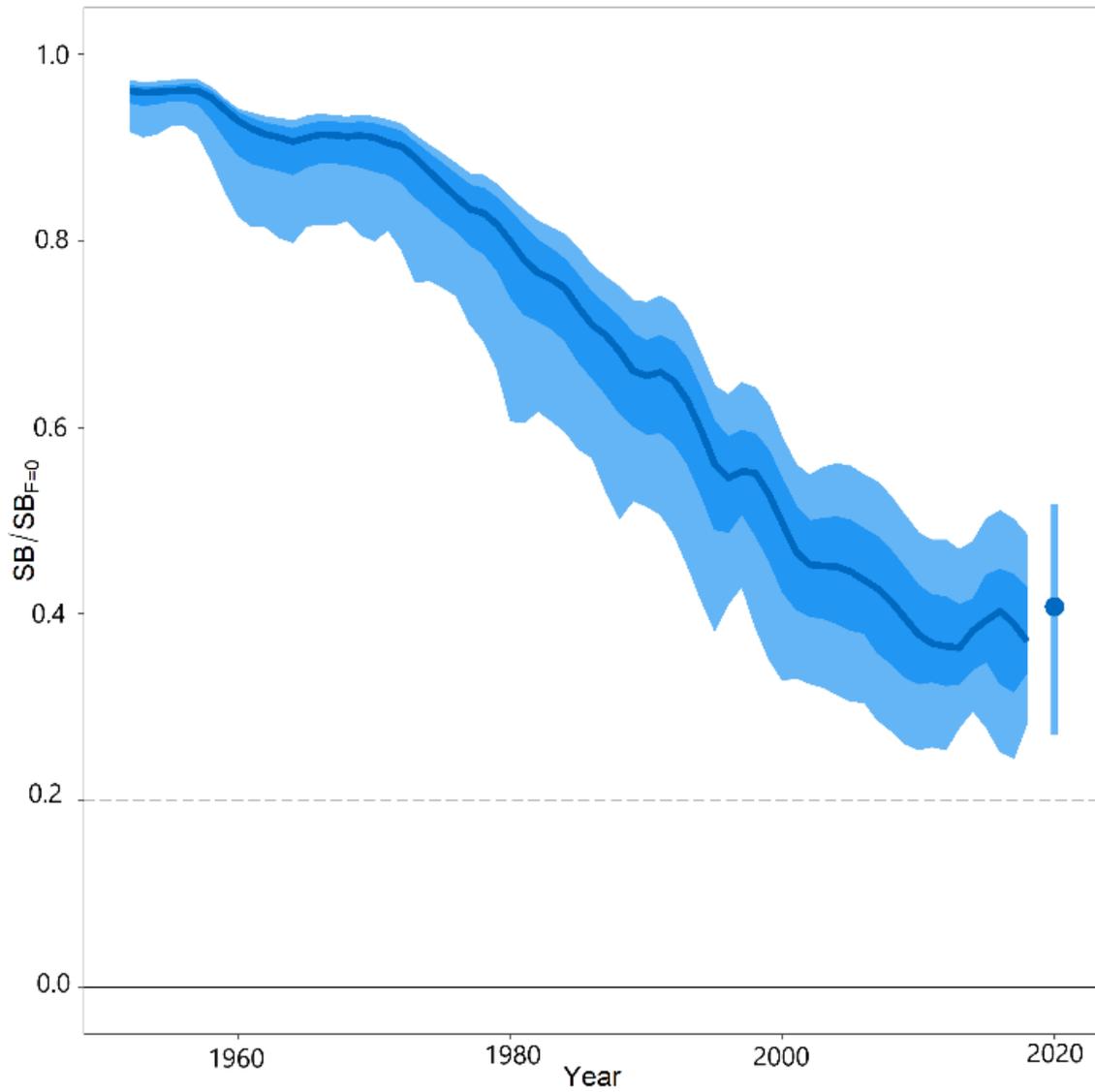


Figure 12. Time-dynamic percentiles of depletion ($SB_t/SB_t;F=0$) and median (dark line) across all 24 models in the structural uncertainty grid. The lighter band shows the 10th to 90th percentiles around the median, and the dark band shows the 50th percentile around the median. The median $SB_{recent}/SB_{F=0}$ and 80th percentile is shown on the right by the dot and line (from Ducharme-Barth et al. 2020).

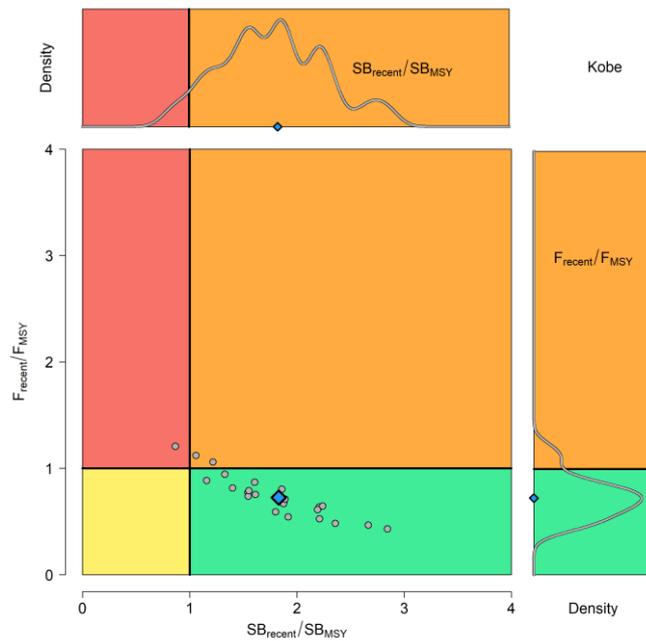


Figure 13. Kobe plot for the recent spawning potential (2015–2018) summarizing the results for each of the models in the structural uncertainty grid. The plots represent estimates of stock status in terms of spawning biomass depletion and fishing mortality. Marginal distributions of each are presented. The median is shown as the blue diamond (from Ducharme-Barth et al. 2020).

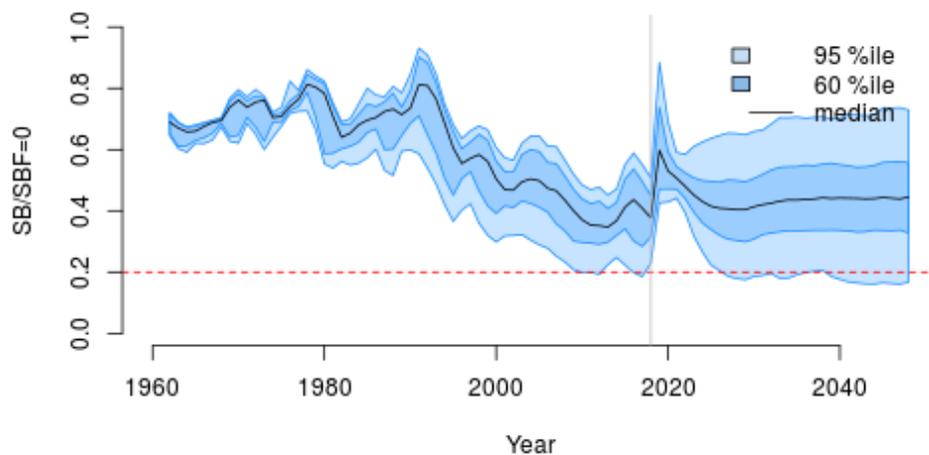


Figure 14. Time series of bigeye tuna spawning potential $SB_t/SBF=0$ from the uncertainty grid of assessment models for the period 2000 to 2018, and stochastic projection results for the period 2019 to 2048 assuming 2016-2018 average catches in longline and other fisheries and 2018 effort in purse seine fisheries continue. Vertical gray line at 2018 represents the last year of the assessment. During the projection period (2019-2048) levels of recruitment variability are assumed to match those over the long-term period (1962-2017). The red horizontal dashed line represents the agreed limit reference point (from Ducharme-Barth et al. 2020).

Table 10. Summary of reference points over the 24 models in the structural uncertainty grid. Note that “recent” is the average over the period 2015-2018 for SB and 2014-2017 for fishing mortality, while “latest” is 2018. The values of the upper 90th and lower 10th percentiles of the empirical distributions are also

shown. F_{mult} is the multiplier of recent (2014-2017) fishing mortality required to attain MSY (from Ducharme-Barth et al. 2020).

	Mean	Median	Minimum	10 th percentile	90 th percentile	Maximum
C_{latest}	159,738	159,288	157,297	157,722	162,033	162,271
$Y_{F_{recent}}$	136,568	134,940	117,800	124,668	149,424	161,520
f_{mult}	1.45	1.38	0.83	0.98	2.03	2.33
F_{MSY}	0.05	0.05	0.04	0.04	0.07	0.07
MSY	146,715	140,720	117,920	125,628	179,164	187,520
F_{recent}/F_{MSY}	0.74	0.72	0.43	0.49	1.02	1.21
$SB_{F=0}$	1,395,173	1,353,367	903,708	982,103	1,780,138	1,908,636
SB_{MSY}	320,162	321,550	192,500	219,810	443,730	482,700
$SB_{MSY}/SB_{F=0}$	0.23	0.23	0.19	0.2	0.26	0.26
$SB_{latest}/SB_{F=0}$	0.38	0.38	0.23	0.3	0.47	0.51
SB_{latest}/SB_{MSY}	1.7	1.67	0.95	1.23	2.15	2.6
$SB_{recent}/SB_{F=0}$	0.4	0.41	0.21	0.27	0.52	0.55
SB_{recent}/SB_{MSY}	1.78	1.83	0.87	1.18	2.32	2.84

The following outcomes were noted at SC16:

- The stock has been continuously declining for about 60 years since the late 1950s, except for the recent small increase from 2015 to 2016 with biomass declining thereafter.
- The median value of relative recent (2015-2018) spawning biomass depletion ($SB_{2015-2018}/SB_{F=0}$) was 0.41 with a 10th to 90th percentiles of 0.27 to 0.52.
- There is a 0% probability (0 out of 24 models) that the recent (2015-2018) spawning biomass breached the adopted limit reference point (LRP).
- There has been a long-term increase in fishing mortality for both juvenile and adult bigeye tuna and while juvenile fishing mortality is higher than that of the adult fish, both adult and juvenile fishing mortality rates have stabilised somewhat since 2008 and have fluctuated without trend since that time.
- The median recent fishing mortality ($F_{2014-2017}/F_{MSY}$) was 0.72 with a 10th to 90th percentile interval of 0.49 to 1.02.
- There was a roughly 12.5% probability (3 out of 24 models) that the recent (2014-2017) fishing mortality was above F_{MSY} .
- Projections from the long-term recruitment scenario indicate that median $SB_{2025}/SB_{F=0} = 0.42$; median $SB_{2035}/SB_{F=0} = 0.44$ and median $SB_{2045}/SB_{F=0} = 0.45$. The risk that $SB_{2048}/SB_{F=0}$ is less than the Limit Reference Point is 5%.

Based on the uncertainty grid adopted by SC16, the WCPO bigeye tuna spawning biomass is above the biomass LRP and recent F is very likely below F_{MSY} . The stock is not overfished (100% probability $SB/SB_{F=0} > LRP$) and likely not experiencing overfishing (87.5% probability $F < F_{MSY}$).

8.3.1.3 Fishing and Management

There are three distinct levels of management for the UoA which are described more fully in Principle 3 in the PCR. These three levels include management by the WCPFC, management by the PNA, and management by various levels of the PNG government. This section provides some background to the first two of these levels of management as these are the most relevant to Principle 1. Readers are directed to Section 3.5 of the PCR for information about management by the PNG government.

WCPFC management

Bigeye tuna have been subject to the provisions of CMMs since CMM 2005-01 was adopted. CMM 2018-01 is the latest version of the CMM for the key tropical tuna species (skipjack, yellowfin and bigeye tuna) and contains the key measures that apply to these target species.

The 2017 and 2018 versions of this CMM removed specific objectives that were in earlier versions that the fishing mortality rates for the key tuna species be reduced to or maintained at levels less than F_{MSY} and replaced these firstly with a general statement of the purpose of the CMM:

“Pending the establishment of harvest strategies, and any implementing CMM, the purpose of this measure is to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks.”

In addition, an interim target is provided for yellowfin tuna (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.”

Nevertheless, the general objective remains articulated under the section titled “Principles for Application of the Measure”:

“... Measures shall ensure, at a minimum, that stocks are maintained at levels capable of producing maximum sustainable yield...”

There are no provisions within 2018-01 that are specifically relevant to the UoA's catch of yellowfin tuna.

PNA Management

There are now two separate schemes for controlling fishing effort that the PNA have introduced: The Purse Seine Vessel Day Scheme (PS VDS) and the Longline Vessel Day Scheme (LL VDS). The PS VDS has been in place for longer and is the most effective. The LL VDS was adopted more recently and is incompletely implemented among PNA members. The following therefore focuses on the PS VDS.

The objective of the PS VDS is “To support collaboration between Parties to enable them to maximize their net economic returns from the sustainable use of tuna resources by purse seine vessels” (PNA 2016). It was established in 2006 under the Palau Arrangement (PNA 2016) and became operational on 1 December 2007, initially limiting effort levels of PNA countries to 2004 levels. In brief, fishing days are allocated to each PNA country and can be traded amongst the eight countries in a single licensing year under conditions designed to ensure that the Total Allowable Effort (TAE) is not exceeded.

The VDS applies to purse seine fishing within the EEZs of PNA countries, where the majority of purse seine fishery takes place within the WCPFC Convention Area. Furthermore, the Third Arrangement Implementing the Nauru Agreement prescribed closures to purse seine fishing, by vessels licensed to fish in PNA waters, of areas of the high seas from 1 January 2011 that were surrounded by the EEZs of PNA countries (from 10°N to 20°S latitude and 170°E to 150°W longitude, equating to an area of 4,555,000 sq. km) (PNA 2010, Banks et al. 2011). This scheme (described in detail in Banks et al. 2011) established a limit on the total number of fishing days that could be fished in PNA members' EEZs, with a system of tradable fishing days allocated to each of the PNA Parties as Party Allowable Effort (PAE). The VDS was established to replace the existing limit of 205 purse seine vessels set under the Palau Arrangement for the Management of the Western Purse Seine Fishery. This Arrangement was established in response to concerns over the status of yellowfin and bigeye tuna and a desire to reduce purse seine fishing effort in the WCPO (Dunn et al. 2006, Banks 2011). The VDS was also designed to conserve the target stocks and enhance the value of the purse seine fishery by creating greater competition for access as new foreign fishing partners not currently allocated licenses under the 205 limits could enter the fishery.

Since 2008, the VDS has been an important element of the WCPFC purse seine measures to conserve bigeye (CMM 2008-001). Currently, the scheme has aimed to limit the catch to 2010 levels by restricting effort of vessels within the scheme to less than 2010 levels (the reduction being intended to allow for increasing fishing efficiency). CMM 2016-01 reiterated the requirement (initially contained in CMM 2011-01 and subsequently carried over in subsequent measures) that Coastal States within the Convention Area that are PNA members shall restrict the level of purse seine effort in their EEZs to 2010 levels through the PNA Vessel Days Scheme; and that WCPFC Commission Members, Cooperating Non-Members and Participating Territories (CCMs) shall support the ongoing development and strengthening of the PNA VDS including implementation and compliance with the requirements of the VDS as appropriate. Catches from vessels outside the scheme have not been similarly constrained.

Article 12 of the Palau Arrangement (PNA 2016) states that the Total Allowable Effort will be set having regard to:

1. The best available scientific, economic, management and other relevant advice and information;
2. The provisions of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean;
3. The objectives of the Management Scheme; and
4. Any submission on this issue from any party, individual or organisation.

A brief analysis of most of the relevant scientific, economic and management information and advice on which the TAE is based is included in a Working Paper to the annual meeting of the Parties to the Palau Arrangement which is available on the PNA website (PNA 2017). This paper also contains sections concerning WCPFC considerations and MSC considerations, with the stated intention of

“clearly recording the link between the TAE and the relevant WCPFC measure and the scientific advice”.

Nevertheless, the basis of total number of fishing days allowed, and particularly its relationship to the scientific advice about stock status of skipjack tuna (the most economically important species caught by purse seine accounting for about 70% of the total catch (PNA 2015)) is not articulated in the form of a formal harvest control rule. Although the minutes of the PNA meetings at which the recommendations in the TAE Working Papers are discussed and the actual TAEs are set are not publicly available, extracts of the meeting record of these discussions for 2015, 2016 and 2017 which were provided to the assessment team show that the recommendations of the VDS Technical and Scientific Committee have been adopted in each of these years, and without discussion in two of these three years.

There have previously been concerns expressed about a lack of clarity and openness in PNA decision-making with respect to the establishment and operation of the VDS Total Allowable Effort, particularly with respect to links to the requirements of WCPFC CMMs and the scientific advice (Banks et al. 2011). Despite being given copies of PNA meeting minutes, we consider that a lack of clarity about the links between the scientific advice, VDS effort allocations, and CMM provisions persists. Also, a concern from a stock sustainability perspective are concerns over how the VDS will deal with evidence of effort creep from increasing size of fishing vessels and increases in the number of sets per fishing day and tonnage caught per fishing day (Pilling et al. 2017c).

WCPO Bigeye - Total Allowable Catch (TAC) and catch data

There is no total allowable catch (TAC) limits set for Bigeye tuna in the WCPFC for purse seine vessels. Instead, fishing effort is regulated through the VDS. The reported catch by set type of bigeye tuna from the UoA for 2019 and 2020 is shown below in Table Table 11.

8.3.1.4 Catch profiles

Table 11 Catch profile of fishery for the retained target species for the FAD and Free school UoAs from 2015 to 2019.

Target species	FAD	Free
BIGEYE	166114.7	434289.6
SKIPJACK	60292.0	242519.4
YELLOWFIN	11942.3	10953.5
Grand Total	238349.0	687762.5

8.3.1.5 Total Allowable Catch (TAC) and catch data

There is no total allowable catch (TAC) limits set for Bigeye tuna in the WCPFC for purse seine vessels. Instead, fishing effort is regulated through the VDS.

Table 12. Total Allowable Catch (TAC) and catch data for bigeye

TAC	Year	NA	Amount	mt
UoA share of TAC	Year	NA	Amount	mt
UoA share of total TAC	Year	NA	Amount	mt
Total green weight catch by UoC (FAD)	Year (2019)	1352	Amount	mt
Total green weight catch by UoC (Free school)	Year (2019)	3223	Amount	mt
Total green weight catch by UoC (FAD)	Year (2018)	2159	Amount	mt
Total green weight catch by UoC (Free school)	Year (2018)	2022	Amount	mt

8.3.2 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock Status-Western and Central Pacific Bigeye Tuna

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			
<p>Western and Central North Pacific Bigeye Tuna were assessed in 2020 and the following results presented at SC16:</p> <ul style="list-style-type: none"> • Results from the uncertainty grid adopted by SC16 show that the stock has been continuously declining for about 60 years since the late 1950s, except for the recent small increase from 2015 to 2016 with biomass declining thereafter; • The median value of relative recent (2015-2018) spawning biomass depletion ($SB_{2015-2018}/SB_{F=0}$) was 0.41 with a 10th to 90th percentiles of 0.27 to 0.52; • There was 0% probability (0 out of 24 models) that the recent (2015-2018) spawning biomass had breached the adopted limit reference point (LRP) of $20\%SB_{F=0}$. • The estimate of SB_{RECENT} is approximately 2 times higher than the LRP. <p>PRI for the stock is defined as $75\%SB_{MSY}$ and estimated as 240,122 mt. The estimate of SB_{RECENT} is approximately 2 times higher than PRI. On this basis there is a high degree of certainty that the stock is above PRI and SG 60, 80 and 100 is met.</p>			
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			
<p>Western and Central North Pacific Bigeye Tuna were assessed in 2020 and the following results presented at SC16:</p> <ul style="list-style-type: none"> • There has been a long-term increase in fishing mortality for both juvenile and adult bigeye tuna and while juvenile fishing mortality is higher than that of the adult fish, both adult and juvenile fishing mortality rates have stabilised somewhat since 2008 and have fluctuated without trend since that time; • Catch in the last year of the assessment (2018) was median 159,288 mt which was greater than the median MSY (140,720 mt) • The median recent fishing mortality ($F_{2014-2017t}/F_{MSY}$) was 0.72 with a 10th to 90th percentile interval of 0.49 to 1.02 and there was a roughly 87.5% probability (21 out of 24 models) that $F_{2014-2017} < F_{MSY}$; • The median recent spawning biomass was 1.78 SB_{MSY} and SB_{MSY} is estimated as 320,162 mt. 			

While there is no adopted target reference point (TRP) for bigeye tuna in the WCPFC, BMSY is used as an implicit TRP. The 2020 stock assessment provides median estimates and associated 10% and 90% percentiles of $SB_{2015-2018} = 1.83SB_{MSY}$ (percentile range 1.18-2.32) and SB_{2018} is $1.67SB_{MSY}$ (percentile range 1.23-2.15). To determine stock status in relation to achievement of MSY the minimum estimates of $SB_{2015-2018}$ and SB_{2018} (0.87 and 0.95) are compared to the percentile ranges the stock appears to be at or fluctuating around a level consistent with MSY; SG80 is met.

Based on the 2020 assessment there was a 87.5% probability (21 out of 24 models) that $F_{2014-2017} < F_{MSY}$ and there has been a long-term increase in fishing mortality for both juvenile and adult bigeye tuna that differs between fishing regions. These regional differences were noted during the 16th Meeting of the WCPFC Scientific Committee in 2020 and evidence presented indicating that the overall stock status is buffered with biomass kept at more elevated level overall due to the low exploitation in the temperate regions. Based on the totality of the information the Assessment Team does not consider there to be 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; SG100 is not met.

References

Ducharme-Barth et al. 2020; Farley et al., 2017b; McKechnie, Pilling, et al., 2017a; Scott et al., 2017; WCPFC, 2017b, 2018; Farley, Eveson, et al., 2018; Vincent et al., 2018

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (S1a)	Limit reference point MSC default PRI	$75\% B_{MSY} = 17.3\%SB_{F=0}$	$SB_{2015-2018}/SB_{F=0} = 0.4$ (80% CI: 0.27-0.52) $SB_{2018}/SB_{F=0} = 0.38$ (80% CI: 0.30-0.47)
Reference point used in scoring stock relative to MSY (S1b)	SB_{RECENT}/SB_{MSY}	SB_{MSY}	$SB_{2015-2018}/SB_{MSY} = 1.83$ (80% CI = 1.18-2.32) $SB_{2018}/SB_{MSY} = 1.67$ (80% CI = 1.23-2.15)

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
Data-deficient? (Risk-Based Framework needed)	No

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

Overall Performance Indicator score	90
Condition number (if relevant)	

PI 1.1.2 – Stock rebuilding-Western and Central Pacific Bigeye Tuna

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?	NA		NA
Rationale				
The stock does not require rebuilding.				
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?	NA	NA	NA
Rationale				
The stock does not require rebuilding				
References				
Draft scoring range and information gap indicator added at Announcement Comment Draft Report				
Draft scoring range			NA	
Information gap indicator			Information sufficient to score PI	
Overall Performance Indicator scores added from Client and Peer Review Draft Report				
Overall Performance Indicator score				
Condition number (if relevant)			NA	

PI 1.2.1 – Harvest strategy-Western and Central Pacific Bigeye Tuna

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				
<p>A harvest strategy includes the combination of monitoring, stock assessment, harvest control rules and management actions, which may include testing of proposed management scenarios, or management procedures, using management strategy evaluation (MSE) or other simulation modelling techniques. While the harvest strategy for WCPO bigeye tuna has several contributing components, there is no formal harvest control rule in place.</p> <p>The range of management measures applied to the sectors that fish for bigeye tuna are supported by fishery dependent monitoring, biological research, and robust stock assessments that explicitly account for uncertainty and provide probabilistic estimates of stock status relative to reference points. The WCPFC adopted the biomass-based LRP of 20%SBF=0 for bigeye tuna and a formal target reference point is under discussion by WCPFC and subject to development under the workplan outlined in CMM 2014-06. While the workplan has gone through several “updates” the most recent version stipulates that bigeye tuna target reference points will be adopted by WCPFC in 2021 (WCPFC 2019, Attachment H). In the interim WCPFC has adopted the harvest strategy stipulated in CMM 2018-01, which runs through 2021. Under CMM 2018-01 the goal is to maintain the bigeye tuna spawning depletion ratio (SB/SBF=0) above the average for 2012-2015. Management measures in place under CMM 2018-01 include limits on FAD sets and fishing days for purse seine.</p> <p>Restrictions on longline fisheries for bigeye, include catch limits for the main CCMs fishing for bigeye (i.e. China, Indonesia, Japan, Korea, Chinese Taipei and USA) and monthly reporting of the bigeye catch by flagged vessels to the Commission Secretariat. By 2020 the Commission shall agree on hard limits for bigeye and a framework to allocate those limits amongst all Members and Participating Territories that adequately take into account Articles 8, 10 (3) and 30 of the Convention in developing management measures.</p> <p>Based on the measures in place, bigeye tuna is expected to achieve stock management objectives reflected in PI 1.1.1 SG80. In the 2020 assessment SBrecent is well above PRI (SBrecent/SBmsy = 2.3), as well as the more precautionary LRP, 20%SBF=0. The median catch in the last year of the assessment (2018) was 159,288 mt which is greater than the median MSY (140,720 mt) and SBrecent is determined to be 1.78 SB MSY. On this basis SG 60 is met.</p> <p>WCPFC16 reviewed the status of work required to implement harvest strategies for yellowfin and bigeye tuna in the WCPO and concluded that significant activities still need to be completed. Progress towards implementation of the yellowfin and bigeye tuna harvest strategies is summarized in the figure below, where dark green shading indicates substantial progress, yellow indicates work is currently underway, and orange indicates work has not yet begun (Adapted from WCPFC-2019-09).</p>				

HARVEST STRATEGY ELEMENT	Bigeye Tuna	Yellowfin Tuna
Management Objectives	Noted	
Performance Indicators	Identified	
Limit Reference Points	Adopted	Adopted
Target Reference Point	Interim	Interim
Harvest Control Rules		
Management Strategy Evaluation		
Monitoring Strategy		

As previously noted, there is no formal harvest strategy for bigeye tuna in place. Most elements of the harvest strategy are scheduled to be completed in 2021. However, deadlines for the development of management procedures and management strategy evaluation have not been articulated. Based on this information SG 80 is not met and SG 100 is not scored.

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

Despite a declining trend in bigeye biomass since the 1950s, there is a high degree of certainty that the stock is above the PRI and that the stock is at or fluctuating around a level consistent with MSY. Therefore, the stock is likely not experiencing overfishing nor is it overfished. The assessment suggests a recent increase in the stock due to recent high recruitments and while the significance of these high recruitment events and the progression of these fish to the mature component of the stock are encouraging, whether this is a result of management measures for the fishery or beneficial environmental conditions is currently unclear. Also, the new assessment with the updated growth curve markedly changed the status of the stock since in the previous assessments using the old growth curve the stock had been below the PRI. Therefore, although the stock is now above the PRI it is difficult to say that previous management was effective in ensuring the stock was maintained above the PRI. It should be noted that the objective of previous CMMs was to reduce the fishing mortality rate on bigeye to a level no greater than F_{MSY} ($F/F_{MSY} \leq 1$), and based on results of recent assessments this to be true.

Despite the difficulty in assessing causality, a suite of conservation measures has been adopted to ensure sustainability of bigeye tuna stocks in the WCPO. The most recent measure, CMM 2018-01 provides a series of management measures aimed at constraining effort on tropical tunas, focusing particularly on the purse seine fishery. The purse seine fishery mostly targets skipjack, and to a lesser extent yellowfin, though significant incidental catches of small bigeye occur. Pending agreement on a target reference point, CMM 2018-01 states that the spawning biomass depletion ratio (SB/SBF=0) is to be maintained at or above the average SB/SBF=0 for 2012-2015. The objective of previous CMMs was to reduce the fishing mortality rate on bigeye to a level no greater than F_{MSY} ($F/F_{MSY} \leq 1$). Based on results of recent assessments these goals are met. Additionally, CMM 2018-01 sets longline bigeye catch limits by flag (including charter vessels) for the distant water nations. For example, bigeye longline catch limits for Japan, Korea, and Chinese Taipei are 18,265, 13,942, and 10,481 tonnes, respectively. Other fisheries (i.e. not purse seine or longline) are limited

<p>to the reported catch level of 2004 or the average catch for the period 2001-2004, except for those taking <2,000 t who may take up to this level. While we note these measures and those could contribute to increased stock abundance the benefits from these measures to the overall population would not be captured in the update assessment given that CMM 2018-01 was only in input data series.</p> <p>It can be inferred that the harvest strategy is likely to be working and while it has not been fully tested it appears to be currently achieving its objectives. Although there are no formal HCRs to determine management actions there is a workplan to develop HCRs by 2022. On this basis the SG80 level is met but not the SG100 level.</p>				
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 is achieved through annual reporting of removals and CMM compliance to the WCPFC, as well as logbooks, port landing records by auction houses, and VMS tracking requirements. Requirements at the SG 60 level are met.				
d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Not scored
Rationale				
Since PI 1.2.1 a is not met at the SG 80 level this is not scored.				
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?	NA	NA	NA
Rationale				
Shark is not a target species.				
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?	Not relevant	Not relevant	Not relevant

Rationale			
<p>CMM 2015-01 (and its predecessors) requires that “To create a disincentive to the capture of small fish and to encourage the development of technologies and fishing strategies designed to avoid the capture of small tunas and other fish, CCMs shall require their purse seine vessels fishing in EEZs and on the high seas within the area bounded by 20°N and 20°S to retain on board and then land or transship at port all bigeye, skipjack, yellowfin tuna.” Exceptions to this requirement are possible where the fish are unfit for human consumption for reasons other than size or when serious malfunction of equipment occurs. Reporting of discards is done via vessel logbooks and Observer Programs (100% observer coverage). Compliance with CMM 2015-01 (and its predecessors) is verified by observers, with any violations (such as illegal discards) being reported to the WCPFC via the Observer authority. Reported discards for the UoA represented 1% of the total catch of bigeye for 2014 to 2018 (Table 1). The rules in place and minimal discarding of this species indicate that this scoring issue is not relevant to the UoA.</p>			
<p>Table 1. Observer reported catch of bigeye in the UoA from 2015 to 2019 (Data from SPC).</p>			
Year	Retained (mt)	Discarded (mt)	% Retained
2015	1846.0	22.8	99%
2016	2316.4	64.2	97%
2017	2022.3	48.0	98%
2018	3222.8	20.7	99%
2019	1546.0	4.8	100%
Grand Total	10953.5	160.4	99%
References			
<p>Ducharme-Barth et al. 2020, McKechnie, Pilling, et al., 2017a; Scott et al., 2017; WCPFC, 2017a, 2017b, 2018; Vincent et al., 2018; Nunes et al., 2019; CMMs 2017-01, 2014-06, 2013-01, 2014-01, 2015-01, 2016-01</p>			
Draft scoring range and information gap indicator added at Announcement Comment Draft Report			
Draft scoring range	60-79		
Information gap indicator	Information sufficient to score PI		
Overall Performance Indicator scores added from Client and Peer Review Draft Report			
Overall Performance Indicator score	70		
Condition number (if relevant)	1-5 (Bigeye)		

PI 1.2.2 – Harvest control rules and tools-Western and Central Pacific Bigeye Tuna

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				
<p>A generally understood HCR is taken here to mean one that is not well defined, as otherwise there is no distinction between requirements at the SG 60 and SG 80 levels. This PI is also assessed taking account the guidance for scoring ‘available’ HCRs at SG 60 containing in SA2.5.2, SA2.5.3 and SA2.5.5.</p> <p>The first option for scoring ‘available’ HCRs is intended to cover the situation where even generally understood HCRs are not yet clearly in place for a fishery. While there are expectations about responses and examples of how actions have been implemented for species such as bigeye tuna, there is no clear linkage or explicit process that links changes in stock status to emergent associated management actions. Therefore, we do not consider that there are even generally understood HCRs that are also “in place” ; and the options for ‘available’ HCRs are evaluated below.</p> <p>The second question to address is whether there are HCRs that meet the requirements for being considered as ‘available’. The guidance in SA2.5.2a indicates that teams shall accept ‘available’ HCRs in cases where, “...Stock biomass has not previously been reduced below the MSY level or has been maintained at that level for a recent period of time that is at least longer than 2 generation times of the species, and is not predicted to be reduced below B_{MSY} within the next 5 years”.</p> <p>Based on the SC grid in the 2020 stock assessment, the probability that $F_{RECENT} > F_{MSY}$ is estimated to be approximately 13% (Ducharme-Barth et al. 2020). It was determined that SB_{RECENT} is 1.78 SB_{MSY} and the probability that $SB_{RECENT} < LRP$ is estimated to be 0%. The risk that $SB_{2048}/SB_{F=0}$ is less than the Limit Reference Point ranges from 0-5%. On this basis, SA2.5.2a is likely met.</p> <p>WCPFC have an agreed, legally-binding framework in place to establish formal harvest strategies and control rules for their main stocks, including WCPO bigeye (see CMM 2014-06 and associated workplans. SA2.5.3b is therefore met. On this basis, a generally understood HCR can be considered to be ‘available’ for this stock and requirements at the SG60 level are met. Since the harvest strategy is not ‘in place’, SG80 is not met.</p>				
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				
The ‘available’ harvest control rules are not sufficiently articulated to allow an evaluation of the extent to which they are robust to main uncertainties. On this basis, 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				
As noted under scoring issue a above, following SA2.5.3b, we have recognized ‘available’ HCRs as ‘expected to reduce the exploitation rate as the point of recruitment impairment is approached’.				
SA2.5.5b, which requires that teams shall include in their rationale a description of the formal agreement or legal framework that the management body has defined, and the indicators and trigger levels that will require the development of HCRs.				
The agreement is contained in CMM 2014-06 whose objective is “To agree that the Commission shall develop and implement a harvest strategy approach for each of the key fisheries or stocks under the purview of the Commission according to the process set out in this conservation and management measure.” This CMM contains general principles (including a description of a harvest strategy) and principles and elements of the proposed harvest strategies (which are consistent with the MSC definitions). The definitions include target and limit reference points and decision rules (or “harvest control rules”), with a clear intention that harvest control rules, tested using simulation approaches, will be part of the implemented harvest strategies				
A formal framework is in place for the development of a harvest strategy for the stock (CMM 2014-06 and workplans). F is estimated by SC16 to be below F_{MSY} with approximately 87% probability (WCPFC 2020). The criteria for ‘available’ tools at SG60 are therefore met. SG80 is not met because the HCR does not include well-defined target exploitation levels.				
References				
Ducharme-Barth et al. 2020; WCPFC 2020; McKechnie, Pilling, et al., 2017a; WCPFC, 2017a, 2017b, 2018; Vincent et al., 2018				
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)		Condition 1-6 (Bigeye)		

PI 1.2.3 – Information and monitoring Western and Central Pacific Bigeye Tuna

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				
<p>The following information is available and is used as part of the harvest strategy – notably to inform the stock assessment models.</p> <p>Catch, Effort, CPUE All CCM fisheries are required to provide catch and effort data to WCPFC/SPC and most key fleets provide operational (logbook) rather than aggregated data (Williams et al. 2017). Catch and effort data date back to 1950, although historical data are generally less reliable than more recent data. The logbook data are raised to best estimates of total catch by SPC-OFP, to account for missing data. Purse seine catch is allocated to species via an agreed methodology (‘Method 3’) (Hampton and Williams, 2017). Longline CPUE data are analysed and standardised as described in Ducharme-Barth et al (2020) and provide the key stock assessment input; purse seine CPUE is not used because of difficulty in measuring effort.</p> <p>Length/weight-frequency data Size-frequency data come from port sampling programs and observer reports, and date 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.</p> <p>Fleet composition All CCMs provide information to WCPFC annually on their active fleet, in their Part 1 reports to the WCPFC-SC.</p> <p>Natural mortality For bigeye (and other WCPO stocks), the methodology set out in Hoyle and Nichol (2008) is used to estimate sex- and length-specific estimates of M. The M-at-length vector is then used to calculate a M-at-age vector using the growth curve, which is used as input to the stock assessment model.</p> <p>Environmental data The Ocean Fisheries Program of SPC has undertaken environmental research as part of their ecosystem monitoring program, focusing particularly on potential environmental drivers of tuna population dynamics.</p>				

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. While work has been done to evaluate the usefulness of a combined management approach, separate assessments in the WCPO and the EPO was considered appropriate for now (Ducharme-Barth et al. 2020).

Data gaps

Observer coverage is low for the longline 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. Nonetheless, 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 constrained previous assessments have been rectified, however, bias and lack of precision in some datasets remain, particularly historical data, but this is expected for any fishery.

Biology

The major biological research has focused on developing a growth curve, which has been agreed by the WCPFC Scientific Committee as best available scientific information and incorporated into the stock assessment, thus removing a major source of uncertainty (Farley et al. 2018).

The available information for bigeye related to stock structure, stock productivity and purse seine fleet composition is sufficient to support the harvest strategy, meeting the SG60 and SG80. While certain uncertainties remain, mainly definition of stock boundaries, based on harmonization discussions P1 assessors collectively agreed that there is a comprehensive range of information on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information, thus meeting the SG100.

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 log sheets 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 5-by-5 degree square, as well as operational level data. Size-frequency data (collected via port sampling and observer programs) are regularly collected as is biological data collected through research programs/projects. Assessments are routinely collected and in between stock assessments, SPC provide information on trends in fishery indicators (total catch, nominal CPUE, catch at length and at weight, status quo projections), to support management decision making. On this basis the SG80 level is met. However, concerns remain preventing the SG100 being met, including a lack of precision with the historical data, unknown accuracy of CPUE standardization approaches, sampling issues with the fishery-dependent at sea and shore side size sampling programs.

c **Comprehensiveness of information**

	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		Yes	
Rationale				
<p>WCPFC and SPC work hard to quantify all sources of removals and include them in the stock assessment. The fisheries in Indonesia, the Philippines and Vietnam have in the past been a particular problem, and there has been ongoing work to quantify the catch (and effort) from these fisheries. The 2017 stock assessment report, noted a gradual improvement in the data from Indonesia and the Philippines over the last decade or so and since the last assessment, catch data from Vietnam has also been available and is included in the 2017/2018 assessment.</p> <p>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. This sensitivity did not have a significant effect on the conclusions of the assessment which was reassuring. On this basis the Team concluded there is good information on all other fishery removals and SG80 is met.</p>				
References				
<p>Hoyle and Nichol, 2008; McKechnie et al., 2015b; Pacific, 2016; Farley et al., 2017b; Pilling and Brouwer, 2017; Scott et al., 2017; Tremblay-Boyer et al., 2017a; WCPFC, 2017b, 2018; Hampton and Williams, 2017; McKechnie, Pilling, et al., 2017a; McKechnie, Tremblay-Boyer, et al., 2017; Brouwer et al., 2018; Vincent et al., 2018; Farley, Eveson, et al., 2018; Farley, Krusic-Golub, et al., 2018</p>				
Draft scoring range and information gap indicator added at Announcement Comment Draft Report				
Draft scoring range			>80	
Information gap indicator			Information sufficient	
Overall Performance Indicator scores added from Client and Peer Review Draft Report				
Overall Performance Indicator score			90	
Condition number (if relevant)				

PI 1.2.4 – Assessment of stock status-Western and Central Pacific Bigeye Tuna

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				
<p>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 biological parameters (growth, natural mortality, maturity, fecundity, and recruitment), fishery dynamics, and tagging data. The model partitions the population into 9 spatial regions and 28 quarterly age-classes and defines fisheries to consist of relatively homogeneous fishing units that have selectivity and catchability characteristics that do not vary greatly over time and space. It therefore meets the requirements of the SG 80 and SG 100 levels of this scoring issue.</p>				
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				
<p>The assessment reports provide a wide range of estimates of stock status relative to indicators of interest to management including both the target and limit reference points that have been agreed for bigeye tuna. This therefore meets the requirements of the SG 60 and SG 80 levels</p>				
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				
<p>The assessment of bigeye tuna has provided explicit commentary on the major sources of uncertainty, has assessed the sensitivity of the assessment to these uncertainties, and has evaluated current and future stock status relative to these in a probabilistic way.</p> <p>This meets the requirements of the SG 60, SG 80 and SG 100 levels of this scoring issue</p>				
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				
<p>Within the WCPFC stock assessment approaches, model assumptions, and data requirements are routinely explored by science providers to the WCPFC, the SPC-OFP and ISC. Alternative hypotheses are continually being explored (within funding and time constraints) and sensitivity analyses undertaken, and assessments updated and modified as required. Furthermore, retrospective analyses have been undertaken to explore any systematic biases in the model and the results used to adjust the reference case. While the assessment for bigeye tuna has generally been shown to be robust and therefore meeting the requirements of this scoring issue, the model is likely overparameterized (Ducharme-Barth et al., 2020). An external peer review or WCPFC modelling workshop prior to the next WCPO bigeye tuna stock assessment was recommended by SC16 (WCPFC-SC 2020). On this basis SG100 requirement are not met.</p>				
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				
<p>Internal reviews of the stock assessments are regularly undertaken during the annual WCPFC-Scientific Committee meeting, annual pre-assessment workshops, and Commission Meeting. There has been an external review of the 2010 Bigeye tuna assessment (Ianelli et al. 2012) which provided recommendations that were also applicable to other similar assessments such as for yellowfin tuna, but there has been no review of subsequent assessments. Given the last assessment review is 9 years old and significant changes to stock status have occurred the assessment team does not consider there to sufficient external review. On this basis SG80 is met but not SG100.</p>				
References				
Ianelli et al., 2012; McKechnie et al., 2015b; Farley et al., 2017b; WCPFC, 2018; McKechnie, Pilling, et al., 2017a; McKechnie, Tremblay-Boyer, et al., 2017; Peatman et al., 2017; PNA, 2017; Tremblay-Boyer et al., 2017a; WCPFC, 2017b; Vincent et al., 2018				
Draft scoring range and information gap indicator added at Announcement Comment Draft Report				
Draft scoring range			>80	
Information gap indicator			Information sufficient to score PI	
Overall Performance Indicator scores added from Client and Peer Review Draft Report				
Overall Performance Indicator score			90	
Condition number (if relevant)			NA	

8.4 Principle 2

Principle 2 scores and background were not revised from the currently certified certificate scope. Therefore, we refer the reader to the certification PCR for the associated evaluation tables, available here: <https://fisheries.msc.org/en/fisheries/png-fishing-industry-associations-purse-seine-skipjack-yellowfin-tuna-fishery/@@assessments>

Bigeye tuna was the only main primary species identified in the original certificate. Since bigeye was the only main primary species, GPE 1.2.4.3 was considered not to apply as there were no remaining primary main species in Principle 2 that would be impacted (FCP 2.2). The remaining scoring elements in Principle 2 did not need to be rescored.

8.5 Principle 3

Principle 3 scores and background were not revised from the currently certified certificate scope. Therefore, we refer the reader to the certification PCR for the associated evaluation tables, available here: <https://fisheries.msc.org/en/fisheries/png-fishing-industry-associations-purse-seine-skipjack-yellowfin-tuna-fishery/@@assessments>

9 Appendices

9.1 Assessment information

9.1.1 Previous assessments

This is the MSC assessment for the addition of Bigeye as a target species under a scope extension. The conditions that are currently open in the fishery as of the time of the scope extension are provided below in 9.5.2. A summary of the conditions is provided in Table 13.

Table 13. Summary of Conditions (Conditions apply to both FAD sets and Free school sets unless otherwise indicated).

Condition number	Condition	PI	Related to previously raised condition? (Y/N/NA)
1-1	By the second surveillance audit, demonstrate that the harvest strategy for skipjack tuna is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points	1.2.1	NA
1-2	SI a) By the second surveillance audit, demonstrate that well defined HCRs are in place for skipjack tuna 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. SI b) By the second surveillance audit, provide evidence that the selection of the harvest control rules for skipjack tuna are robust to the main uncertainties. SI c) By the second surveillance audit, provide evidence that indicates that the tools in use for skipjack tuna are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	1.2.2	NA
1-3	By the second surveillance audit, demonstrate that the harvest strategy for yellowfin tuna is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points	1.2.1	NA
1-4	SI a) By the second surveillance audit, demonstrate that well defined HCRs are in place for yellowfin tuna 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. SI b) By the second surveillance audit, provide evidence that the selection of the harvest control rules for yellowfin tuna are robust to the main uncertainties. SI c) By the second surveillance audit, provide evidence that indicates that the tools in use for yellowfin tuna are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	1.2.2	NA
2-1	FAD sets and Free school sets: By the fourth surveillance audit, provide evidence that the direct effects of the UoA are highly likely to not hinder recovery of Cetacean species.	2.3.1	NA

Condition number	Condition	PI	Related to previously raised condition? (Y/N/NA)
2-2	By the fourth surveillance audit provide at least some evidence that the measures/strategies for whale sharks and cetaceans are being implemented successfully	2.3.2	NA
2-3	FAD sets and Free school sets: By the fourth surveillance audit, provide some quantitative information that 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 Cetaceans.	2.3.3	NA
2-4	FAD sets: By the fourth surveillance audit provide 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.	2.4.1	NA
2-5	FAD sets: By the fourth surveillance audit, provide at least 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.	2.4.2	NA
2-6	For FAD sets: By the fourth surveillance audit, provide evidence that the information available 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 That some quantitative information is available that is adequate to estimate the consequence and spatial attributes of the main habitats.	2.4.3	NA
2-7	By year four the fishery must provide 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.	2.5.1	NA
3-1	Provide evidence to demonstrate that clear and transparent processes exist to regularly seek and accept “relevant information” provided via consultative processes and that any such information is considered in management decision making at national and regional levels.	3.1.2	NA
3-2	By the fourth year, the client shall present evidence that 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, for free school sets.	3.2.1	NA
3-3	SI b) By the fourth surveillance audit, provide evidence that 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. SI d) By the fourth surveillance audit, provide evidence that Information on the fishery’s performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	3.2.2	NA

9.1.2 **Small-scale fisheries**

This fishery is not a small scale fishery.

9.2 Evaluation processes and techniques

9.2.1 Site visits

The assessment team selected visit sites and interviewees based on information needed to assess management operations of the unit of assessment. A remote site visit took place with personnel of PNG-FIA and SCS on April 28th, 2021.

9.2.2 Stakeholder Participation:

In advance of the fishery entering full assessment SCS compiled an extensive stakeholder list used for emailing announcements and assessment progress to stakeholders.

During the ACDR stage comments were received from ISS. A summary of these concerns, and the original stakeholder comments, including team's responses can be found in Section 9.4 Stakeholder input.

9.2.3 Evaluation techniques

Documentation and Information Gathering

One of the most critical aspects of the MSC certification process is ensuring that the assessment team gets a complete and thorough grounding in all aspects of the fishery under evaluation. In even the smallest fishery, the assessment team typically needs documentation in all areas of the fishery from the status of stocks, to ecosystem impacts, through management processes and procedures.

Under the MSC program, it is the responsibility of the applying organizations or individuals to provide the information required proving the fishery or fisheries comply with the MSC standards. It is also the responsibility of the applicants to ensure that the assessment team has access to any and all scientists, managers, and fishers that the assessment team identifies as necessary to interview in its effort to properly understand the functions associated with the management of the fishery. Last, it is the responsibility of the assessment team to make contact with stakeholders that are known to be interested or actively engaged in issues associated with fisheries in the same geographic location.

Information for the assessed was gathered from stakeholder comments prior to the onsite visit.

Scoring and Report Development Process

ACDR: The Announcement Comment Draft Report was completed on January 29 2021. The client decided to continue with the full assessment.

Site visit: The site visit is scheduled tentatively for 60 days following the posting of the ACDR on April 3rd 2021. This site visit will occur remotely given the travel restrictions in place for COVID-19. All information can be easily accessed online and necessary meetings with science and management personnel and stakeholders can be facilitated remotely.

Publication of ACDR: Publication of the Announcement Comment Draft Report was published on January 29th, 2021.

Onsite Visit: Scoring was initiated during the and completed iteratively through phone calls, emails and skype teleconferences .

Client Draft: Rationales and associated background was developed by respectively assigned assessment team members, and then cross read by team members and SCS staff for production of the client draft report. Scoring was completed by consensus through this review process and team meetings by phone and email. The fishery received a total of two scoring-issue level conditions within two performance indicators (PI 1.2.1 and PI 1.2.2). The team finalized scoring and submitted the Client Draft in July 2021. The client fishery worked with SCS to generate an acceptable client action plan.

Peer Review: Based on comments from peer reviewers, the team modified content related to Principle 1.2.3 SI a adjusting the score from 100 to 80. The finalization of this score is pending harmonization

discussions. The PCDR was prepared on September 6th 2021, and subject to a 30-day stakeholder comment period that terminated on October 6th, 2021

Stakeholder Comment on PCDR: Comments were received from ISSF, no other stakeholder comments were received. Based on harmonization discussions the following scores were re-adjusted: 1.2.3 SI a adjusting the score back to 100, and PI 1.2.4 SI d to no longer meet SG100, bring the score for PI 1.2.4 down from 965 to 90. The updated harmonization discussions can be found in Section 13 Harmonised fishery assessments of this report. The report was submitted to MSC for publication on October 15th, 2021 for a 15-business day objection period closing on November 5th.

Scoring Methodology

The assessment team followed guidelines in MSC FCP v2.2 Section 7.10 “Scoring the fishery”. Scoring in the MSC system occurs via an Analytical Hierarchy Process and uses decision rules and weighted averages to produce Principle Level scores. There are 28 Performance Indicators (PIs), each with one or more Scoring Issues (SIs). Each of the scoring issues is considered at the 60, 80, and 100 scoring guidepost levels. The decision rule described in Table 14 determines the Performance Indicator score, which must always be in an increment of 5. If there are multiple ‘elements¹¹’ under consideration (e.g. multiple main primary species), each element is scored individually for each relevant PI, then a single PI score is generated using the same set of decision rules described in Table 14.

Table 14. Decision Rule for Calculating Performance Indicator Scores based on Scoring Issues, and for Calculating Performance Indicator Scores in Cases of Multiple Scoring Elements. (Adapted from MSC FCPV2.2 Table 4)

Score	Combination of individual SIs at the PI level, and/or combining multiple element PI scores into a single PI score.
<60	Any scoring element/SI within a PI which fails to reach SG60 shall not be assigned a score as this is a pre-condition to certification.
60	All elements (as scored at the PI level) or SIs meet SG60 and only SG60.
65	All elements/SIs meet SG60; a few achieve higher performance, at or exceeding SG80, but most do not meet SG80.
70	All elements/SIs meet SG60; half* achieve higher performance, at or exceeding SG80, but some do not meet SG80 and require intervention action to make sure they get there.
75	All elements/SIs meet SG60; most achieve higher performance, at or exceeding SG80; only a few fail to achieve SG80 and require intervention action.
80	All elements/SIs meet SG80, and only SG80.
85	All elements/SIs meet SG80; a few achieve higher performance, but most do not meet SG100.
90	All elements/SIs meet SG80; half achieve higher performance at SG100, but some do not.
95	All elements/SIs meet SG80; most achieve higher performance at SG100, and only a few fail to achieve SG100.
100	All elements/SIs meet SG100.

**MSC FCPV2.2 uses the word ‘some’ instead of half. SCS considers ‘half’ a clearer description of the methodology utilized.*

¹¹ MSC FCPV2.1 7.10.7: In Principle 1 or 2, the team shall score PIs comprised of differing scoring elements (species or habitats) that comprise part of a component affected by the UoA.

When calculating the Principal Indicator scores based on the results of the Scoring Issues (SI), SCS interprets the terms in Table 2 as follows:

- **Few:** Less than half. Ex: if there are a total of three SIs, one SI out of 3 is considered few.
- **Some:** Equal to half. Ex: if there are a total of four SIs, two SIs out of 4 is considered some.
- **Most:** More than half. Ex: if there are a total of three SIs, two SIs out of 3 is considered most.

9.2.4 **Modified assessment tree**

The default assessment tree was used in the scope extension.

9.3 Peer Review reports

9.3.1 Peer Review ‘A’ Comments Client and Peer Review Draft Report

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?	No	This is a scope extension report to include WPCO Bigeye tuna (BET) in a fishery already certified (i.e.: PNG Fishing Industry Association’s purse seine Skipjack & Yellowfin Tuna Fishery). Taking into account the evidence provided in the report and GAP analysis is correct that only P1 related to BET was assessed. The report is well structured and most justifications are appropriate and the overall I agree with scoring. My main concern is about the HCRs in 1.2.2 (see specific comment). The reason I replied "No" to this specific question is because there are mistakes in the scorings of some PIs as evidenced in PI comments.	The scoring mistakes of some PIs have been addressed, including that for HCR 1.2.2
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.2, 7.18.1 and sub-clauses]	Yes	Conditions on 1.2.1 and 1.2.2 are common to WCPO SKJ and YFT. The Conditions are appropriately written and the timeline is harmonised with the other fisheries of the area.	No comment required

Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	NA		
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below, including the codes in Columns A-C.	NA	There are few issues in the report that need to be addressed: 1) Glossary needs to be in alphabetic order, also add relevant acronyms as MSY etc.; 2) Table 3 is confusing (The UoAs should be 6 now); 3) in Table 4 the final scoring needs to be provided for BET; 4) in table 5 the new conditions on BET are missing; 5) in Tables 7 and 8 the scoring for BET need to be updated; 6) in Fig1 provide the explanation of the Acronyms; 7) In section 11.1 Harmonised fishery assessments I think that the tables about SKJ and YFT are not relevant.	1) Glossary revised, now in alphabetic order 2) Table 3 now includes 6 UoAs 3) Table 4 now includes final score for BET 4) BET conditions now included in the table. 5) Scores in Table 7 and 8 updated 6) Explanation of Acronyms provided in Figure 1 7) Tables for SKJ and YFT removed in harmonization section

PI Input

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
1.1.1	Yes	Yes	NA	I agree with scoring and rationale. I would suggest to add the values of ref. points under "Value of reference point" in term of tons.	The volume value fo the ref point is now included in the justification section	Accepted (no score change, change to rationale)
1.1.2	NA (PI not scored)	NA (PI not scored)	NA	The PI was correctly not scored.	No comment required	NA (No response needed)

PNG Fishing Industry Association’s purse seine Skipjack & Yellowfin Tuna Fishery, Scope Extension Report

1.2.1	Yes	No (score increase expected)	Yes	The rationales are appropriate, and I agree that a condition should be raised for 1.2.1a. However the final scoring should be 70 and not 65.	Overall score corrected	Accepted (score increased)
1.2.2	Yes	No (material score reduction expected to <60)	Yes	<p>In 1.2.2a at SG60, MSC allows a harvest control rule to be ‘available’ rather than ‘in place’ if the requirements summarised below are met (for full list see SA2.5.2, 2.5.3):</p> <p>1 - 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;</p> <p>2 - HCRs are effectively used in other stocks by the same management body or an agreement or framework is in place requiring the management body to adopt HCRs before the stock declines below BMSY.</p> <p>For WCPO BET, the first requirement is met because the stock biomass has not previously been reduced below the MSY level, according to the last stock assessment as evidenced in 1.1.1. In theory also the second of MSC’s requirements to score a HCR as ‘available’ would be met via CMM 2014-06. However, 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) shows a declining trend of the stock and there is no evidence that management is able to limit this decline yet. 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. Because there is no evidence that the HCR will reduce the exploitation rate as the PRI is approached, SG60 is not met.</p>	This is a harmonized score. The biomass of bigeye tuna in the Western Central Pacific Ocean has not previously been reduced below the MSY level based on previous stock assessments; thus SA2.5.2a is met. The assessment team has expanded the rationale and provided to justify the score of SG60, including	Accepted (no score change, change to rationale)

PNG Fishing Industry Association’s purse seine Skipjack & Yellowfin Tuna Fishery, Scope Extension Report

1.2.3	Yes	No (non-material score reduction expected)	NA	In 1.2.3a, data are in general comprehensive, but there still remain some data problems that apply specifically to BET (e.g., longline observer coverage, limited data from some countries). Furthermore, uncertainties remain about the biology of the species (e.g., as stated in the report: It appears that bigeye growth is faster in the EPO than the WCPO, for reasons unknown), which can have an impact on 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 should not be met.	Agreed, score updated, however this score change may be changed again pending the result of harmonization discussions. Update October 2021: reversed to original score based on harmonization discussions.	Accepted (non-material score reduction)
1.2.3	Yes	No (score increase expected)	NA	In the case the team would better justify 1.2.3a as 100, the final score should be 90 and not 85.	Team has reduced score in 1.2.3 a to 80, the overall score for PI 1.2.3 has been adjusted to 80	Accepted (non-material score reduction)

9.4 Stakeholder input

To be included at the Client and Peer Review Draft Stage. Stakeholder input at the ACDR stage will be posted on the MSC database.

Stakeholder Name & Organization	Quote/Summary	Medium of submission	Evidence	Input Date
ISSF	See Sections Below	Written comments	See Sections Below	ACDR Stage
ISSF	See Sections Below	Written comments	See Sections Below	PCDR Consultation Stage

9.4.1.1 ISSF comments ACDR

General Comments

General comments	Evidence or references	CAB response to stakeholder input	CAB Response Code
<p>FAD MANAGEMENT PLAN ISSF suggests the client provides complete background information in the assessment report covering the following:</p> <p>GENERAL FISHERY DESCRIPTION</p> <p>A complete fishery description section must include information on all fishery’s operations, including the use of drifting and anchored 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.</p> <p>FAD MANAGEMENT STRATEGY</p> <p>ISSF recommends that the PCDR includes a description of the fishery’s FAD management strategy. A comprehensive FAD</p>	<ul style="list-style-type: none"> - 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-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 	<p>This comment is not applicable to this scope expansion Principle 2 is not scored</p>	<p>Not accepted (no change)</p>

<p>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).</p> <p>(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.</p> <p>(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.</p> <p>(3) Support science-based limits on the overall number of FADs used per vessel and/or FAD sets made</p>	<p>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/</p> <p>- CM 3.7 https://iss-foundation.org/what-we-do/verification/conservation-measures-commitments/bycatch-mitigation-3-7-transactions-with-vessels-or-companies-with-vessel-based-fad-management-policies/</p>		
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<p>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 day while they are in the water, and (iv) adopting alternative possible measures such as FAD closures to reduce their impact.</p> <p>In regard to aFADs, ISSF recommends the client fishery to support science-based limits on the overall number of aFADs in an area and set maximum aFAD limits per area.</p> <p>(4) Use only non-entangling FADs to reduce ghost fishing</p> <ul style="list-style-type: none"> o A new ISSF non- entangling and biodegradable FADs guide was published in 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. <p>(5) Mitigate other environmental impacts due to FAD loss including through the use of biodegradable FADs and FAD recovery policies</p> <p>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.</p> <p>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</p>			
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<p>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.</p> <p>(6) For silky sharks (the main bycatch issue in FAD sets) implement further mitigation efforts</p> <p>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).</p> <p>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.).</p>			
<p>CUMULATIVE IMPACTS</p> <p>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).</p> <p>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</p>	<p>- https://fisheryprogress.org/directory</p>	<p>This comment is not applicable to this scope expansion Principle 2 is not scored</p>	<p>Not accepted (no change)</p>

<p>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.</p> <p>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.</p>			
<p>ETP Shark species Given the higher probability of catching silky sharks (and higher catch rates) in dFAD and log sets (Peatman et al. 2017), ISSF is concerned 2.3.X PI scores do not reflect the larger impact that fishing on associated sets has on silky sharks and other species (e.g. oceanic whitetip shark). In addition, in other Pacific Ocean fisheries under assessment, the lack of reliable estimates of post-release mortality and of FAD entanglement rates resulted in preliminary scores <SG80 for some ETP performance indicators (e.g. Tri Marine Western and Central Pacific Skipjack and Yellowfin Tuna PI 2.3.3, AGAC four oceans Integral Purse Seine Tropical Tuna Fishery PI 2.3.3, Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery PI 2.3.1 and 2.3.3).</p> <p>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 revise these scores to make sure they take into account the impact of fishing on associated sets on these ETP shark species.</p>	<ul style="list-style-type: none"> - https://www.wcpfc.int/node/29500 - https://fisheries.msc.org/en/fisheries/tri-marine-western-and-central-pacific-skipjack-and-yellowfin-tuna/@assessments - https://fisheries.msc.org/en/fisheries/agac-four-oceans-integral-purse-seine-tropical-tuna-fishery/@assessments - https://fisheries.msc.org/en/fisheries/eastern-pacific-ocean-tropical-tuna-purse-seine-tunacons-fishery/@assessments 	<p>This comment is not applicable to this scope expansion Principle 2 is not scored</p>	<p>Not accepted (no change)</p>
<p>HS ADVOCACY ACTIONS According to the ACDR preliminary scores, the CAB will likely set conditions towards the implementation by WCPFC of a robust Harvest Strategy for Western Pacific bigeye tuna, and the fishery also has open conditions on PIs 1.2.1 and 1.2.2 for the WP skipjack and yellowfin stocks. As regards the Client Action Plan to meet these conditions, ISSF would like to suggest specific actions for the Client to consider:</p>	<ul style="list-style-type: none"> - https://ngotunaforum.org/global-tuna-advocacy-appeal/ - https://iss-foundation.org/what-we-do/influence/position-statements 	<p>SCS shared this suggestions with the fishery client to inform their Client Action Plan drafting</p>	<p>Not accepted (no change)</p>

<p>1) Publicly support the high-level appeals for RFMOs developed by global NGOs that are participants in the NGO Tuna Forum.</p> <p>In 2021, companies will have the opportunity to engage in other direct RFMO advocacy tactics to demonstrate market support for specific tuna sustainability asks. NGO participants in the NGO Tuna Forum will be reaching out to market partners with these opportunities in the coming months.</p> <p>2) Continue advocating for accelerated progress on the adoption and implementation of Harvest Strategies through WCPFC, such as through continued direct engagement with national delegations to WCPFC, or through other initiatives. The WCPO MSC Alignment Group is not currently active, but FIA should continue to monitor the group for an opportunity to participate in the future.</p> <p>3) Urge the PNG, Philippines, FSM, Chinese Taipei, Nauru and Vanuatu delegations 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 HCRs, and to underscore that the MSC has established hard deadlines for P1 conditions for certified tuna fisheries. For WCPO bigeye and yellowfin HCR, and for skipjack HS the deadline is by June 2022. If these deadlines are not met, the corresponding WCPO bigeye, yellowfin and skipjack MSC certifications will be suspended. All delegations should also support establishing a scientist/manager dialogue group that will hold its first meeting in 2022.</p> <p>4) Have meetings, calls or other direct contact with all other relevant WCPFC delegations where FIA has business interests to advocate for the adoption of Harvest Strategies and HCR.</p> <p>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 2021 and future in-person meetings, and document that support (e.g. by submitting a letter or some other communication citing the Position Statement).</p>			
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<p>6) Support technical work of WCPFC as well as capacity workshops on Management Strategy Evaluation in the Western Pacific Ocean region so as to increase the leverage of WCPFC members for the discussion and adoption of robust Harvest Strategies.</p>			
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PI Input

Performance Indicator (PI)	Input summary	Input detail	Evidence or references	Stakeholder input code	CAB response to stakeholder input	CAB response code
Principle 1 - Sustainable fish stocks						
<p>1.2.1 - Harvest strategy (WP BET, WP SKJ, WP YFT)</p>	<p>The independent report by Medley et al. (2021) indicates that SI 1.2.1.f should be scored and the fishery would meet SG80.</p>	<p>The independent report by Medley et al. (2021) indicates that SI 1.2.1.f should be scored and the fishery would meet SG80.</p> <p>1.2.1.f: "Unwanted catch is defined by MSC as catch which is unwanted and not used (i.e., not sold or consumed). Under P1 it refers only to unwanted catch of the target species. 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 and low compared to other fisheries (Gilman et al. 2020). However, whether discards are significant enough to require a review to work out how to reduce them will need to be determined on a case-by-case basis and monitoring depends upon the presence of at-sea observers.</p> <p>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 (2020-01, 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</p>	<p>Medley et al. (2021)</p>	<p>Scoring implications unknown</p>	<p>The MSC Fisheries Standard SA3.1.6 states that 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. Furthermore, according to MSC, this scoring issue need not be scored if there are no unwanted catches of primary species.</p> <p>Noting there are no requirements such as minimum or maximum landing sizes which could lead to any of this catch being unwanted, discarding rates for bigeye tuna are minimal, according to the stock assessment report (BET-Ducharme et al. 2020). This was corroborated through examination of UoA observer data where reported discards of bigeye tuna for the UoA</p>	<p>Not accepted (no change)</p>

		<p>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. "</p>		<p>represented a very small proportion of the total catch. Furthermore, CMM 2018-01 requires purse seine vessels fishing in EEZs and on the high seas within the area bounded by 20°N and 20°S to retain on board and then land or transship at port all bigeye, skipjack, yellowfin tuna. While there are exceptions to this requirement discarding of skipjack, yellowfin, and bigeye tuna is considered minor. Based on this information the assessment team concluded there is no ‘unwanted catch’ of and bigeye tuna in this fishery and scoring of PI 1.2.1-f was not necessary.</p>	
<p>1.2.2 - Harvest control rules and tools (WP YFT)</p>	<p>The independent report by Medley et al. (2021) indicates that the fishery would not meet SG60 for SI 1.2.2.a for WP yellowfin and that, as a result, the overall PI score would be less than 60 (“Fail”).</p>	<p>The independent report by Medley et al. (2021) indicates that the fishery would not meet SG60 for SI 1.2.2.a and that, as a result, the overall PI score would be less than 60 (“Fail”):</p> <p>1.2.2.a: “At SG60, MSC allows a harvest control rule to be ‘available’ rather than ‘in place’ if the requirements summarised below are met (for full list see SA2.5.2, 2.5.3):</p> <ul style="list-style-type: none"> • Stock biomass has not previously been reduced below the MSY level, or has been maintained at that level for a recent period of time ... and is not predicted to be reduced below BMSY within the next 5 years; • HCRs are effectively used in other stocks by the same management body or an agreement or framework is in place requiring the management body to adopt HCRs before the stock declines below BMSY. <p>MSC’s second requirement for an ‘available’ HCR is met for yellowfin by CMM 2014-06. In terms of the first 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</p>	<p>Medley et al. (2021)</p>	<p>Score reduction expected to <60, PI fails</p>	<p>Not applicable YFT is not scored in this scope expansion</p> <p>Not accepted (no change)</p>

	<p>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.</p> <p>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.</p> <p>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.</p> <p>The authors are aware that this scoring may not be consistent with the MSC certification of several fisheries targeting this stock. One reason for this difference is that this assessment is a pre-assessment, not a full assessment. A full assessment is based on a strict interpretation of the MSC requirements (scoring issues and guidance) at the time of scoring. A pre-assessment is more focused on risks to an MSC assessment failing and may be more useful to stakeholders to inform decisions about entering certification over a timeframe of a year or more, with the certification process taking a further year or so. A pre-assessment therefore needs to take into account what the situation with the stock is likely to be over this timeframe.</p> <p>We are concerned that although strictly the MSC requirements may be met at time of writing, there has been slow progress with the development of harvest strategies for WCPFC stocks since the commitment was made (CMM 2014-06 was agreed) and strict timelines are not being observed. The workplan for the implementation of CMM 2014-06 has been systematically revised, with CPCs seemingly unwilling to apply the original timetable. Progress is being made at least for some species (WCPFC HS, 2019). Limit reference points have been agreed for bigeye and</p>				
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		<p>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.</p> <p>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."</p>				
<p>1.2.2 - Harvest control rules and tools (WP BET)</p>	<p>The independent report by Medley et al. (2021) indicates that the fishery would not meet SG60 for SI 1.2.2.a for WP bigeye and that, as a result, the overall PI score would be less than 60 (“Fail”).</p>	<p>The independent report by Medley et al. (2021) indicates that the fishery would not meet SG60 for SI 1.2.2.a for WP bigeye and that, as a result, the overall PI score would be less than 60 (“Fail”).</p> <p>1.2.2.a: “At SG60, MSC allows a harvest control rule to be ‘available’ rather than ‘in place’ if the requirements summarised below are met (for full list see SA2.5.2, 2.5.3):</p> <ul style="list-style-type: none"> • Stock biomass has not previously been reduced below the MSY level, or has been maintained at that level for a recent period of time ... and is not predicted to be reduced below BMSY within the next 5 years; • HCRs are effectively used in other stocks by the same management body or an agreement or framework is in place requiring the management body to adopt HCRs before the stock declines below BMSY. <p>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 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</p>	<p>Medley et al. (2021)</p>	<p>Score reduction expected to <60, PI fails</p>	<p>These are harmonized scores, the rationale of which is based on full consideration of MSC requirements by a range of P1 experts. To achieve a score of SG 60 for PI1.2.2.a, MSC allows a harvest control rule to be either be in place or “available”, and to be available it must meet at least one element each of SA2.5.2 and SA2.5.3. As noted, the biomass of bigeye tuna in the Western Central Pacific Ocean has not previously been reduced below the MSY level based on previous stock assessments; thus SA2.5.2a is met. With the adoption of CMM 2014-06 by WCPFC, SA2.5.3b is met. On this basis the requirements for a harvest control rule to be available at SG 60 are met and the assessment team considers the initial SG 60 score for PI1.2.2.a to be appropriate.</p> <p>We share the concerns regarding slippage of the harvest strategy workplan (CMM 2014-06) and its impact on harvest strategy</p>	<p>Not accepted (no change)</p>

	<p>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.</p> <p>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.</p> <p>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.</p> <p>The authors are aware that this scoring may not be consistent with the MSC certification of several fisheries targeting this stock. One reason for this difference is that this assessment is a pre-assessment, not a full assessment. A full assessment is based on a strict interpretation of the MSC requirements (scoring issues and guidance) at the time of scoring. A pre-assessment is more focused on risks to an MSC assessment failing and may be more useful to stakeholders to inform decisions about entering certification over a timeframe of a year or more, with the certification process taking a further year or so. A pre-assessment therefore needs to take into account what the situation with the stock is likely to be over this timeframe.</p> <p>We are concerned that although strictly the MSC requirements may be met at time of writing, there has been slow progress with the development of harvest strategies for WCPFC stocks since the commitment was made (CMM 2014-06 was agreed) and strict</p>		<p>development. However, as you note a variation request was granted by MSC in 2018 for all tuna fisheries to extend the timeline for developing harvest strategies. The new timeline is now set with an expected harvest control rule completion date. On this basis the assessment team considers the initial SG 60 score for PI1.2.2.a to be appropriate for both yellowfin and bigeye tuna.</p>
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		<p>timelines are not being observed. The workplan for the implementation of CMM 2014-06 has been systematically revised, with CPCs seemingly unwilling to apply the 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."</p>				
<p>1.2.3 - Information and monitoring (WP BET)</p>	<p>The independent report by Medley et al. (2021) indicates that the fishery would not meet SG100 for SI 1.2.3.a.</p>	<p>The independent report by Medley et al. (2021) indicates that the fishery would not meet SG100 for SI 1.2.3.a:</p> <p>1.2.3.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 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."</p>	<p>Medley et al. (2021)</p>	<p>Minor score reduction expected</p>	<p>Team accepted comment and reduced score for PI 1.2.3 SI a from 100 to 80. However, this final score will pend result of harmonization discussions. Update October 2021: PI reverted to original score based on harmonization discussions.</p>	<p>Accepted (minor score reduction)</p>

9.4.1.2 ISSf comments PCDR Stage

Performance Indicator (PI)	Stakeholder input code	Previous input stage	Input detail	Evidence or references	CAB response to stakeholder input	CAB response code
Principle 1 - Sustainable fish stocks						
1.2.2 - Harvest control rules and tools (CAP)	No (scoring implications unknown)	ACDR	<p>As regards the Client Action Plan to meet Conditions 1-5 and 1-6 on the adoption of a HS and HCR for Western Pacific bigeye, ISSF acknowledges PNG FIA’s advocacy efforts and recommends the following specific actions that PNG FIA can add to those already listed in the CAP:</p> <p>1) Publicly support the high-level appeals for RFMOs developed by global NGOs that are participants in the NGO Tuna Forum. In 2021, companies will have the opportunity to engage in other direct RFMO advocacy tactics to demonstrate market support for specific tuna sustainability asks. NGO participants in the NGO Tuna Forum have begun reaching out to market partners with these opportunities.</p> <p>2) ISSF encourages PNG FIA to directly engage in alignment initiatives with other MSC-certified or MSC-aspiring fisheries which also advocate for harvest strategies for Western Pacific tuna stocks. The WCPO MSC Alignment Group is being reactivated in 2021, ISSF encourages PNG FIA to monitor the group for an opportunity to participate in the Group once reactivated.</p> <p>3) Urge the delegations of all parties associated with PNG FIA at WCPFC (e.g. Philippines, Federated States of Micronesia, Nauru, Chinese Taipei, Vanuatu) to take a strong public position on advancing harvest</p>	<p>- https://ngotunaforum.org/global-tuna-advocacy-appeal/</p> <p>- https://iss-foundation.org/what-we-do/influence/position-statements</p>	<p>ISSF suggestions for PNG Fua's engagement with advocacy initiatives have been passed on to the Client.</p> <p>Corrections have been made to outdated 2020 references in Condition 1-6</p>	Accepted (no score change - change to rationale)

	<p>strategies, including HCR and the establishment of Target Reference Points for WP skipjack, WP yellowfin and WP bigeye 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 target reference points and harvest control rules, and to underscore that the MSC has established hard deadlines for P1 conditions for certified tuna fisheries, which for WCPO skipjack HS, WCPO yellowfin and WCPO bigeye HCR conditions is by June 2023. If these deadlines are not met, the corresponding WCPO skipjack, yellowfin and bigeye MSC certifications will be suspended. The WCPFC has developed a harvest strategies Work Plan (https://www.wcpfc.int/doc/wcpfc17-att-h/indicative-work-plan-adoption-harvest-strategies-under-cmm-2014-06). Meeting the deadlines in the WCPFC Harvest Strategy Work Plan for skipjack, yellowfin and bigeye tuna stocks is necessary for MSC-certified fisheries to resolve existing conditions to maintain certification. In fact, it requires interim decisions to be passed by WCPFC in December 2021. The MSC has published a factsheet (https://www.msc.org/docs/default-source/default-document-library/stakeholders/western-central-pacific-tuna-factsheet-2021.pdf) that outlines this situation.</p> <p>In particular, specifically, for 2021, PNG FIA, the PNG delegation and the delegations of all associated parties should advocate for the WCPFC to:</p> <ul style="list-style-type: none"> • Adopt Target Reference Points for bigeye and yellowfin. • Adopt a list of candidate management 			
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	<p>procedures for skipjack.</p> <ul style="list-style-type: none"> • Develop and implement relevant elements of the monitoring strategy for skipjack • Establish a scientist/manager dialogue group and agree to hold its first meeting in 2022. <p>4) Have meetings, calls or other direct contact with all other relevant WCPFC delegations where PNG FIA has business interests to advocate for the adoption of Harvest Strategies including HCR, management procedures and Target Reference Points.</p> <p>5) Publicly support ISSF Position Statements that contain detailed asks on Harvest Strategies, Harvest Control Rules and Target Reference Points to the virtual sessions of the WCPFC in 2021 and future in-person meetings, and document that support (e.g. by submitting a letter or some other communication citing the Position Statement).</p> <p>6) PNG FIA could provide further assistance to the ongoing efforts of ISSF, MSC, the NGO Tuna Forum, by engaging in supporting the technical work of WCPFC as well as capacity workshops 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.</p> <p>Additionally, we note that the CAP for condition1-6 needs some corrections, as it mentions the organization of a workshop and an NFA-industry consultation meeting in 2020 in Year 1 of the plan, and as there is some text that should be removed from FIA's actions planned for Year 2 ("SCS Global Services Report / Version 4-0 (September 2017) © SCS Global Services Full Assessment Report MSC V2.0 Page 283").</p>			
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<p>1.2.2 - Harvest control rules and tools</p>	<p>No (score reduction expected to <60, PI fails)</p>	<p>ACDR</p>	<p>We reiterate our agreement with Medley et al's scoring of this SI.</p> <p>The independent report by Medley et al. (2021) indicates that the fishery does not meet SG60 for SI 1.2.2.a: At SG60, MSC allows a harvest control rule to be ‘available’ rather than ‘in place’ if the requirements summarised below are met (for full list see SA2.5.2, 2.5.3):</p> <ul style="list-style-type: none"> • Stock biomass has not previously been reduced below the MSY level, or has been maintained at that level for a recent period of time ... and is not predicted to be reduced below BMSY within the next 5 years; • HCRs are effectively used in other stocks by the same management body or an agreement or framework is in place requiring the management body to adopt HCRs before the stock declines below BMSY. <p>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 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</p>	<p>Medley et al. (2021)</p>	<p>The CAB, reiterates their response to this comment in the ACDR: These are harmonized scores, the rationale of which is based on full consideration of MSC requirements by a range of P1 experts. To achieve a score of SG 60 for PI1.2.2.a, MSC allows a harvest control rule to be either be in place or “available”, and to be available it must meet at least one element each of SA2.5.2 and SA2.5.3. As noted, the biomass of bigeye tuna in the Western Central Pacific Ocean has not previously been reduced below the MSY level based on previous stock assessments; thus SA2.5.2a is met. With the adoption of CMM 2014-06 by WCPFC, SA2.5.3b is met. On this basis the requirements for a harvest control rule to be available at SG 60 are met and the assessment team considers the initial SG 60 score for PI1.2.2.a to be appropriate.</p> <p>We share the concerns regarding slippage of the harvest strategy workplan (CMM 2014-06) and its impact on harvest strategy development. However, as you note a variation request was granted by MSC in 2018 for all tuna fisheries to extend the timeline for developing</p>	<p>Not accepted (no change)</p>
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	<p>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.</p> <p>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.</p> <p>The authors are aware that this scoring may not be consistent with the MSC certification of several fisheries targeting this stock. One reason for this difference is that this assessment is a pre-assessment, not a full assessment. A full assessment is based on a strict interpretation of the MSC requirements (scoring issues and guidance) at the time of scoring. A pre-assessment is more focused on risks to an MSC assessment failing and may be more useful to stakeholders to inform decisions about entering certification over a</p>	<p>harvest strategies. The new timeline is now set with an expected harvest control rule completion date. On this basis the assessment team considers the initial SG 60 score for PI1.2.2.a to be appropriate for both yellowfin and bigeye tuna.</p>
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	<p>timeframe of a year or more, with the certification process taking a further year or so. A pre-assessment therefore needs to take into account what the situation with the stock is likely to be over this timeframe.</p> <p>We are concerned that although strictly the MSC requirements may be met at time of writing, there has been slow progress with the development of harvest strategies for WCPFC stocks since the commitment was made (CMM 2014-06 was agreed) and strict timelines are not being observed. The workplan for the implementation of CMM 2014-06 has been systematically revised, with CPCs seemingly unwilling to apply the 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.</p> <p>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.</p>	
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9.5 Conditions

9.5.1 Summary of conditions closed under previous certificate

This assessment is a scope extension to include Bigeye as a target species under the existing certificate. No conditions have been closed under a previous certificate. For a complete list of conditions refer to initial PCR report on the MSC website.

9.5.2 Conditions

The current conditions open under this certificate may be referenced in the PCR for the initial certificate. Below we include new conditions are opened during the scope extension for Bigeye.

9.5.2.1 Condition 1-5 (PI 1.2.1) Bigeye

Performance Indicator	PI 1.2.1. There is a robust and precautionary harvest strategy in place Si a: Harvest strategy design	
Score	65	
Justification	See rationale for PI 1.2.1 (Bigeye)	
Condition	<p>PI 1.2.1., Si a: By the second surveillance audit (Extended to June 2023), demonstrate that the harvest strategy for bigeye tuna is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.</p> <p><i>Via the 2019 MSC-approved Mega Variation CABs agreed to align the condition milestones for the WCPO stocks with the Proposed Revisions to Harvest Strategy Work plan (WCPFC14-2017-DP27_rev2), which indicates the harvest control rule will be adopted in 2021. Consistent with MSC COVID 19 derogation, the proposed timeline has been extended by 6 months to June 2022. Following the second MSC Covid 19 derogation, the condition timeline is extended 12 additional months to June 2023.</i></p> <p><i>Given the current timeline assessment, the fishery is set to be certified by Q3 2021, to align with the harmonized milestones SCS will aim to either (a) conduct surveillances in June, a few months prior to the anniversary date or (b) conduct an expedited audit outside of the surveillance cycle to assess progress on Principle 1 conditions by June 2023.</i></p>	
Milestone Year 1	<p>1.2.1 Si a (Y1 2022): the client will provide evidence that it is actively working to ensure 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 the management objectives reflected PI 1.1.1 SG80. This evidence will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC 2017 agreed work plan.</p> <p><i>Expected score: 65</i></p>	
Client Action Plan	Activities:	PNG FIA will lead in efforts to coordinate and co-organize consultation and country level work (i.e., management plan reviews) primarily with PNG NFA and also other key stakeholders to progress and drive actions in response to identified shortcomings of the bigeye-Harvest strategy and the suggested approach in the fisheries management and development in the PNG.

		<p>PNG FIA or industry Participation in Fisheries Management The National Tuna Management & Development Plan has sub-technical advisory committee which includes representative of industry.</p> <p>Accordingly, PNG FIA will work through the industry representative in the committee to encourage, motivate and ensure committee meetings are convened and workplans developed and progress respective actions related to this subject condition.</p> <p>FIA representative on the National Fisheries Board will encourage, motivate and ensure Board meetings give advice and direction to NFA workplans developed and respective actions related to this subject condition progressed with target schedules.</p> <p>Year 1 Actions</p> <ul style="list-style-type: none"> ■ PNG FIA support and advocacy will largely be through active participation in WCPFC meetings as part of the PNG delegations. Such participation will include communicating specific desired policies to support meeting this condition. ■ PNG FIA through PNG National Fisheries Authority delegation will also advocate and support these conditions being met through active participation in PNA, FFA and WCPFC initiatives/proposals regarding the harvest strategies.
	<p>Expected outcome:</p>	<ul style="list-style-type: none"> ■ Meeting Records/Minutes ■ Workplan ■ Country report to SC, TCC or WCPFC
	<p>Responsible Party/ies:</p>	<p>PNG-FIA and NFA</p>
<p>Milestone Year 2</p>	<p>1.2.1 Si a: (Y2 2023): provide evidence that a harvest strategy has been adopted for WCPO bigeye that is responsive to the state of the stock and in which the elements of the harvest strategy work together towards achieving the management objectives reflected PI 1.1.1 SG80.</p> <p><i>Expected score: 80</i></p>	
<p>Client Action Plan</p>	<p>Activities:</p>	<p>PNG FIA will actively support work towards the development and adoption of a harvest strategy for WCPO bigeye that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target references points.</p> <p>FIA will:</p> <ul style="list-style-type: none"> ■ will actively support the implementation of the WCPFC Harvest Strategy Workplan, which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06).

		<ul style="list-style-type: none"> ■ PNG FIA will advocate for a harvest strategy that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points (in line with WCPFC CMM 2014-06). ■ PNG FIA will actively support work towards the development and adoption of a harvest strategy for WCPO bigeye that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target references points. ■ Support NFA in facilitating and coordinating the Annual tuna management plan technical advisory committee meeting draft workplan for NTMDP review, as required. ■ Support NFA in coordinating the NFA/Industry consultation ■ Participate in all consultative meetings to assist and support NFA in ensuring the industry input is rendered. ■ Partner Support <p>NFA will:</p> <ul style="list-style-type: none"> ■ will actively implement the WCPFC Harvest Strategy Workplan, which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06). ■ will implement a harvest strategy that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points (in line with WCPFC CMM 2014-06). ■ Will encourage the active participation of PNG FIA in WCPFC meetings as part of the PNG delegations ■ Oversee and coordinate the Annual tuna management plan technical advisory committee meeting and workplan ■ Oversee implementation of National Tuna Management & Development Plan (NTMDP) review, if required ■ oversee and facilitate the NFA/industry consultation and awareness on this condition. ■ oversee and coordinate the participation of multi-stakeholders in the consultation on this condition
	<p>Expected outcome:</p>	<p>PNG FIA been engaged in and supportive of the process for the development of a harvest strategy for bigeye</p> <ul style="list-style-type: none"> ■ Communicated a “PNG FIA position on Harvest Strategies – WCPFC” to PNG delegation. ■ Progress of Workplans ■ Meeting Records/Minutes

		<ul style="list-style-type: none"> ■ Country report to SC, TCC or WCPFC ■ National assessment and reporting program includes component of PI ■ National Country Report on Catch and Effort, CPUE reports and Stock Assessment Reports and analysis to report against PI
	Responsible Party/ies:	PNG-FIAG and NFA
Consultation on condition	See letter attached	

9.5.2.2 Condition 1-6 (PI 1.2.2) Bigeye

Performance Indicator	PI 1.2.2
Score	60
Justification	See rationale for PI 1.2.2 (Bigeye)
Condition	<p>By the second surveillance audit (Extended to June 2023) the client must be in a position to demonstrate that the SG80 requirements for bigeye tuna have been met:</p> <p>SI a) 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.</p> <p>SI b) evidence that the selection of the harvest control rules are robust to address the main uncertainties.</p> <p>SI c) the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</p> <p><i>Via the 2019 MSC-approved Mega Variation CABs agreed to align the condition milestones for the WCPO stocks with the Proposed Revisions to Harvest Strategy Work plan (WCPFC14-2017-DP27_rev2), which indicates the harvest control rule will be adopted in 2021. Consistent with MSC COVID 19 derogation, the proposed timeline has been extended by 6 months to June 2022. Following the second MSC Covid 19 derogation, the condition timeline is extended 12 additional months to June 2023.</i></p> <p><i>Given the current timeline assessment, the fishery is set to be certified by Q3 2021, to align with the harmonized milestones SCS will aim to either (a) conduct surveillances in June, a few months prior to the anniversary date or (b) conduct an expedited audit outside of the surveillance cycle to assess progress on Principle 1 conditions by June 2023.</i></p>
Milestone Year 1	Year 1 : the client will provide evidence that it is actively working to ensure that well defined HCRs are in place for bigeye tuna that a) reduce the exploitation rate as the PRI is approached, and are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, b) have been selected so that they are robust to the main uncertainties, c) and are appropriate and effective in achieving the required exploitation levels. This

	<p>evidence will include a summary of the actions taken by the client and other relevant parties to achieve this outcome in alignment with the WCPFC 2017 agreed work plan.</p> <p><i>Expected score: 60</i></p>
<p>Client Action Plan</p>	<p>Activities:</p> <p>PNG FIA will actively support work towards the development and adoption of a harvest strategy for WCPO bigeye that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points.</p> <p>PNG FIA will lead in efforts to co-organize consultation (ie PNG Delegation briefing to PNA, FFC & WCPFC) and country level work (ie management plan reviews) primarily with PNG NFA and also other key stakeholders to progress and drive actions in response to identified shortcomings of the bigeye-Harvest strategy and the suggested approach in the fisheries management and development in the PNG.</p> <p>PNG FIA or industry Participation in Fisheries Management</p> <p>The National Tuna Management & Development Plan has sub-technical advisory committee which includes representative of industry. Accordingly, PNG FIA will work through the industry representative in the committee to encourage, motivate and ensure committee meetings are convened and workplans developed and progress respective actions related to this subject condition.</p> <p>FIA representative on the National Fisheries Board will encourage, motivate and ensure Board meetings give advice and direction to NFA workplans and subject condition progressed with target schedules.</p> <p>Year 1 Actions:</p> <p>Through the channels noted above;</p> <ul style="list-style-type: none"> ■ support the implementation of the WCPFC Harvest Strategy Workplan which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06). ■ advocate for a harvest strategy that includes well defined harvest control rules taking into account the main uncertainties for bigeye tuna that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. ■ will actively support work towards the development and adoption of a harvest strategy for WCPO bigeye that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points. ■ PNG FIA will advocate that PNA establish more explicit linkages between total allowable effort (TAE) of the VDS and the harvest strategy (effort limited to that which maintains the stock at target reference point), including reductions in PAE as the limit reference point is neared.

		<ul style="list-style-type: none"> ■ Undertake a workplan to review national management plans and PNG’s work with the PNA parties, FFA parties and WCPFC partners to have this issue’s subregional & regional workplan progressed. ■ PNG to inform of its country level workplan to SC and TCC. And work with the subregional groups to make recommendations at the SC to progress work in addressing this issue. ■ Review National Tuna Development & Management Plan (NTDMP) and have alignment mechanism (schedule) to reflect harvest control rules (HCRs) in place, if required. <p>FIA will:</p> <ul style="list-style-type: none"> ■ will actively support the implementation of the WCPFC Harvest Strategy Workplan, which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06). ■ PNG FIA will advocate for a harvest strategy that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points (in line with WCPFC CMM 2014-06). ■ PNG FIA will actively support work towards the development and adoption of a harvest strategy for WCPO bigeye that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target references points. ■ Support NFA in facilitating and coordinating the Annual tuna management plan technical advisory committee meeting draft workplan for NTMDP review, as required. ■ Support NFA in coordinating the NFA/Industry consultation ■ Participate in all consultative meetings to assist and support NFA in ensuring the industry input is rendered. ■ Partner Support <p>NFA will:</p> <ul style="list-style-type: none"> ■ will actively implement the WCPFC Harvest Strategy Workplan, which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06). ■ will implement a harvest strategy that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points (in line with WCPFC CMM 2014-06). ■ Will encourage the active participation of PNG FIA in WCPFC meetings as part of the PNG delegations
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		<ul style="list-style-type: none"> ■ Oversee and coordinate the Annual tuna management plan technical advisory committee meeting and workplan ■ Oversee implementation of National Tuna Management & Development Plan (NTMDP) review, if required ■ oversee and facilitate the NFA/industry consultation and awareness on this condition. ■ oversee and coordinate the participation of multi-stakeholders in the consultation on this condition
	Expected outcome:	<ul style="list-style-type: none"> ■ PNG FIA been engaged in and supportive of the process for the development of a harvest strategy for bigeye ■ Communicated a “PNG FIA position on WCPFC Harvest Strategies” to PNG delegation country position formation. ■ Progress of Workplans ■ Meeting Records/Minutes of PNG FIA participation in consultation on the subject. ■ Country report to SC, TCC or WCPFC ■ National assessment and reporting program includes component of PI ■ National Country Report on Catch and Effort, CPUE reports and Stock Assessment Reports and analysis to report against Performance Indicator ■ Management & Evaluation Outcomes report
	Responsible Party/ies:	PNG-FIA and NFA
Milestone Year 2	<p>Year 2 : Evidence that Harvest Control Rules adopted meeting requirements detailed in previous milestones. <i>Expected score: 80</i></p>	
Client Action Plan	Activities:	<p>Years 2</p> <ul style="list-style-type: none"> ■ PNG FIA actively support work towards the adoption and institution in 2022 of a harvest control rule for WCPO bigeye that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points. ■ PNG FIA will advocate that PNA establish more explicit linkages between total allowable effort (TAE) of the VDS and the harvest strategy (effort limited to that which maintains the stock at target reference point), including reductions in PAE as the limit reference point is neared. ■ PNG FIA will demonstrate that the WCPFC has well defined and effective harvest control rules taking into account the main uncertainties are in place for bigeye that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.

		<ul style="list-style-type: none"> ■ National industry consultation meeting. <p>PNG FIA support and advocacy will largely be through active participation in WCPFC meetings as part of the PNG delegation. Such participation will include communicating specific desired policies to support meeting this condition.</p> <p>NFA will also advocate and support these conditions being met through active participation in PNA, FFA and WCPFC initiatives.</p> <p>FIA will:</p> <ul style="list-style-type: none"> ■ will actively support the implementation of the WCPFC Harvest Strategy Workplan, which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06). ■ PNG FIA will advocate for a harvest strategy that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at or near target reference points (in line with WCPFC CMM 2014-06). ■ PNG FIA will actively support work towards the development and adoption of a harvest strategy for WCPO bigeye that includes management action responses to changes in bigeye stock status and ■ SCS Global Services Report ■ Version 4-0 (September 2017) © SCS Global Services Full Assessment Report MSC V2.0 Page 283 ■ harvest control rules aimed at maintaining the WCPO bigeye stock at or near target references points. ■ Support NFA in facilitating and coordinating the Annual tuna management plan technical advisory committee meeting draft workplan for NTMDP review, as required. ■ Support NFA in coordinating the NFA/Industry consultation ■ Participate in all consultative meetings to assist and support NFA in ensuring the industry input is rendered. ■ Partner Support <p>NFA will:</p> <ul style="list-style-type: none"> ■ will actively implement the WCPFC Harvest Strategy Workplan, which establishes a process and timeframes to adopt a harvest strategy for WCPO bigeye tuna (in line with WCPFC CMM 2014-06). ■ will implement a harvest strategy that includes management action responses to changes in bigeye stock status and harvest control rules aimed at maintaining the WCPO bigeye stock at
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		<p>or near target reference points (in line with WCPFC CMM 2014-06).</p> <ul style="list-style-type: none"> ■ Will encourage the active participation of PNG FIA in WCPFC meetings as part of the PNG delegations ■ Oversee and coordinate the Annual tuna management plan technical advisory committee meeting and workplan ■ Oversee implementation of National Tuna Management & Development Plan (NTMDP) review, if required ■ oversee and facilitate the NFA/industry consultation and awareness on this condition. ■ oversee and coordinate the participation
	Expected outcome:	<p>PNG FIA been engaged in and supportive of the process for the development of a harvest strategy for bigeye</p> <ul style="list-style-type: none"> ■ Communicated a “PNG FIA position on Harvest Strategies – WCPFC” to PNG delegation. ■ Progress of Workplans ■ Meeting Records/Minutes ■ Country report to SC, TCC or WCPFC ■ National assessment and reporting program includes component of PI ■ National Country Report on Catch and Effort, CPUE reports and Stock Assessment Reports and analysis to report against PI ■ Management & Evaluation Outcomes report
	Responsible Party/ies:	PNG-FIA and NFA
Consultation on condition	See Attached support letter	

10 Client Action Plan

Refer to previous section

11 Client Action Plan Support Letter



NATIONAL FISHERIES AUTHORITY
Monitoring Control & Surveillance

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Stanley Esplanade
PO Box 2016
Port Moresby, N.C.D
Papua New Guinea

Date: 02nd August 2021

Ref: MCS

Team Leader

SCS Global Services
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Dear Gabriela,

Subject: NFA Support of FIA PNG' Client Action Plan

We, NFA, support the Client Action Plan of FIA PNG to comply with the MSC certification of bigeye tuna that is being assessed by SCS Global Service.

Thank you,

Gisa KOMANGIN
Executive Manager, MCS

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12 Surveillance

The surveillance program is expected to be set at Level 6: Default Surveillance. This was confirmed by the publication of the PCR and will not change with the scope extension.

Table 15. Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
1-4	On-site audit	2 or more auditors	In accordance with FCPV2.2 7.23.4 and based on the number of conditions and information needed to verify progress. Note, the on-site audit may not necessarily include in person meetings with representatives of all management systems relevant to the UoA.

Table 16. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
2021	May 8	Within six months of the certificate anniversary date	To be held in compliance with timing requirements put forth in FCRV2.2 7.23.6

Table 17. Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit

13 Harmonised fishery assessments

13.1.1 Principal 1

Principle 1 tuna fisheries in the WCPO have been the subject of several harmonization discussions. In 2016 CAB representative and team members participated in a Harmonization Workshop, which resulted in agreed scores for Principle 1 for the yellowfin tuna, albacore, and skipjack tuna stocks in the western Pacific managed by the Western and Central Pacific Fisheries Commission (WCPFC). The harmonization outcome report was peer-reviewed, the details of which can be provided upon request.

Following the 2016 Harmonization Workshop, CABs have reviewed new information, participated in harmonization discussions and adjusted rationales, and relevant scores. The sections below describe

subsequent harmonization discussions in which SCS participated. Currently, all scores are harmonized except for some minor differences in the SG80-100 bracket. These differences do not affect the overall outcome of the Principle 1 assessment.

In 2018, in recognition of different timelines to address Principle 1 conditions across MSC certified tuna fisheries, the MSC required all tuna and tuna-like fisheries (herein, tuna fisheries) certified against MSC Fisheries Standard v1.3 to update to v2.0. Additionally, there are requirements to harmonize timelines for P1 conditions (limited to those concerning harvest strategies and harvest control rules). For the WCPO, timelines are aligned against the WCPFC 2017 work plan.

In 2020 in response to the Covid-19 Derogation issued by MSC, six months was added to all fishery conditions, including harmonized conditions.

Bigeye

This fishery overlaps with several other WCPO bigeye tuna fisheries in the MSC programme (Table 18).

Table 18 Fisheries in the MSC System Considered for Harmonization for Principle 1 for bigeye stocks as of October 2021.

Fishery name	CAB	Report Version	1.1.1	1.1.2	1.2.1	1.2.2	1.2.3	1.2.4
Standard v2.0/2.01								
Australian Eastern Tuna and Billfish Fishery	q.inspecta GmbH	PCR Aug 2020	100	n/a	70	60	90	95
Fiji Albacore, Yellowfin and Bigeye Tuna longline	LR	PCR Nov 2020	100	n/a	70	60	90	95
Kiribati albacore, bigeye and yellowfin tuna longline fishery	Control Union	PCR Jan 2021	100	n/a	70	60	90	95
MIFV RMI EEZ Longline Yellowfin and Bigeye Tuna	Control Union	SV1 May 2021	90	n/a	70	60	90	90
Owasebussan Co. Ltd. North Pacific Longline Tuna Fishery for Albacore, Yellowfin Tuna & Bigeye Tuna	SCS	PCR Feb 2021	100	n/a	65	60	85	95
Pan Pacific yellowfin, bigeye and albacore longline fishery	Control Union	PCR May 2020	100	n/a	70	60	90	100
PNA Western and Central Pacific skipjack, yellowfin and bigeye tuna purse seine fishery (FAD and non-FAD sets)	Lloyds Register	PCDR July 2021	90	n/a	70	60	90	90
SZLC CSFC & FZLC FSM EEZ Longline Yellowfin and Bigeye Tuna Fishery	Control Union	SV2 April 2020	100	n/a	70	60	90	100

SZLC, CSFC & FZLC Cook Islands EEZ albacore, yellowfin and bigeye longline fishery	Control Union	PCDR May 2020	100	n/a	70	60	90	100
Micronesia Skipjack, Yellowfin and Bigeye Tuna Purse Seine Fishery	Control Union	PCDR May 2021	90	n/a	70	60	90	90
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register	PCDR July 2021	90	n/a	70	60	90	90
Nauru Skipjack, Yellowfin, and Bigeye Tuna Purse Seine Fishery	SCS	ACDR Sep 2021	≥ 80	n/a	60-79	60-79	≥ 80	≥ 80
US Pacific Tuna Group Purse Seine FSC and FAD Set Fishery	SCS	PCDR October 2021	90	n/a	70	60	90	90
PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery (This Fishery)	SCS	Final Report October 2021	90	n/a	70	60	90	90
MSC Harmonized SCORE (Feb 2021)	SCS, Lloyd's Registry, DNV, and CU		90	n/a	70	60	90	90

*Unlike for other WCPFC stocks, there was no harmonized score produced in the 2016 Harmonization meetings

There are differences in scores for PI 1.1.1 and 1.2.3. The scores for this fishery for PI 1.1.1 are based on previous harmonized scores from 2020. In 2021, LR assessments downscored PI 1.1.1 from 100 to 90

Table 19 Overlapping fisheries WCPO Bigeye

Supporting information
Describe any background or supporting information relevant to the harmonisation activities, processes and outcomes.
<p>2020 Activities: SCS proposed down scoring PI1.2.4 SI e from 100 to 80 on the justification that the last external review was conducted in 2012. This change does not result in PI 1.2.4 falling below a score of 80 nor will Principal 1 fall below a score of 80.</p> <p>February 2021 Activities: With the adoption of the 2020 WCPO bigeye tuna stock assessment by the WCPFC in December 2020, harmonization discussions amongst CABs were reinitiated via email in January 2021 with the new assessment forming the basis of the scoring. After a thorough vetting of differences in scoring CABs reached agreement on scores for the WCPO bigeye tuna stock; PI1.1.1=90, PI1.2.1=70, PI1.2.2=60, PI1.2.3=90, and PI1.2.4=90. There may be some scoring differences until CABs can re-score certified fisheries in subsequent assessments.</p>

September 2021: Based on comments received from stakeholders and Peer Reviewers, the proposal to downcore for PI 1.2.3 SI a, from 100 to 80 was reviewed with P1 assessors via email. P1 assessors rejected proposal to downcore PI 1.2.3 SIa, on the basis that despite the uncertainties in stock boundaries in the Pacific/limited knowledge of sub-regional population structure there is a comprehensive range of information on stock structure of BET that meets the SG100	
Was either FCP v2.1 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	Yes
Date of harmonisation meeting	Communication via email on June 2020, communication via email on Feb 2021
Agreement was reached, and lowest score was adopted of 95 for PI 1.2.4, CABs agreed to update scores in subsequent audits.	

14 Objection Procedure

To be added at Public Certification Report stage

15 Vessel list for the UoA

Table 20 Vessels included in the Unit of Certification

Status	#	Vessel Name	IRCS	Flag State	Flag Registration
Certified	1	Alpine Rose	P2V4189	PG	000-937
Certified	2	Amaryllis 88	P2V5709	PG	00-1594
Certified	3	Atun Kalap	P2V5615	PG	00-1461
Certified	4	Atun Planti	P2V5616	PG	00-1460
Certified	5	Atun Sta	P2V5621	PG	00-1476
Certified	6	Camia 888	P2V5056	PG	932
Certified	7	Cherry Blossoms 88	P2V5068	PG	000-948
Certified	8	Cromwell 1 (formerly Glory Pacific No.1)	V6PC1 P2V5630	FM (PG)	VR01712 00-1488
Certified	9	Cromwell 101 (formerly Glory Pacific 101)	V6PC101 (P2V5742)	FM (PG)	VR017 100-1649
Certified	10	Discovery 101	DUCK	PH	05-0000237
Certified	11	Discovery 102	4DET8	PH	11-0000340
Certified	12	Discovery 105	4DFB8	PH	11-0001005
Certified	13	Dolores 737	4DFB9	PH	12-0002054
Certified	14	Dolores 787	P2V5642	PG	00-1513
Certified	15	Dolores 838	DUL6785	PH	12-0000179
Certified	16	Dolores 839 (Change flag PG to PH)	4DEF-7 (P2V5664)	PH (PG)	12-0003458 (1553)
Certified	17	Dolores 849	4DEF-6	PH	12-0000110

PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery, Scope Extension Report

Certified	18	Dolores 858	DUFO	PH	10-0002817
Certified	19	Dolores 859	DUGM	PH	10-0003031
Certified	20	Dolores 865	DUGC	PH	10-0003054
Certified	21	Dolores 869	DUHQ	PH	10-0003090
Certified	22	Dolores 870	DUID	PH	13-0001621
Certified	23	Dolores 872	DUIE	PH	13-0001622
Certified	24	Dolores 878	DUM-3170	PH	12-0001818
Certified	25	Gabrielle L T	4DFC-5	PH	00-0002559
Certified	26	Gardenia	DUL6827	PH	12-0001655
Certified	27	John Reynald	DUQA-7	PH	12-0001599
Certified	28	Lauren Marie Taylor	DUA-6679	PH	00-0003069
Certified	29	Martina Marie	DUTN-9	PH	04-0000827
Certified	30	Mistletoe 888	DUL6384	PH	12-0001572
Certified	31	Naoero Star (formerly Majestic Star) – PNG flag to NA flag	C2AA2 (P2V5611)	NA (PG)	NMA-10011890 (00-1464)
Certified	32	Naoero Sun (formerly Majestic Sun) – PNG flag to NA flag	C2AB2 (P2V5610)	NA (PG)	NMA-10021890 (00-1463)
Certified	33	Pacific Journey No.101 (formerly Pacific Journey No.1) – PNG flag to FM flag	V6KPJ101 (P2V5601)	FM (PG)	VR0166 (00-1445)
Certified	34	Pacific Journey No.8 (formerly Pacific Journey No.888) – PNG flag to FM flag	V6KPJ8 (P2V5602)	FM (PG)	VR0164 (00-1446)
Certified	35	Princess Janice 168	DYUW	PH	120001653
Certified	36	Purple Beauty 888	DUE6131	PH	00-0002671
Certified	37	Queen Evelyn 168	DUL-6968	PH	120001654
Certified	38	Queen Jenny No. 138	4DET-6	PH	120001831
Certified	39	Queen Jina 101	DUIY	PH	120003015
Certified	40	Resty B T	DUTN7	PH	00-0000460
Certified	41	Rose Marie	DUTG-7	PH	00-0000323
Certified	42	Sophia Martina	4DFC-6	PH	00-0002560
Certified	43	Sunflower 8	DUE6208	PH	00-0003240
Certified	44	Tobias Miguel	4DFC-7	PH	00-0002561
Certified	46	Alpine Pink	DUA6114	PH	00-0002010
Certified	47	Gardenia 888	P2V5654	PG	00-1539
Certified	48	Golden Sapphire 88	P2V5655	PG	NMA-1019 (00-1538)
Certified	49	Kaile 888 (PNG flag to NA)	C2AQ2 (P2V5666)	NA (PG)	00-1410
Certified	50	Kwila 888	P2V5624	PG	00-1470
Certified	51	Lavender 888	P2V5406	PG	00-1227
Certified	52	Malva 888 (PNG flag to NA flag)	C2AR2 (P2V5627)	NA (PG)	NMA-1020 (00-1481)

PNG Fishing Industry Association's purse seine Skipjack & Yellowfin Tuna Fishery, Scope Extension Report

Certified	53	Marita 88 (PNG flag to NA flag)	C2AS2 (P2V5580)	NA (PG)	NMA-1021 (1422)
Certified	54	Milflores 888	P2V5653	PG	00-1540
Certified	55	Niupelalip No. 8	P2V5491	PG	00-1322
Certified	56	Nupla Kanu	P2V5606	PG	00-1456
Certified	57	Nupla Kumul	P2V5636	PG	00-1505
Certified	58	Nupla Solwara	P2V5603	PG	00-1449
Certified	59	Orchids 888	DUL6383	PH	12-0000940
Certified	60	Pink Carnation 88	P2V5045	PG	000-905
Certified	61	Purple Lilac 888	P2V5408	PG	00-1210
Certified	62	Red Robin 888	P2V5125	PG	00-1003
Certified	63	Red Tulip 888	P2V5278	PG	00-1121
Certified	64	Silver Queen	DUA6088	PH	00-0001398
Certified	65	Simbun 88 - PNG flag to NA flag	C2AT2 (P2V5605)	NA (PG)	NMA-1022 (1450)
Certified	66	FV Sokei	P2V5669	PG	00-1542
Certified	67	Dolores 873	4DJB-5	PH	05-0003290
Certified	68	FB Treska	DUG9015	PH	00-0002818
Certified	69	FV Chenille	DUG9082	PH	00-0002267
Certified	70	Jasmin 888	DUE-6325	PH	00-0003917
Certified	71	Joe Turner	DYUD	PH	00-0003935
Certified	72	John Fisher	DUTT	PH	00-0003936
Certified	73	Kamilah	DUM-3346	PH	12-0002957
Certified	74	Mavienne	DUM-3347	PH	12-0002975
Certified	75	Queen Evelyn 101	DUK-2237	PH	12-0003554
Certified	76	Fair Bravo No. 707	BL2116	TW	CT8-0116
Certified	77	Fair Well No. 707	BL2127	TW	CT8-0127
Certified	78	New Fair Discovery No. 707	BL2099	TW	CT8-0099
Certified	79	Viva Fafa No. 707	BEBT	TW	CT8-0065
Certified	80	Win Forever No.707	BL2131	TW	CT8-0131
Certified	81	Win Rich No. 707	BL2132	TW	CT8-0132
Certified	82	Viva Gogo 707	YJRJ6	VU	1214
Certified	83	Win Best 707	YJWG3	VU	2455
Certified	84	Win Harvest 707	YJWG4	VU	2456
Certified	85	Win Win 707	YJTV8	VU	2324

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A controlled document list of MSC program documents is available on the [MSC website](http://msc.org) (msc.org).

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