Sargen Fish Port Tuna Handline Fishing Association, Inc. Yellowfin and Bigeye Tuna Fishery in the Philippine Fisheries Management Areas 2 and 3

Pre-Assessment Report

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Assessment type	Pre-assessment
Date	June 2023

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2 Glossary

Acronym	Definition
ACDR	Announcement Comment Draft Report
B0	Equilibrium unexploited total biomass
BET	Bigeye Tuna
BFAR	Bureau of Fisheries and Aquatic Resources
$BF_{current}$	Equilibrium total biomass at Fcurrent
B_{init}	Initial biomass at the start of the stock assessment model (for the albacore assessment, B1960)
B_{MSY}	Equilibrium total biomass at MSY
BUM	Pacific Blue Marlin
CA	Convention Area
CAB	Conformity Assessment Body
CBD	Convention on Biological Diversity
CCM	WCPFC Commission Members, Cooperating Non-Members, and participating Territories
CFVGL	Commercial Fishing Vessel and gear License
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMM	WCPFC Conservation and Management Measure
CoC	Chain of Custody
CPUE	Catch per Unit Effort
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DOTC	Department of Transportation and Communication
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
EO	Executive Order
EPO	Eastern Pacific Ocean
ETP	Endangered, Threatened and Protected
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization
FARMC	Fisheries and Aquatic Resource Management Council
FB or F/B	Fishing Boat
FCP	Fisheries Certification Process
FMA	Fisheries Management Areas
FMB	Fisheries Management Board
HCR	Harvest Control Rule

Acronym	Definition
IATTC	Inter-American Tropical Tuna Commission
IPI	Inseparable or Practicably Inseparable catches
IUU	Illegal, Unreported and Unregulated fishing
LGU	Local Government Unit
LRP	Limit Reference Points
M	Natural mortality
MARINA	Maritime Industry Authority
MFARMC	Municipal Fisheries and Aquatic Resource Management Council
NFRDI	National Fisheries Research and Development Institute
NTC	National Telecommunication Commission
NTMP	National Tuna Management Plan
OFP	Oceanic Fisheries Program
PCG	Philippine Coast Guard
PI	Performance Indicator
RA	Republic Act
RBF	Risk-Based Framework
RFMO	Regional Fisheries Management Organization
SA	Spawning Abundance
SAC	Scientific Advisory Committee
SB_0	Equilibrium unexploited spawning potential
$SBF_{current}$	Average current spawning potential in the absence of fishing
SB_{init}	Initial spawning potential at the start of the stock assessment model (for the albacore assessment, SB1960)
SBR	Spawning Biomass Ratio
SC	Scientific Committee
SEAPODYM	Spatial Ecosystem and Population Dynamics Model
SFFAII	SOCSKSARGEN Federation of Fishing and Allied Industries Inc
SFPTHFAI	Sargen Fish Port Tuna Handline Fishing Association, Incorporated
SI	Scoring Issue
SIDS	Small Island Developing States
SKJ	Skipjack
SOCCSKSARGEN	South Cotabato, Cotabato, Sultan Kudarat, Sarangani, General Santos
SP	Spawning Biomass
SPC	Secretariat of the Pacific Community
TCC	Technical and Compliance Committee
TMC	Tenpoint Manufacturing Corporation
TRP	Target Reference Points

Acronym	Definition
UNCLOS	United Nations Convention on the Law of the Sea
UoA	Units of Assessment
UoC	Units of Certification
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WPEA	West Pacific East Asia
YFT	Yellowfin Tuna

3 Executive Summary

This report presents the result of the pre-assessment study using Marine Stewardship Council (MSC) Standard v2.01 of the yellowfin (*Thunnus albacares*) and bigeye (*Thunnus obesus*) handline fishery operations in the Fisheries Management Areas (FMAs) 2 and 3 in the Philippines of the members of Sargen Fish Port Tuna Handline Fishing Association, Incorporated (SFPTHFAI) with the end-goal of having the fishery MSC certified. This is initiated and supported by the members of the Fresh Frozen Seafood Association of the Philippines (FFSAPI) who are buyers of SFPTHFAI. With the intent to maintain their competitiveness in the global market, especially in this time of pandemic, FFSAPI members urged the members of SFPTHFAI to have the fishery certified as soon as possible. As a result, 18 members of SFPTHFAI committed to be part of this initiative by enrolling 42 of their Philippine-flagged handline vessels operating in the Fisheries Management Areas 2 and 3 of the Philippines targeting yellowfin and bigeye tunas.

The pre-assessment is done by Rosanna Bernadette Contreras, the engaged Consultant for the project. She has been the Executive Director of the Socsksargen Federation of Fishing and Allied Industries, Inc for over 10 years, thus, she is very accustomed with the fishery. She is also the Chairperson of the Asian Seafood Improvement Collaborative (ASIC), thus adept in the formulation of improvement tools and initiatives in the region, and a regular member of the Philippine delegation to meetings in the tuna regional fisheries management organizations like the Western and Central Pacific Fisheries Commission and Indian Ocean Tuna Commission.

This preassessment was then reviewed by Key Traceability, a UK based consultancy specializing in MSC assessments and FIPs. The review was completed by Kat Collinson and Tom Evans, both listed technical consultants on the MSC register.

In general, with the highly selective nature of the fishery, there is a great potential to pass certification with conditions relating to adoption of harvest strategy and harvest control rules at the regional level. The target stocks, yellowfin and bigeye are not overfished and do not experience overfishing. Necessary legal framework and fishery-specific objectives and plan, both at the national and regional levels, are in place to support the sustainability of the fishery.

However, the inability to provide catch reports or log sheets that can be verified through VMS tracks, validation upon loading, and the like, renders too much uncertainty in the fishery, specially its impact on by-catch species and bait fishery, interaction with endangered, threatened and protected species. There are identified areas for research such as impacts of use of fish aggregating devices in habitats, biological and economic studies and ecosystem modelling to obtain more information on the fishery. Compliance and enforcement of laws are areas for improvement. Not unless these are addressed, the fishery may not be certified. Thus, there is a need for an improvement of the fishery in order to pass certification.

The Philippines abides to internationally binding and non-binding treaties such as the United Nations Convention on the Law of the Seas (UNCLOS) and Food and Agriculture Organizations' Agreement to Promote Compliance with International Conservation by Fishing Vessels on the High Seas. At the WCPFC, Philippines, as a member, signed the Convention Text which provided framework to ensure sustainability of fisheries without jeopardizing rights of small fishers and small island developing states. The Philippine Fisheries Code of 1998 amended by Republic Act 10654, an Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, provides legal framework that protects the rights of fishers while conserving and maintaining sustainability of the fishery in the light of providing food security. The National Tuna Management Plan of 2018 provides for fishery-specific goals and objectives for the tuna industry using the Ecosystem Approach to Fishery Management. However, while adjudication and dispute settlement mechanism are in place and even if BFAR MCS efforts have improved in the recent years, there still remains room for improvement to ensure compliance to rules and regulations specially by the handline industry. Public-private concerted effort is needed to improve on this aspect.

4 Report Details

4.1. Aims and Constraints of the Pre-assessment.

The report aims to provide a pre-assessment of the handline fishery of the Sargen Fish Port Handline Fishing Association, Inc. using the MSC Fisheries Certification Process V2.01. Identified gaps and barriers will be subject of the fisheries improvement project of the fishery.

The availability of operational data and data on the target species, by-catch and ETP species poses as the major constraint of this assessment based on the very limited information provided. There is no way yet to verify data if ever available.

4.2. Version Details

Table 1 – Fisheries Program Documents Versions

Document	Version number
MSC Fisheries Certification Process	**Version 2.1**
MSC Fisheries Standard	**Version 2.01**
MSC Pre-Assessment Reporting Template	**Version 3.2**

4.3. Full Assessment Process

Full Assessment for MSC Certification is a multi-step process approach involving stakeholders of the fishery. It may take as much as 8 months or as long 18 months, averaging 12 months. The process involves the following steps:

4.2.1. Application for Full Assessment By SFPTHAI
4.2.2. Submission of SFPTHAI Document Checklist
4.2.3. Confirmation of Scope
4.2.4. Determination of the Scope of Assessment: Unit of Assessment and Unit of Certification
4.2.5. Team Selection by the CAB
4.2.6. Preparation for the Announcement Comment Draft Report (ACDR)
4.2.7. Determination of Eligibility Dates
4.2.8. Determination of the Traceability Systems and Point at which Fish and Fish Products enter further certified Chains of Custody
4.2.9. Announcement of Comment Draft Report
4.2.10. Decision to Proceed to Announcement by the SFPTHAI
4.2.11. Announcement of Fishery Assessment
4.2.12. Submission of Assessment Timelines
4.2.13. Peer Review
4.2.14. Stakeholder Input on the ACDR
4.2.15. Site Visits, Collection of Stakeholder Input and Information
4.2.16. Scoring the Fishery
4.2.17. Setting Conditions
4.2.18. Preparation and Review of Client and Peer Review Report
4.2.19. Preparation of Public Comment Draft Report
4.2.20. Determination of any Changes and Comments
4.2.21. Preparation and Publication of the Final Draft Report
4.2.22. Objection Procedure
4.2.23. Preparation and Publication of Public Certification Report
4.2.24. Certification Decision and Certificate Issue

MSC Certification lasts up to 5 years during which the fishery should be able to make necessary improvements required as conditions of certification. Annual Audits will be conducted to examine significant changes in the physical environment or in the management of the fishery. When the certification is about to expire, the fishery will need to undergo reassessment which can be on a full-scale or reduced scale-based meeting a set criterion.

5 Units of Assessment

5.1. Units of Assessment

The Unit of Assessment includes the yellowfin and bigeye tuna caught by handline vessel operators who are members of the Sargen Fish Port Handline Tuna Fishing Association Inc. (SFPHTFAI).

Based on the survey conducted, the fishery under assessment is found to meet the following scope requirements relative to MSC Fisheries Standard FCP v2.1 7.4 as it:

- Does not target amphibians, birds, reptiles, or mammals.
- Does not use poisons or explosives.
- Does not operate under a controversial unilateral exemption to an international agreement.
- Does not include an entity that has been successfully prosecuted for a forced or child labor violation in the last 2 years.
- Has a mechanism for resolving disputes and disputes do not overwhelm the fishery?
- Is not an enhanced fishery per MSC FCP 7.4.6; and,
- Is not an introduces species-based fishery per MSC 7.4.7.

Based on available information, the following are the proposed UoAs as described in Table 2.

Table 2 – Units of Assessment (UoAs)

UoA 1	
Species	Yellowfin Tuna (*Thunnus albacares*)
Stock	Western and Central Pacific Ocean (WCPO) Yellowfin Tuna
Fishing gear type(s) and, if relevant, vessel type(s)	Handline (hook and line) Vessels
Client group	Sargen Fish Port Handline Tuna Fishing Association Inc.
Other eligible fishers	Other Handline Vessels licensed and registered in the Philippines
Geographical area	Philippine Fisheries Management Area 2 and Fisheries Management Area 3
UoA 2	
Species	Bigeye Tuna (*Thunnus obesus*)
Stock	Western and Central Pacific Ocean (WCPO) Bigeye Tuna
Fishing gear type(s) and, if relevant, vessel type(s)	Handline (hook and line) Vessels
Client group	Sargen Fish Port Handline Tuna Fishing Association Inc.
Other eligible fishers	Other Handline Vessels licensed and registered in the Philippines
Geographical area	Philippine Fisheries Management Area 2 and Fisheries Management Area 3
Other eligible fishers	Other Handline Vessels licensed and registered in the Philippines
Geographical area	Philippine Fisheries Management Area 2 and Fisheries Management Area 3

6 Traceability and Eligibility

6.1. Traceability within the Fishery

The tuna fishery is governed by BFAR's Administrative Circular 251 Series of 2014 on Traceability system for fish and fishery products.

Table 3 – Traceability within the Fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? If yes, please describe: - If this may occur on the same trip, on the same vessels, or during the same season. - How any risks are mitigated.	Only hook and line is used in this fishery.
Will vessels in the UoC also fish outside the UoC geographic area? If yes, please describe: - If this may occur on the same trip. - How any risks are mitigated.	The vessels do not fish outside of FMA2 and FMA3. Other FMAs are too distant from General Santos home port.
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities. - Transport - Storage - Processing - Landing - Auction If yes, please describe how any risks are mitigated.	To be determined
Does transshipment occur within the fishery? If yes, please describe: - If transshipment takes place at sea, in port, or both. - If the transshipment vessel may handle product from outside the UoC. - How any risks are mitigated.	Transshipment at-sea occurs within the fishery. Mitigation measures need to be established.
Are there any other risks of mixing or substitution between certified and non-certified fish? If yes, please describe how any risks are mitigated.	There is probability of mixing catches upon landing. Thus, mitigation measures should be established.

7 Pre-Assessment Results

7.1. Overview of Pre-Assessment Results

7.1.1. Overview

Under Principle 1, with yellowfin tuna and bigeye tuna in good health condition based on the latest stock assessments, the fishery can pass full assessment with conditions until such time harvest strategy and harvest control rules for the fishery under assessment are adopted by the Western and Central Pacific Fisheries Commission (WCPFC). A work plan toward the adoption is in place.

The selective nature of the fishery presupposes that it may have a lower impact on its non-target species, ETP species, the habitat and the ecosystem as a whole. However, since the fishery was not able to provide logsheets, non-target and ETP species cannot be determined with certainty.

For purposes of establishing possible by-catch in the absence of logsheets, information from National Stock Assessment Program monitoring was used for possible identification of primary and secondary by-catch species. WCPFC Scientific Committee paper in 2020 entitled, “Relative abundance of yellowfin tuna for the purse seine and handline fisheries operating in the Philippines Moro Gulf (Region 12) and High Seas Pocket #1,” provided the average species composition of the handline fishery in Region 12 from 2004 to 2019, where the fishery under assessment is a part of.

There are very limited studies specific to the fishery. There is no way to obtain information on whether the fishery interacts with ETP species. Without vessel monitoring measures in place and proof of landing validations there is no way to triangulate information if ever available. Thus, complying with performance indicators of Principle 2 poses a serious challenge. The fishery needs to work on to provide enough information that can be verified.

MSC standards require verifiability of information. For MSC, information derived from observer programs, electronic monitoring of locations/positions such as that from vessel monitoring system, technologies to monitor impact or compliance (ex. cameras), and information from independent research projects or programs are considered to have higher level of verifiability or lower bias compared to information derived from logbooks, interviews from fishers and information obtained from co-management and community-based management.

Under Principle 3, the Philippines abides to internationally binding and non-binding treaties such as the United Nations Convention on the Law of the Seas (UNCLOS) and Food and Agriculture Organizations’ Agreement to Promote Compliance with International Conservation by Fishing Vessels on the High Seas. At the WCPFC, Philippines, as a member, signed the Convention Text which provided framework to ensure sustainability of fisheries without jeopardizing rights of small fishers and small island developing states. The Philippine Fisheries Code of 1998 amended by Republic Act 10654, an Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, provides legal framework that protects the rights of fishers while conserving and maintaining sustainability of the fishery in the light of providing food security. The National Tuna Management Plan of 2018 provides for fishery-specific goals and objectives for the tuna industry using the Ecosystem Approach to Fishery Management. However, while adjudication and dispute settlement mechanism are in place and even if BFAR MCS efforts have improved in the recent years, there still remains room for improvement to ensure compliance to rules and regulations specially by the handline industry. Public-private concerted effort is needed to improve on this aspect.

7.1.2. Recommendations

To proceed to full assessment by a CAB and ensure successful certification process the following are recommended:

- Monitoring and lobbying for the adoption of harvest strategy and harvest control rules of the fishery at the Western and Central Pacific Fisheries Commission by actively participating in WCPFC meetings and workshops.
- Availing of current Vessel Monitoring System and Electronic Reporting System installation program of BFAR that subsidizes the cost of installation.
- Collaborating with the National Fisheries Research and Development Institute (NFRDI) and the Mindanao State University and other academic and research institutes for the conduct of identified studies that will support the fisheries.
- Training and re-training fishers on logsheet preparation
- Validation of catches upon landing by the Bureau of Fisheries and Aquatic Resources and making the aggregate catch information available to the public
- Exploring possibilities of using electronic technologies for monitoring such as installation of time lapsed camera
- Lobbying for policy formulations or reformulation relating to by-catch management, FAD management and ETP management.
- Formulation of association polices relating to by-catch management, FAD management and ETP management.
- Capacity training for handline fishers relating to by-catch management, FAD management and ETP management.
- Participating in consultative meetings at the National Tuna Industry Council, Fisheries Management Board and City Fisheries and Aquatic Resource Management Councils
- Capacitating fishers by conducting orientations on WCPFC CMMs, BFAR regulations and the like.
- Capacitating law enforcement
- Formulating a Fisheries Improvement Plan to encapsulate needed action to address identified gaps in the fishery, and,
- Engaging a good implementation team to ensure successful implementation, monitoring and evaluation of the improvement plan.

7.2. Summary of Potential Conditions by Principle

Table 4 – Summary of Potential Conditions by Principles

Principle of the Fisheries Standard	Number of PIs with draft scoring ranges <60	Number of PIs with draft scoring ranges 60-79
Principle 1 – Stock Status-Yellowfin Tuna	**0**	**2**
Principle 1 – Stock Status-Bigeye Tuna	**0**	**2**
Principle 2 – Minimizing environmental impacts	**12**	**3**
Principle 3 – Effective management	**1**	**3**

7.3. Summary of Performance Indicator Level Scores

Table 5 – Summary of Performance Indicator Level Scores

Performance Indicator	Draft scoring range	Data deficient?
UoA 1 WCPO Yellowfin Tuna		
1.1.1 – Stock status	**≥80**	**No**
Rationale or key points		
With spawning biomass depletion ratio above LRP with 0% probability of breaching, the WCPO yellowfin stock is above the PRI with high degree of certainty and fluctuates at or around a level consistent with MSY with both recent and latest spawning biomass above 1.		
1.1.2 – Stock rebuilding	**NA**	**No**
Rationale or key points		
There is no need to rebuild WCPO yellowfin tuna. Not applicable.		
1.2.1 – Harvest Strategy	**60 – 79**	**No**
Rationale or key points		
The current strategy achieves objectives set forth in PI 1.1.1 SG 80 however, its responsiveness cannot be assessed without the formalized HCRs by WCPFC.		
1.2.2 – Harvest control rules and tools	**60 – 79**	**No**
Rationale or key points		
Despite the positive assessment of yellowfin stock, without well-defined and understood HCRs in place, its design, robustness and effectivity cannot be evaluated with certainty.		
1.2.3 – Information and monitoring	**≥80**	**No**
Rationale or key points		
Mechanisms to provide and monitor necessary and comprehensive information are in place. However, information of fishery removals at the UoA should be improved.		
1.2.4 – Assessment of stock status	**≥80**	**No**
Rationale or key points		
The 2020 stock assessment of WCPO yellowfin has successfully incorporated additional fishery information of the recent years to include tag-recapture information, biology and population structure and parameters while taking into account the reference points set for the fishery and uncertainties in the evaluation. The assessment was subjected to internal peer review.		
UoA 2 WCPO Bigeye Tuna		
1.1.1 – Stock status	**≥80**	**No**

Rationale or key points		
With estimated recent spawning biomass way above the limit reference points and way above the maximum sustainable level, the stock is above PRI with high degree of certainty and fluctuates around a level consistent with MSY.		
1.1.2 – Stock rebuilding	**NA**	**No**
Rationale or key points		
There is no need to rebuild WCPO BET. Not applicable.		
1.2.1 – Harvest Strategy	**60 – 79**	**No**
Rationale or key points		
The positive current stock assessment indicates effective transitional harvest strategy. However, with the development of well-defined and formalized harvest strategy, its responsiveness cannot be periodically evaluated or reviewed with certainty.		
1.2.2 – Harvest control rules and tools	**60 – 79**	**No**
Rationale or key points		
Without finalized HCRs in the WCPFC, latest stock assessment indicates effectiveness of transitional HCRs to achieve objectives set forth and monitored per CMM 2021-01. A workplan is in place to develop the HCRs.		
1.2.3 – Information and monitoring	**≥80**	**No**
Rationale or key points		
Mechanisms to provide and monitor necessary and comprehensive information are in place. However, information of fishery removals at the UoA should be improved.		
1.2.4 – Assessment of stock status	**≥80**	**No**
Rationale or key points		
The 2020 stock assessment of WCPO bigeye has successfully incorporated additional fishery information of the recent years to include tag-recapture information, biology and population structure and parameters while taking into account the reference points set for the fishery and uncertainties in the evaluation. The assessment was subjected to internal peer review.		
2.1.1 – Primary Outcome	**<60**	**Yes**
Rationale or key points		
Main and minor primary species identified based on NSAP monitoring are not overfished and are not experiencing overfishing, thus highly likely to be above the PRI. However, with unavailability of verifiable catch information, the list of primary species cannot be established. Considering precautionary approach, the PI does not meet the requirements.		
2.1.2 – Primary Management	**<60**	**Yes**
Rationale or key points		
Minor primary species identified by NSAP monitoring have management strategy in place. However, with unavailability of verifiable catch information, the list of primary species cannot be established. Considering precautionary approach, the PI does not meet the requirements.		

2.1.3 – Primary Information	**<60**	**Yes**
Rationale or key points		
Without a verifiable catch data of the fishery, the list of primary fisheries cannot be determined with certainty, thus adequacy of information to assess the UoA impact to primary species and for management purposes cannot be fully assessed. Considering the precautionary approach, the PI does not meet the requirements.		
2.2.1 – Secondary Outcome	**<60**	**Yes**
Rationale or key points		
While there is stock assessment done for one of the minor secondary species identified based on NSAP monitoring, without a verifiable catch data, the list of secondary species cannot be determined with certainty, thus UoA impact to secondary species cannot be fully assessed. Considering the precautionary approach, the PI does not meet the requirements.		
2.2.2 – Secondary Management	**<60**	**Yes**
Rationale or key points		
While there is management strategy in place for one of the minor secondary species identified based on NSAP monitoring, without a verifiable catch data, the list of secondary fisheries cannot be determined with certainty, thus UoA impact to secondary species cannot be fully assessed. Considering the precautionary approach, the PI does not meet the requirements.		
2.2.3 – Secondary Information	**<60**	**Yes**
Rationale or key points		
Based on NSAP monitoring, qualitative and quantitative information on identified minor secondary species can be collected. However, without verifiable catch data from the fishery, the list of secondary species cannot be determined with certainty, thus adequacy of information for impact assessment on secondary species cannot be fully assessed. Considering the precautionary approach, the PI does not meet the requirements.		
2.3.1 – ETP Outcome	**<60**	**Yes**
Rationale or key points		
Without a verifiable catch data from the fishery, the list of ETP species cannot be established with certainty, thus effects of the UoA on ETP population and its direct effects cannot be fully assessed. Considering the precautionary approach, the PI does not meet the requirements.		
2.3.2 – ETP Management	**<60**	**Yes**
Rationale or key points		
While WCPFC has adopted CMMs to protect ETPs in the WCPO, without verifiable catch data from the fishery, the list of ETP species cannot be established with certainty, thus effectiveness of management strategy cannot be fully assessed. Considering the precautionary approach, the PI does not meet the requirements.		
2.3.3 – ETP Information	**<60**	**Yes**
Rationale or key points		
Without verifiable catch data of the fishery, neither qualitative nor quantitative information can be gathered to estimate impact of UoA on ETP mortality that support management strategy. Thus, information adequacy for impact assessment and management of ETPs cannot be assessed. Considering the precautionary approach, the PI does not meet the requirements.		

2.4.1 – Habitats Outcome	**<60**	**Yes**
Rationale or key points		
There is no information on the design of the FADs, or the habitats the fishery encounter, thus the impact of the operation on the vulnerable marine ecosystem (VME) habitat cannot be determined. Studies need to be conducted on the impact of FADs on habitat.		
2.4.2 – Habitats Management	**<60**	**Yes**
Rationale or key points		
While there is management strategy in place, with unavailability of verifiable catch information, no quantitative evidence of effectiveness can be established.		
2.4.3 – Habitats Information	**<60**	**Yes**
Rationale or key points		
The UoA is unlikely to reduce structure and function of the commonly encountered habitats based on its general nature. Verifiable catch information supported with VMS tracks can help determine physical impact of the gear and the FADs on the habitats. However, the fishery has not provided the catch report/logsheets at this time. More information is sought on use of payaos (FADs).		
2.5.1 – Ecosystems Outcome	**60 - 79**	**Yes**
Rationale or key points		
While extensive ecosystem modeling in the WCPO indicated that the tuna fishery impacts on top-level predators in the Pacific Ocean is substantial but with minor ecosystem impact, impact to the ecosystem cannot be accurately determined due to unavailability of information directly for the UoA.		
2.5.2 – Ecosystems Management	**60 - 79**	**No**
Rationale or key points		
While there are range of CMMs and Resolutions adopted, evaluated and implemented at the WCPFC, and Philippines adopted National Tuna Management Plan with specific goals and objectives formulated in accordance with Ecosystem Approach to Fisheries Management, due to the unavailability of information directly for the UoA the sufficiency of management cannot be determined		
2.5.3 – Ecosystems Information	**60 – 79**	**Yes**
Rationale or key points		
With ecosystem modelling done at the WCPFC, key elements of the ecosystem can be identified, however, with unavailability of verifiable catch information, the UoA impact on the ecosystem cannot be inferred.		
3.1.1 – Legal and customary framework	**≥80**	**No**
Rationale or key points		
The Philippine Fisheries Code of 1998 amended by RA 10654 An Act to Prevent, Deter, and eliminate Illegal, Unreported and Unregulated Fishing is in place and the National Tuna Management Plan is adopted consistent with MSC Principles 1 and 2. However, while respect for legal rights is committed, dispute settlement mechanism it is yet to be tested to be proven effective.		
3.1.2 – Consultation, roles and responsibilities	**≥80**	**No**

Rationale or key points		
Roles and responsibilities of different stakeholders are clearly defined at the regional, national, municipal levels and that their participation is highly encouraged in consultations. However, documentation of how their inputs is used or not used can still be improved.		
3.1.3 – Long term objectives	**≥80**	**No**
Rationale or key points		
The amended Philippines Fisheries Code and the Comprehensive National Fisheries Industry Development Plan provides for the long-term objectives for conservation and sustainable management of fishery resources. However, long term objectives needed to be established for all fisheries at the regional level.		
3.2.1 – Fishery specific objectives	**60 – 79**	**No**
Rationale or key points		
Short-term and long-term fishery-specific are outlined in the National Tuna Management Plan 2018 consistent with MSC Principles 1 and 2 but need to demonstrate its achievement.		
3.2.2 – Decision making processes	**60 – 79**	**No**
Rationale or key points		
Decision-making mechanism is in place both in regional and national levels, however its responsiveness to issues identified in research, monitoring and consultation, timeliness and transparency still has room for improvements.		
3.2.3 – Compliance and enforcement	**<60**	**Yes**
Rationale or key points		
While there are reported sanctions to non-compliance, difficulty to provide catch report/logsheets, challenges of VMS installation and existence of unlicensed/unregistered boats in the handline fishery are indicative of low compliance and enforcement.		
3.2.4 – Management performance evaluation	**60 – 79**	**Yes**
Rationale or key points		
Evaluation mechanism in place for key parts fishery-specific management system with occasional external reviews. However, no external review is being conducted.		

8 Fishery Overview

8.1. Western and Central Pacific Ocean (WCPO) Tuna Fisheries

Tuna is a migratory fish which is sensitive to temperatures. The distribution of tuna in the ocean is greatly affected by extreme oscillations, that is El Nino and La Nina, which in turn shifts the fishing effort.

The industrial fisheries of western and central Pacific Ocean (WCPO) focus on four primary tuna stocks, namely: skipjack *(Katsuwonus pelamis),* yellowfin *(Thunnus albacares),* bigeye *(T. obesus)*, and South Pacific albacore tuna *(T. alalunga)*, within the Western and Central Pacific Fisheries Commission Convention Area (WCPFC-CA). In Figure 1, the boundary of WCPFC-CA is outlined in dark blue.

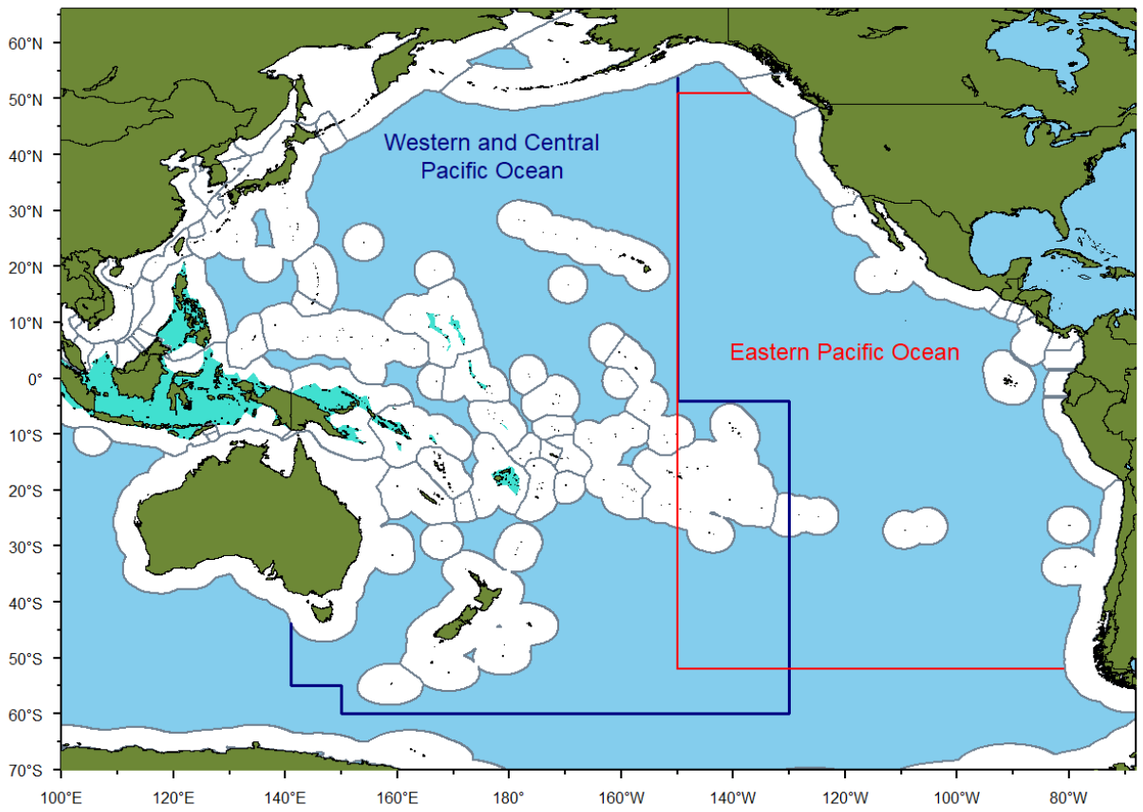

Figure 1. WCPFC Convention Area. (Source: WCPFC17-2020-IP02, 2020).

Due to the expansion of purse seine tuna fisheries in the region, the tuna catch of all primary species has increased starting from 1980s, as shown in Figure 2 and Figure 3.

According to Figures 2 and 3, it is undeniable that tuna fishery is increasing throughout the years with its peak in 2019 with total catch of 2,997,309 tons. 70% of this is from purse seine fishery. From Figure 2, it can be noticed that the portion of purse seine catch to the total tuna catch is also growing, while the other gears are declining.

The skipjack catch has also reached its record high in 2019 at 2,045,970 tons which is the majority of the total tuna catch that year at 68%. However, the other species dropped in quantities compared to previous year.

In relation to the stock assessment done for 2020, the Majuro plot of the four target tuna species of WCPO is shown in Figure 4.

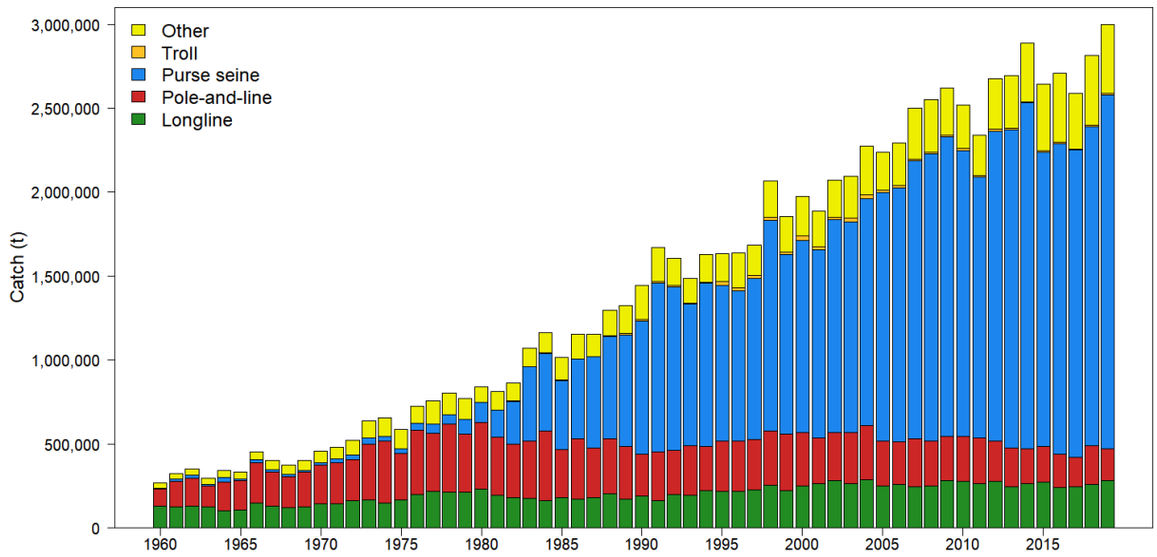

Figure 2. WCPO Tuna Catch Based on Gear Used from 1960 to 2019 (tons). (Source: WCPFC17-2020-IP02, 2020).

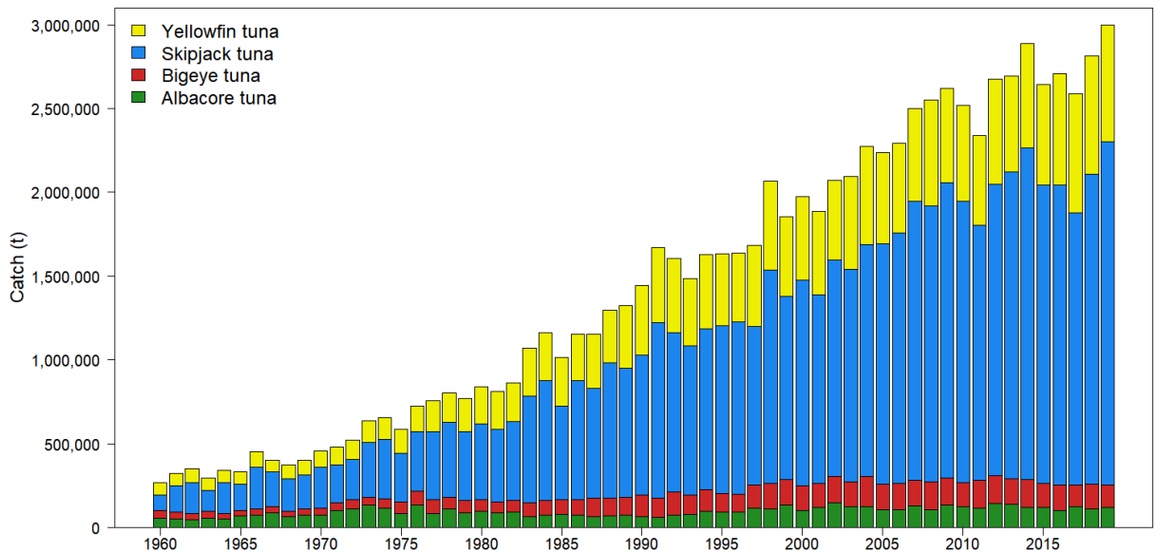

Figure 3. WCPO Tuna Catch Per Specie from 1960 to 2019 (tons). (Source: WCPFC17-2020-IP02, 2020).

In Figure 4 the median of each species is illustrated in big dots while its distribution is demonstrated by the ellipses. Since all of them fall below 1.0 F/F_{MSY}, it can be interpreted that the stocks of albacore, bigeye, skipjack and yellowfin tuna are in healthy and sustainable status. There is no probability of overfishing.

Moreover, there is a need for large-scale experiments in order to conduct more accurate assessments and substantial information of tropical tunas in the WCPO. The most recent tagging campaign done in the equatorial WCPO has released a total of 452,489 tunas with 81,591 reported recaptures.

For the tuna fishing industry, it is inevitable to catch other associated fish in the course of the activity. Some of these are considered by-catch or by-products while others are discarded. Most cases of by-catch are reported from purse seine fishing operations. Unassociated purse seine sets catch composition of tuna is at 99.7% while associated purse seine is at 97.9%. Associated sets account for the bulk of finfish and shark by-catch. Furthermore, anchored Fish Aggregating Device (FAD) has higher by-catch rate compared to drifting FADs.

Other reported by-catch is from longline fisheries. Shallow-set fisheries has 60.9%, deep-set has 79.8% and albacore target has 67.4% main tuna catch composition. The usual by-catch of longline includes blue shark, billfish, mahi mahi and opah.

Measures for conservation of species of special interest have been placed by WCPFC which limits the interaction of tuna and other protected species such as whale shark, silky shark, oceanic whitetip shark, sea turtles, seabirds, and manta rays.

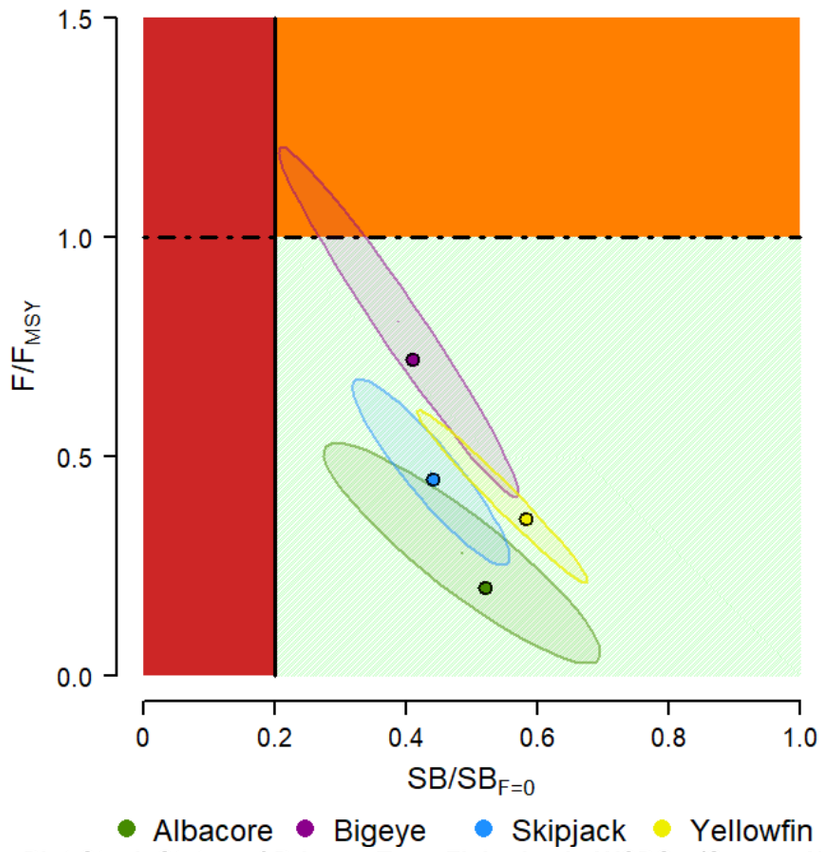

Figure 4. Majuro Plot Stock Status of Primary Tuna Fisheries in WCPO. (Source: WCPFC17-2020-IP02, 2020).

8.2. Philippine Tuna Fisheries

Philippines is one of the major tuna-fishing nations in the world. In the growth and development of this business, the country has taken active participation and cooperation in properly conserving and managing tunas to maintain its sustainable levels.

The tuna fishing industry in the Philippines uses municipal and commercial fishing vessels. Municipal vessels have the capacity of 3 gross tons such as hook and line, troll line, and gill net. These vessels target oceanic tunas such as skipjack, yellowfin, bigeye, albacore, longtail, and striped bonito. Municipal tuna catches usually land in more than 8,000 ports in the country, and then to processing plants or wet market.

Beyond the municipal waters, commercial vessels with the capacity of more than 3 gross tons are used to operate in the Exclusive Economic Zone (EEZ) of the country and areas beyond national jurisdiction. They use purse seine, ring net and handline gears. Most Philippine-registered commercial vessels operating in the WCPFC region are based in General Santos City.

As of writing, Philippines has access to 36 tuna catchers with capacity of not more than 250 gross tons to operate in the high seas pocket 1 (HSP1). While other larger purse seine vessels of more than 500 gross tons capacity are fishing in other Pacific Island countries.

During the WPEA Workshop with WCPFC last May 2021, the total tuna catches of the Philippines in 2020 has been consolidated by all concerned parties and was agreed upon as shown in Figure 5. The total tuna catch is at **188,166 tons** which is 23% more compared to previous year.

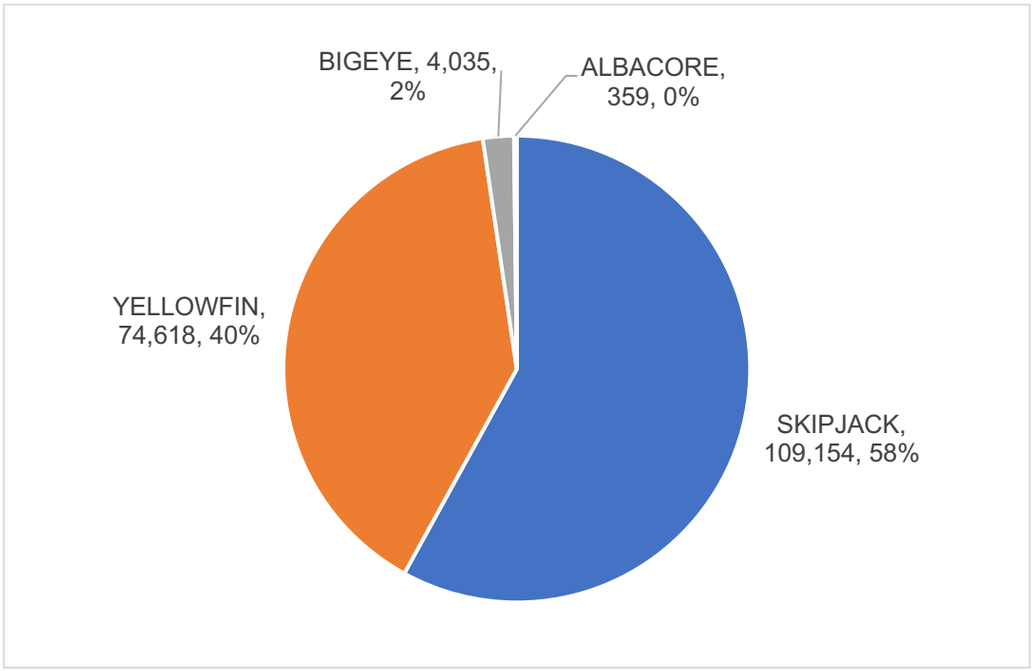

Figure 5. Philippine Oceanic Tuna Catch in 2020 by Species. (Source: Philippine WPEA Workshop 2021).

In 2020, skipjack shares the largest portion on the total tuna catch in the country which is 109,154 tons (58%), followed by yellowfin with 74,618 tons (40%), bigeye with 4,035 tons (2%), and albacore with 355 tons. The distribution of the tuna catch based on fishing gear is described in Figure 6.

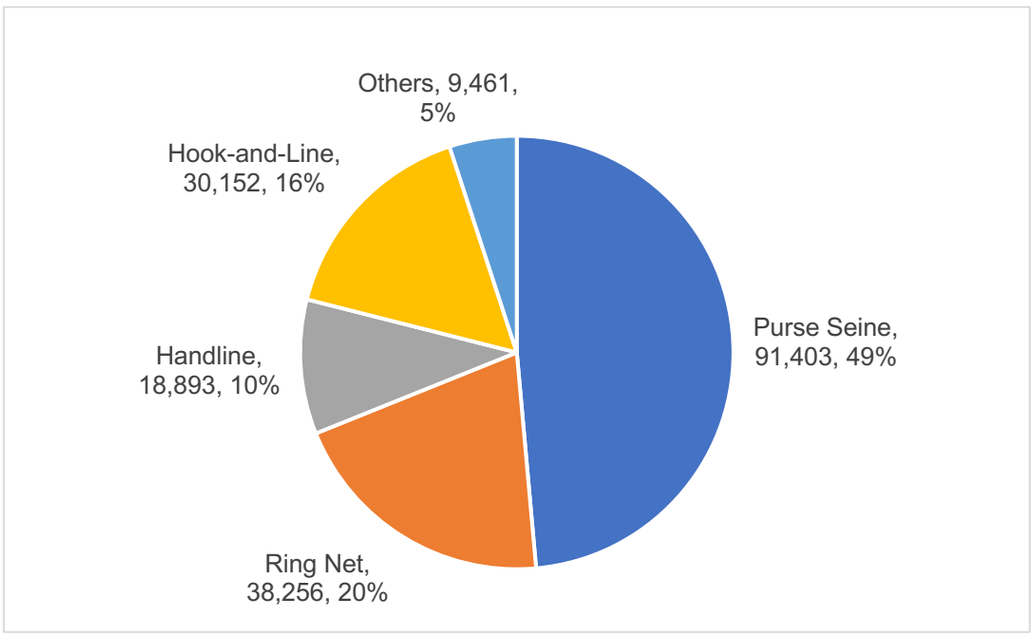

Figure 6. Philippine Tuna Catch in 2020 by Gear. (Source: Philippine WPEA Workshop 2021).

As shown in Figure 6, the majority of catch is from purse seine with 91,403 tons (49%), followed by ring net with 38,256 tons (20%), hook-and-line with 30, 152 tons (16%), handline with 18,893 tons (10%), and other gears with 9,461 tons (5%).

In the operation of tuna fishing, the by-catch includes mackerel scad, billfish, dolphin fish, wahoo, opah, rainbow runner, trigger fish, shark, and juvenile oceanic tunas.

Most yellowfin and bigeye are processed in Metro Manila and General Santos. These are chilled, frozen, smoked, canned, or boiled. Canned tuna accounts for the majority of tuna products exported by the country.

Most of the canning facilities and frozen processors are located in General Santos, staying true to its name as the Tuna Capital of the Philippines.

Consequently, tuna is also the largest fishery import of the country which comes from Indonesia, Taiwan and Papua New Guinea. The industrial processors use this as raw materials for canning.

Philippine Tuna Handline

Republic Act 9379 (RA 9379) or The Handline Law defines handline fishing as a traditional fishing method that uses the hook and line, a passive fishing gear with a single vertical line carrying one hook and used by simply dropping the line into the water and waiting for the fish to bite.

A handline vessel is a fishing boat, with or without outrigger and with or without auxiliary small boats locally on board that exclusively utilizes the handline fishing method (RA 9379). The auxiliary boat locally known as “pakura” or “sirisan” is defined by the Joint DA-DOTC-NTC Administrative Order 2016 on the Implementing Rules and Regulations of RA 9379 (IRR of RA 9379), as a boat less than three gross tons made of wood, fiber glass or any other material, with or without outrigger, propelled by a suitable engine and carried on board a handline fishing boat for use in handline fishing operations beyond municipal waters.

Handline fishing targets mainly big-sized yellowfin tuna weighing 20 kg and higher. These fish are intended for local and export markets. Unlike purse seine fishing that use nets and fishing gear in boats 50 GT or higher and targeting skipjack tuna and small yellow fin tuna intended for canneries, use the traditional hook and line fishing method targeting only mature tuna.

8.3. Region 12 -Socsksargen Tuna Fisheries

General Santos (Gensan) is in the southern part of the archipelago and is blessed with the abundance of the ocean. Tuna fishery remains to be the city’s number one drive to an improved and rich economy. The industry leads in providing employment to its residents.

The fleet from Gensan targets skipjack tuna, yellowfin tuna, and bigeye. The fishing gear used are purse seine, baby purse seine, ring net, and handline, among others. The marine boats based in the region use various and broad fishing grounds in their exploration. These vessels fishing ground are the Philippine EEZ, Pacific Islands EEZ, High Seas Pocket 1, and adjacent waters such as Papua New Guinea.

The catch lands in different sites – private fish ports, foreign ports, and the Philippine Fisheries Development Authority (PFDA) market ports and wharfs. The Gensan Fish Port Complex is tagged as the country’s major tuna unloading port, followed by the Navotas Fish Port Complex.

From the ocean, the fish is transported to the canneries, processing plants, and the local wet market. General Santos has the greatest number of processing canneries in the Philippines, being home to 7 of them.

In the 2021 WPEA Workshop, the Socsksargen Federation of Fishing and Allied Industries, Inc. (SFFAII) presented an industry survey for the region’s 2020 tuna catch. The total reconciled tuna catches of the fleets from SOCSKSARGEN region for 2020 is 212,427 tons including those landed outside of Philippines. In Figure 7, the tuna catch distribution by species is shown.

As observed in Figure 7, skipjack contributes majorly to the tuna catch with 151,225.46 tons (71%), followed by yellowfin with 60,022 tons (28%), and bigeye with 1,180 tons (1%). These were unloaded to different landing sites as shown in Figure 8.

Most fish caught by the fleet from the region lands directly on international ports with 113,407 tons (53%). The total landing in the Gensan fish port markets sums to 83,209 tons (40%). Other landing sites are Wharf 2 Manila-based with 13,386 tons (6%), private ports with 2,232 tons (1%), and other Philippine ports with 193 tons.

This catch is reported to be sourced mainly from Papua New Guinea and other Pacific Islands EEZs (54%), Philippines EEZ and adjacent waters (35%), and High Seas Pocket 1 (11%). The catch from HSP1 has increased by 40% from previous year.

87% of the 2020 total catch were directed to canneries, while the remaining too wet market (9%), fresh frozen processing plants (3%), and others (1%).

The distribution by fishing gear for 2020 catch in SOCKSARGEN is in Figure 9.

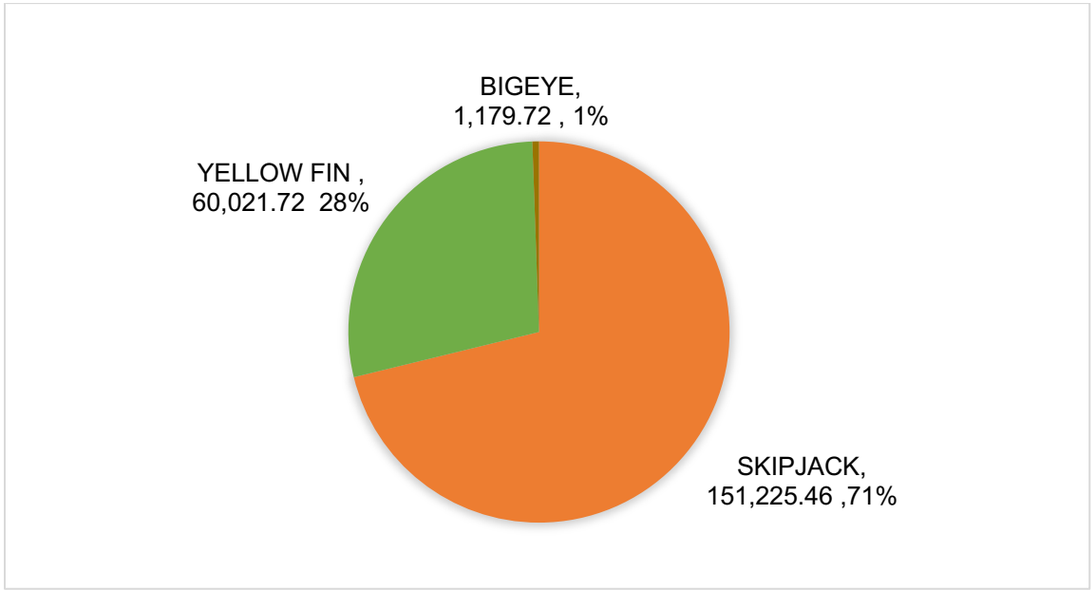

Figure 7. SOCSKSARGEN Tuna Catch Distribution by Species in 2020. (Source: SFFAll WPEA, 2021).

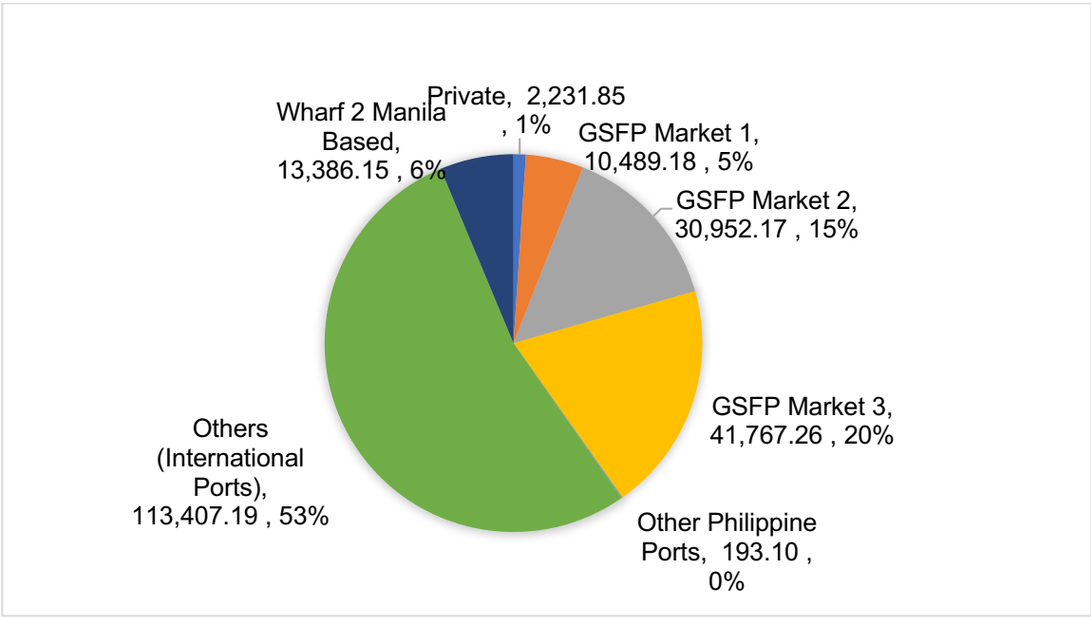

Figure 8. SOCCSKSARGEN Tuna Catch Distribution by Landing Site in 2020. (Source: SFFAll WPEA, 2021).

The sophisticated large purse seine fishing vessels is the primary gear used in 2020 with 189,039 tons (89%). Other gears used are handline with 10,489 tons (5%), ring net with 8,674 tons (4%), and baby purse seine with 4,225 tons (2%). Purse seine vessels which land in Gensan Wharfs 1 and 2 increased by 9%. Ring net also increased by 20%. However, the handline unloading in the Gensan fish port has decreased by 29% compared to 2019.

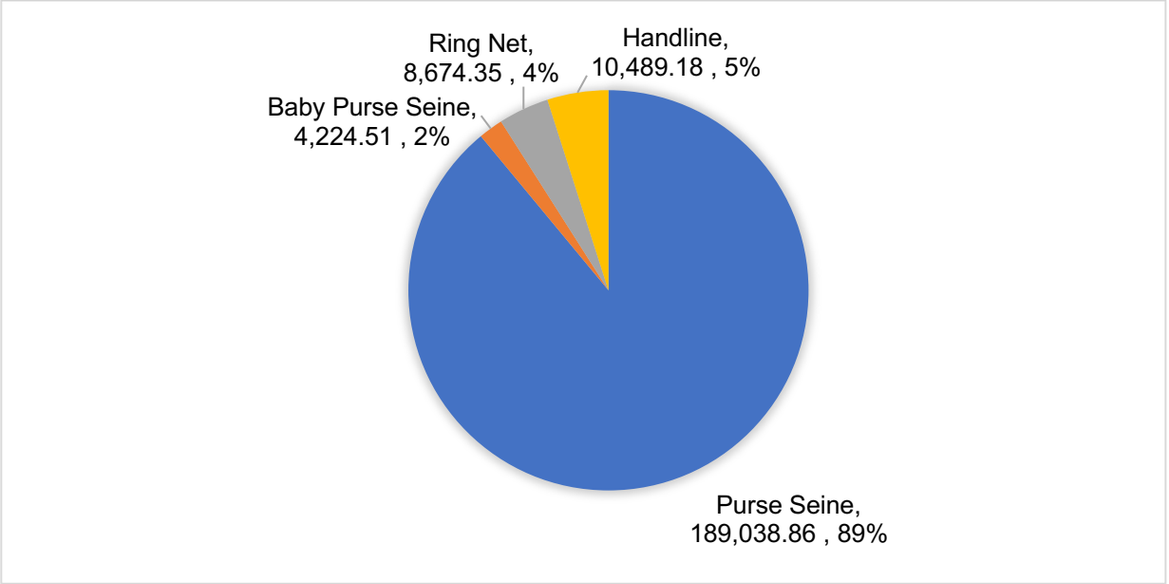

Figure 9. SOCSKSARGEN Tuna Catch Distribution by Fishing Gear in 2020. (Source: SFFAII WPEA, 2021)

SOCCSKSARGEN Tuna Handline

The Philippines is one of the pioneers in handline fishing. In the beginning of the tuna business in Gensan and the time when technology is not yet as advanced as it is now, most fishermen only use this method. They track dolphins in the surface of the water and use them as guide since these two species usually swim together. If there is a school of dolphin, there are tunas underneath for sure.

Handline vessels use “pakura” or smaller boats which were deployed to follow dolphins. Once they spot dolphins around, they use a pole with a hook and bait at the end which could be a pouch of squid ink or fresh fish meat. They drop this in the water to attract the tuna. When they feel a bite at the other end of the pole, they pull it and bring the fish up.

This method is low in cost and done by small-scale fishermen. Handline fishing has also been observed as sustainable and selective with very minimal by-catch and juvenile catch. Thus, it has less negative impact on the marine habitat.

An information paper in the WCPFC SC16 provided handline fishery trends for effort and catch in Region 12 from 2004 to 2019. Table 6 illustrates catch composition with yellowfin tuna garnering the highest share at 83.1% and with bigeye at 3.89%. The remainder of the catch is comprised of blue marlin, albacore tuna and other species.

Table 6. Catch and Species Composition Estimated by NSAP for Handline Fishery (2004-2019) in region 12 (SOCCSKSARGEN) based on NSAP Monitoring (Source: WCPFC-SC16-2020/SA-IP-19 Rev.01)

Species	Catch (mt)	Percent (%)
Yellowfin tuna (*Thunnus albacares*)	138,892.90	83.12%
Blue marlin (*Makaira mazara*)	17,839.80	10.68%
Bigeye tuna (*Thunnus obesus*)	6,501.00	3.89%
Albacore (*Thunnus alalunga*)	1,915.10	1.15%
Sailfish (*Istiophorus platypterus*)	791.00	0.47%
Black marlin (*Makaira indica*)	682.90	0.41%
Swordfish (*Xiphias gladius*)	370.00	0.22%
Moonfish (*Lampris guttatus*)	62.80	0.04%
Other Species	39.30	0.02%
Total	**167,094.70**	**100%**

Figure 10 shows that handline effort from 2006 to mid-2009 was higher compared to from mid-2009 until the end of 2019. Handline effort averaged 21 boat days per trip, although there has been an increase over time due to vessels traveling farther away from port in an attempt to obtain higher catch rates and/or the use of larger vessels that can remain at sea for longer durations.

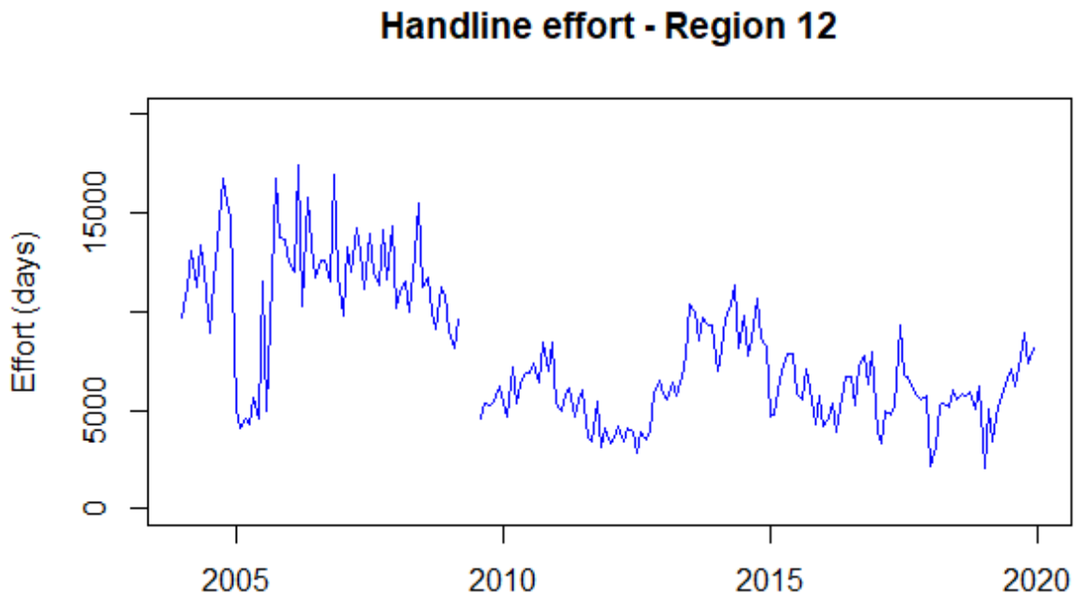

Figure 10. Raised Monthly Effort in the Philippine Region 12 (SOCCSKSARGEN) Handline Fishery Based on NSAP Monitoring. (Source: WCPFC-SC16-2020/SA-IP-19 Rev.01).

8.4. The Client Fishery

8.4.1. Fishery Profile

Sargen Fish Port Tuna Handline Fishing Association, Incorporated (SFPTHFAI) is a relatively new organization of tuna hand line fishing vessel owners established in 2021 that aims to provide services, facilities and support that will help improve and develop the businesses of its members, while also assisting the government and the public in promoting environmental concern and ecology. It is located in Market 1 Fish Port Complex, Tambler, General Santos City, South Cotabato, Region 12, Philippines with SEC Registration Number 2021040010222-22.

In order for its members to compete in the international and export business of the fast-developing market of tuna, SFTHFA is now trying to acquire the certification from the world's top standard in sustainable and responsible fishing which is the Marine Stewardship Council (MSC), through the assistance of their buyers from Fresh Frozen Seafoods Association of the Philippines Inc. (FFSAPI).

SFPTHFAI's 18 members (Figure 11) enrolled its 42 fishing vessels for certification listed in Table 7. Trinity Home Industrial Development Corp. has the most numbers with 9 vessels, followed by Tuna Explorers, Inc. with 6 vessels.

These 42 vessels support and supply 8 buyers from FFSAPI namely, Citra Mina, GS Pescador, Well Delight Network, RDEX Food International, Philippine Cinmic Industrial Corp., Malalag Bay Aquaculture, Jarla Trading, and JAMS Seafood Trading.

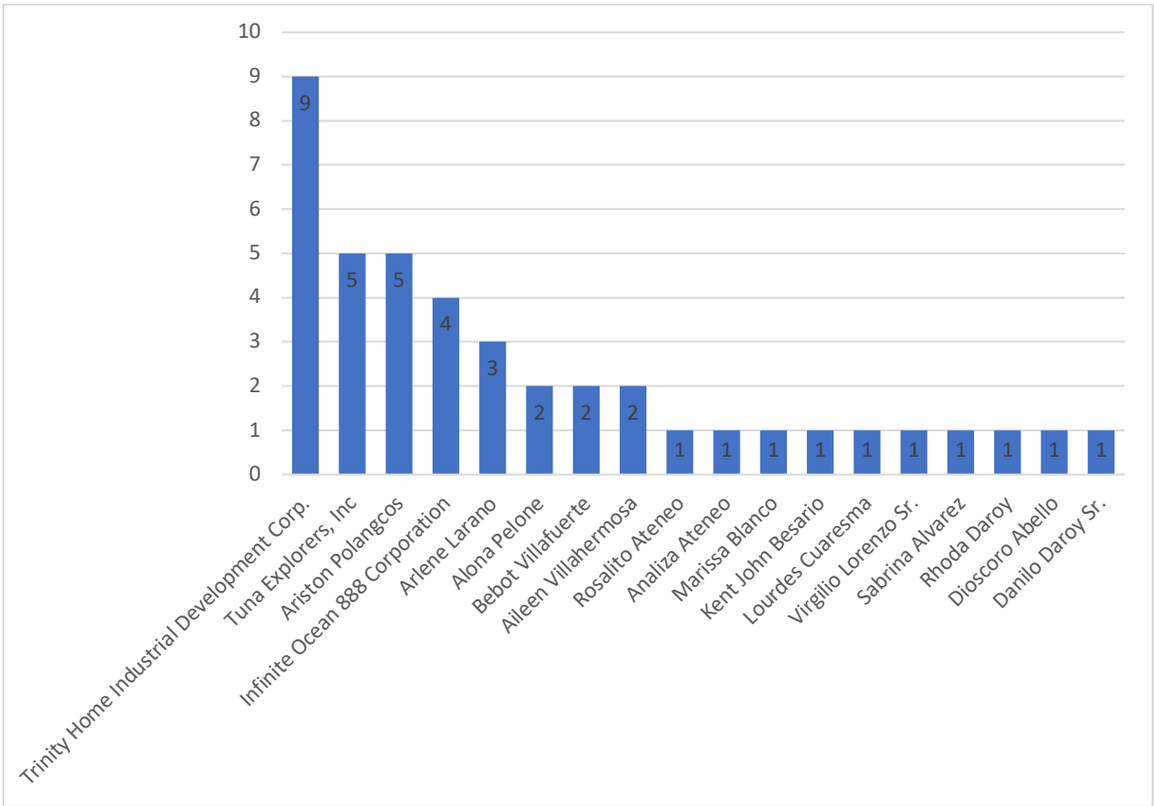

Figure 11. Handline Fishing Vessels by SFPTHFAI Operators.

Table 7. Handline Fishing Vessels Enrolled for MSC Certification

S.N.	Vessel Name	Owner	Classification	CFVL No.	Gross Tonnage
1	F/B RJK	Aileen Villahermosa	Catcher/Small-Scale	MHLL-06565-12-20	6.00
2	F/B Princess Aira 2	Aileen Villahermosa	Catcher/Small-Scale	MHLL-09842-12-20	11.48
3	F/B John Paul Alona	Alona Pelone	Catcher/Medium-Scale	MHLL-07957-12-18	23.76
4	F/B John Mark AP	Alona Pelone	Catcher/Medium-Scale	GHLL-03237-06-18	24.72
5	F/B Roselle Ann	Analiza Ateneo	Catcher/Small-Scale	MHLL-04470-12-20	16.00
6	F/B JEBO 12	Ariston Polangcos	Catcher/Medium-Scale	MHLL-06305-12-20	60.38
7	F/B JEBO 09	Ariston Polangcos	Catcher/Small-Scale	MHLL-010039-12-20	16.08
8	F/B JEBO 04	Ariston Polangcos	Catcher/Medium-Scale	MHLL-03610-12-20	46.44
9	F/B JEBO 03	Ariston Polangcos	Catcher/Medium-Scale	MHLL-02777-12-20	22.99
10	F/B JEBO 02	Ariston Polangcos	Catcher/Small-Scale	MHLL-04232-12-20	11.17
11	F/B Day Arlene 5	Arlene Larano	Catcher/Medium-Scale	MHLL-05425-12-18	26.14

S.N.	Vessel Name	Owner	Classification	CFVL No.	Gross Tonnage
12	F/B Day Arlene 3	Arlene Larano	Catcher/Small-Scale	MHLL-05058-12-19	16.57
13	F/B Arlene L	Arlene Larano	Catcher/Small-Scale	MHLL-07464-12-20	5.73
14	F/B Alyana Collen 02	Bebot Villafuerte	Catcher/Medium-Scale	MHLL-010959-12-20	27.00
15	F/B Alyana Collen	Bebot Villafuerte	Catcher/Medium-Scale	MHLL-07158-12-18	29.07
16	F/B Prince DJ	Danilo Daroy Sr.	Catcher/Small-Scale	MHLL-04001-12-19	17.25
17	F/B Queen & King Loweljun	Dioscoro Abello	Catcher/Small-Scale	MHLL-04471-12-20	9.04
18	FB Golden Pearl 888	Infinite Ocean 888 Corporation	Catcher/Medium-Scale	MHLL-06878-12-18	53.56
19	FB Diamond 888	Infinite Ocean 888 Corporation	Catcher/Medium-Scale	MHLL-06877-12-18	72.00
20	FB Jade 88-02	Infinite Ocean 888 Corporation	Catcher/Small-Scale	MHLL-06874-12-15	10.19
21	FB Jasper 888	Infinite Ocean 888 Corporation	Catcher/Medium-Scale	MHLL-07103-12-18	29.19
22	F/B Joyce 968	Kent John Besario	Catcher/Medium-Scale	MHLL-011579-12-19	22.41
23	F/B Dhonna 2 Kasilak	Lourdes Cuaresma	Catcher/Medium-Scale	MHLL-05774-12-19	29.51
24	F/B Joeriz 1	Marissa Blanco	Catcher/Medium-Scale	MHLL-09380-12-20	26.40
25	F/B Kate and Marist	Rhoda Daroy	Catcher/Medium-Scale	MHLL-011719-12-19	31.00
26	F/B Roselle Jane	Rosalito Ateneo	Catcher/Small-Scale	MHLL-04470-12-19	9.58
27	FB Aqua Sea 03	Sabrina Alvarez	Catcher/Medium-Scale	MHLL-06689-12-19	48.02
28	F/B Lady 02	Trinity Home Industial Development Corp.	Catcher/Small-Scale	MHLL-05969-12-20	15.81
29	F/B Divino 04	Trinity Home Industial Development Corp.	Catcher/Small-Scale	MHLL-06032-12-20	15.81
30	F/B Divino 03	Trinity Home Industial Development Corp.	Catcher/Medium-Scale	MHLL-05592-12-19	33.97
31	F/B Divino 02	Trinity Home Industial Development Corp.	Catcher/Medium-Scale	MHLL-05709-12-19	34.48
32	F/B Divino 01	Trinity Home Industial Development Corp.	Catcher/Medium-Scale	MHLL-05720-12-19	42.92
33	F/B San Raphael	Trinity Home Industrial Development Corp.	Catcher/Medium-Scale	MHLL-07759-12-18	32.06
34	F/B Lady 03	Trinity Home Industrial Development Corp.	Catcher/Medium-Scale	MHLL-07152-12-18	61.61

S.N.	Vessel Name	Owner	Classification	CFVL No.	Gross Tonnage
35	F/B Lady 01	Trinity Home Industrial Development Corp.	Catcher/Small-Scale	MHLL-06076-12-14	15.81
36	F/B Divino 05	Trinity Home Industrial Development Corp.	Catcher/Small-Scale	MHLL-06621-12-18	15.81
37	F/B Tri Rezeki 11	Tuna Explorers, Incorporated	Catcher/Medium-Scale	MHLL-03940-12-19	48.07
38	F/B MG 901	Tuna Explorers, Incorporated	Catcher/Medium-Scale	MHLL-05083-12-19	56.33
39	F/B Makmur 12	Tuna Explorers, Incorporated	Catcher/Medium-Scale	MHLL-00123-12-19	43.22
40	F/B Makmur 09	Tuna Explorers, Incorporated	Catcher/Medium-Scale	MHLL-08289-12-19	36.52
41	F/B Makmur 08	Tuna Explorers, Incorporated	Catcher/Medium-Scale	MHLL-08426-12-19	36.56
42	F/B NJR 02	Virgilio Lorenzo Sr.	Catcher/Small-Scale	MHLL-06079-12-20	18.92

All of the vessels have a valid Commercial Fishing Vessel License (CFVL) from BFAR, with consideration on the extension of CFVL during the state of public health emergency caused by COVID-19 global pandemic per DA Administrative Circular No.19 signed on December 22, 2020.

Based on BFAR's classification, the fishing vessels can be categorized under small-scale commercial fishing with vessel as small as 5.73 GT and medium-scale commercial fishing as big as 72 GT. Small-scale vessels have the capacity of 3.1GT to 20GT, while medium-scale can carry 20.1GT to 150GT.

In Figure 12 it is shown that out of 43 vessels, 63% or 27 vessels are medium-scale, and 37% or 16 vessels are small-scale. Thus, in this project, most vessels have the capacity of more than 20GT.

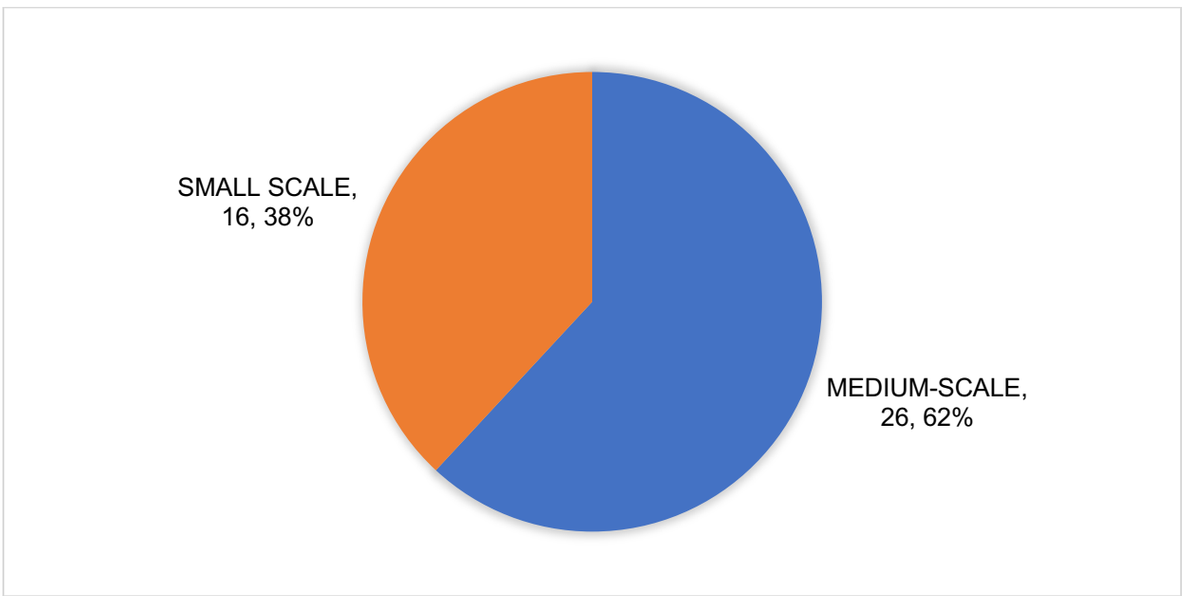

Figure 12. SFPTHFAI Handline Vessel Classification per BFAR Categorization

8.4.2 Gear and Operation of the Fishery

The 42 handline vessels of this fishery utilize auxiliary boats locally known as ‘pakura’ where small-scale vessels use10 pakura each on the average while medium-scale fishing vessels use 17 pakura on the average.

The number of crew on board can be as low as 4 to as high as 45. The number varies with the tonnage of the handline boats. Table 8 lists down number of crew on board the handline vessel across the different tonnage levels.

Table 8. Number of Crew Members in SFPTHFAI Handline Vessels

Gross Tonnage	No. of Crew/Fishers
5 GT Below	4-6 crews
5.1 to 30 GT	10- 15 crews
30.1 GT and Above	30-45 crews

Typical activities in a fishing expedition

“Starting” Activities
This is the preparation of the vessel and supplies needed for the fishing expedition while on land. It involves cleaning of the vessel and its quarters, checking and repairing of the boat engine and radio and navigation equipment, inspection of the engines and other devices of the pakura or small boats; also, loading of supplies for the voyage such as rice, ice, water, fuel. This process takes a couple of days to several days depending on the boat size and condition.

Sailing of boat to the fishing ground
Sailing to the fishing ground takes two to six fishing days, during which only the boat captain works. The Piyado or the Boat Captain works for around 20 hours on the successive days during which they navigate to the fishing area or back from it. The Segunda Piyado takes over when the captain needs to rest.

Work in the fishing area
Catching of fish starts from offloading of the pakuras the mother boat traveling in groups of three or more to their intended place of anchored non entangling anchored fish aggregating device/s (payao) to fish. The pakuras go back and forth the mother boat to unload their catch and have the fish iced. Depending on the fish catch (lean or peak season), weather condition and remaining supplies for sustenance such as fuel, water, and food, the boat captain sails back to homeport. A fishing expedition may take days, weeks or even a month or two to complete.

8.4.3 Fishing Areas and Seasons

For those who declared their fishing ground, the handline vessels operate throughout the year in Fishery Management Areas 2 and 3 per BFAR Fisheries Administrative Order No. 263 Series of 2019 or Establishment of Fisheries Management Areas (FMA) for the Conservation and Management of Fisheries in Philippine Waters (Figure 13).

Figure 14 illustrates that out of 42 vessels, 5 or 12% of these are fishing in FMA 2, 4 or 9% are in FMA 3, 2 or 5% are in both FMA 2 and FMA 3, and 31 or 74% has yet to declare their fishing ground. So far based on this data, most of the vessels are fishing in FMA 2.

With FAO 263, the country is divided into 12 FMAs. FMAs refers to delineated bodies of water in the Philippines based on approximation of fish stocks and their boundary, range and distribution and other considerations for the purpose of fisheries management or governance that is science-based, participatory and transparent, applying the ecosystem approach to fisheries management (EAFM). The EAFM approach emphasizes the balance of ecological well-being with human well-being founded on good governance for future generations. The FMA is a means by which fisheries can be managed at the ecosystem level, rather than on political boundaries.

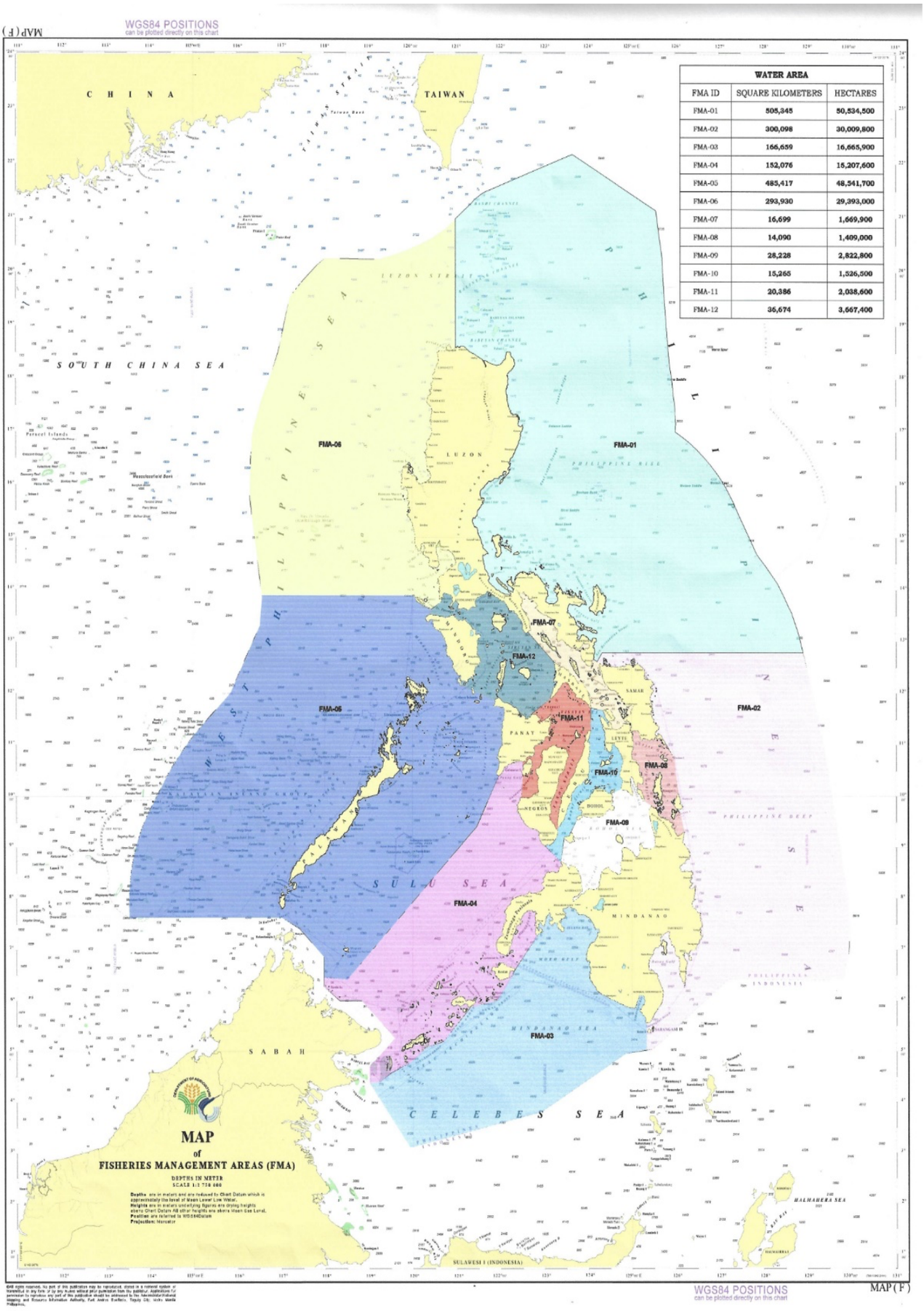

Figure 13. Map of Fisheries Management Areas of the Philippines. (Source: BFAR FAO 263).

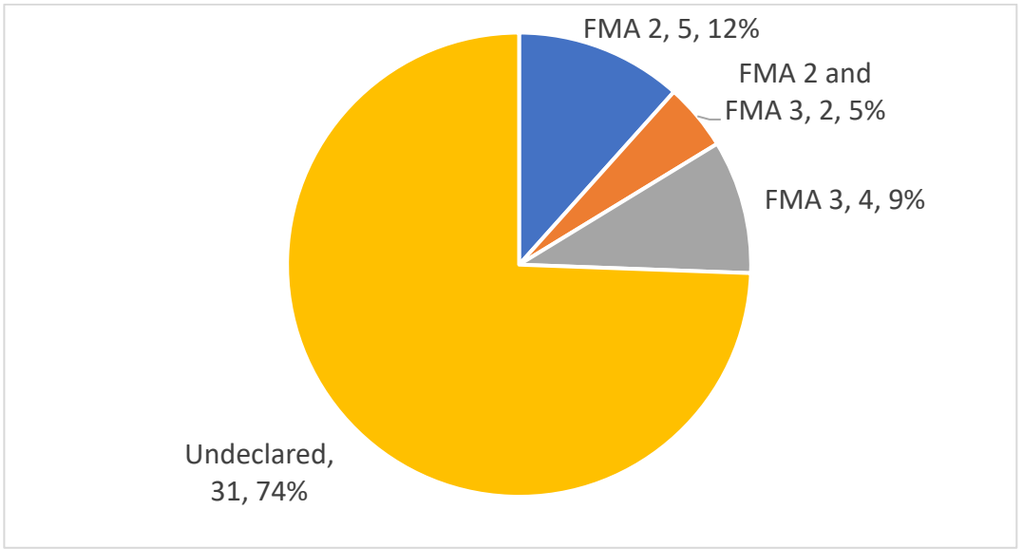

Figure 14. SFPTHAI Fishing Grounds.

8.4.4 Catch Profiles and Data Availability

The handline operators were not able to provide catch reports except for Tuna Explorers Inc. which reported on their 5 vessels in terms of number of fish caught. See Annex 3 for the summary. Availability of historical catch data is a challenge.

8.4.5. Total Allowable Catch

Total Allowable Catch is not yet in place in the fishery.

9 Pre-Assessment Result by MSC Principle

9.1. Principle 1

9.1.1. Principle 1 – Yellowfin Tuna (*Thunnus albacares*)

9.1.1.1 Biology and Ecology of Yellowfin Tuna

Tuna is considered to be the world's most popular seafood with global demand increasing intensely over the last 50 years. Yellowfin tuna are usually found in the Pacific, Indian and Atlantic Oceans. They are migratory and are caught in the tropical waters with temperatures above 18ºC and below 30ºC. Yellowfin tuna represent 28% of the world's tuna catch.

They are found in large schools of fish along with other tuna species like skipjack and bigeye. In the Pacific Ocean they are associated with dolphins as they swim close together. Yellowfin swim at 100 to 150 meters beneath the dolphins. Although there is no definite explanation, this schooling behavior has been used by fishermen to track yellowfin tuna.

They are distinguishable with their yellow fins and finlets. They are torpedo-shaped and has dark metallic backs and silver belly. See Figure 15. The meat of this tuna species has a firm and mild taste which is sold in canned, frozen or fresh packaging.

Figure 15. Yellowfin Tuna Being Weighed at the General Santos Fish Port. (Source: Bulanhagui, 2018)

Yellowfin tunas are similar sized to bigeye tunas. Although yellowfin tuna is a fast-growing species, they are short-lived. 89% of them last for less than 6 years with no significant difference between sexes.

In terms of growth, yellowfin tuna can reach a maximum size of 160cm fork length. At their early age, female yellowfin tuna is slightly larger, but this changes at later ages. They become fully grown by 2 years old. Yellowfin can weigh as heavy as 175 kg.

Yellowfin tuna are considered to be highly productive as they reproduce and breed throughout the year. In the general population, there are equally as many males as there are females.

Fishermen use different methods in catching tuna. Near the surface, they use purse seine, gillnet, and pole and line, while they use longlines and handlines for deep waters.

According to the Tuna Handbook of 2021, the yellowfin tuna stocks around the world are generally sustainable. The fish stock in the Atlantic Ocean, Western-Central Pacific, and Eastern Pacific are found to be above the Maximum Sustainable Yield (MSY). However, yellowfin tuna in the Indian Ocean was found out to be below the MSY and has not been stable or is fluctuating around the MSY.

9.1.1.2. Catch and Landings

Yellowfin tuna constitutes 23% of the total catch that is 696,797 tons in 2019. This is 17,000 tons lower than the highest recorded yellowfin tuna catch in 2017. The yellowfin tuna is caught using different methods such as purse seine with 349,358 tons (50%), longline with 107,656 tons (15%), pole and line with 17,813 tons (3%), troll with 2,550 tons (0.3%) and other gears with 219,420 tons (32%). In general, purse seine catch is four times more than long line.

The time series of annual yellowfin tuna catch in the overall assessment region in WCPFC-CA by fishing method/gear is shown in Figure 16.

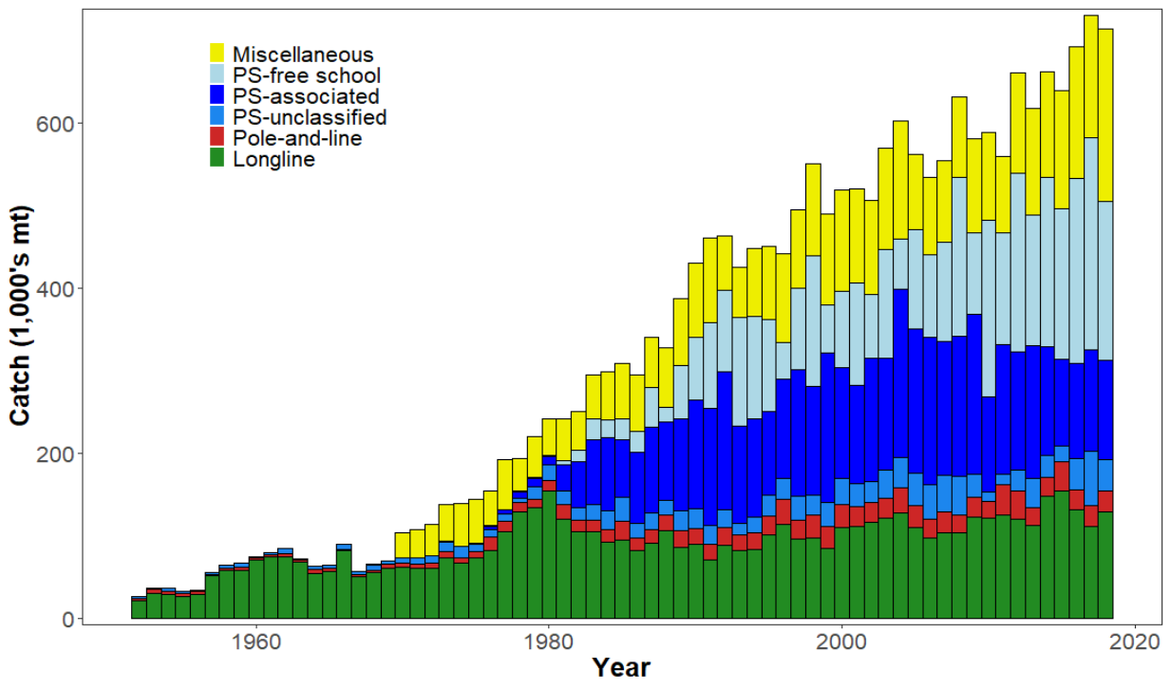

Figure 16. Time Series Annual Catch of Yellowfin Tuna by Gear Over WCPFC-CA Region. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

Over the years, purse seine has been the primary fishing method in catching yellowfin tuna, followed by longline, and others. Handline Fishing is categorized under Other Commercial Fisheries in WCPFC.

In the Philippines, large yellowfin tuna is taken from purse seine and handline fishery. During the Western Pacific East Asia (WPEA) Workshop facilitated by WCPFC and SPC in May 2021, the 2020 tuna catch of the entire Philippines was reconciled and consolidated for reporting resulting to total yellowfin catch for 2020 at 74,618mt. Figure 17 illustrates the distribution of the yellowfin tuna catch in the country by gear.

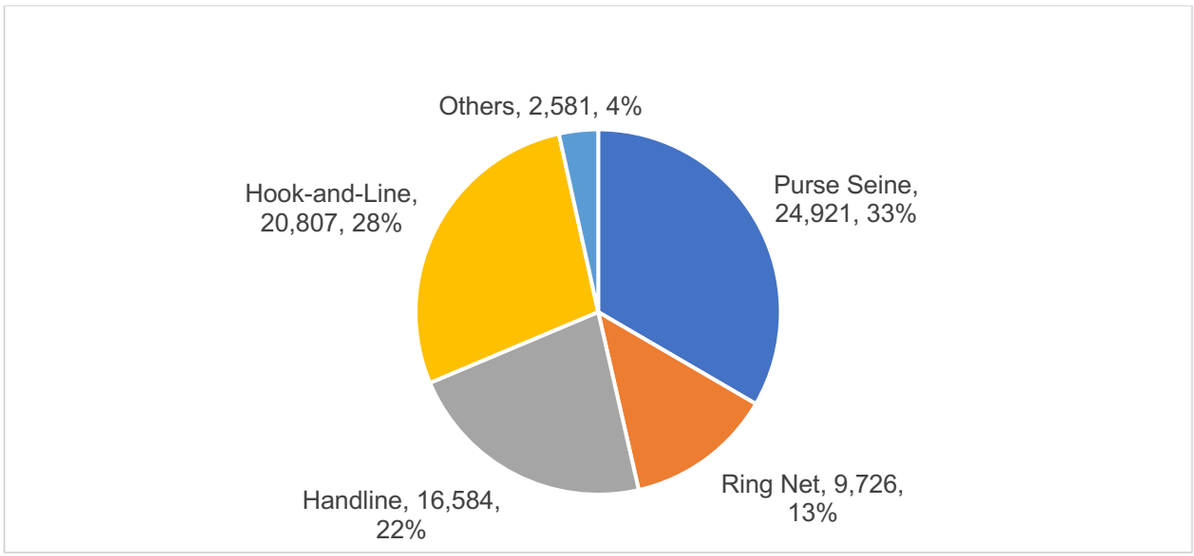

Figure 17. Yellowfin Tuna Catch (in tons) in the Philippines in 2020 by Fishing Gear. (Source: WPEA Philippines, 2020).

It is observed that in 2020, purse seine was the main method used which has caught 24,921 tons (33%) of yellowfin tuna, followed by hook-and-line (28%), handline (22%), ring net (13%), and others (4%).

In Figure 18, the yellowfin tuna catches by handline fishing throughout the years from 2000 to 2020 is shown.

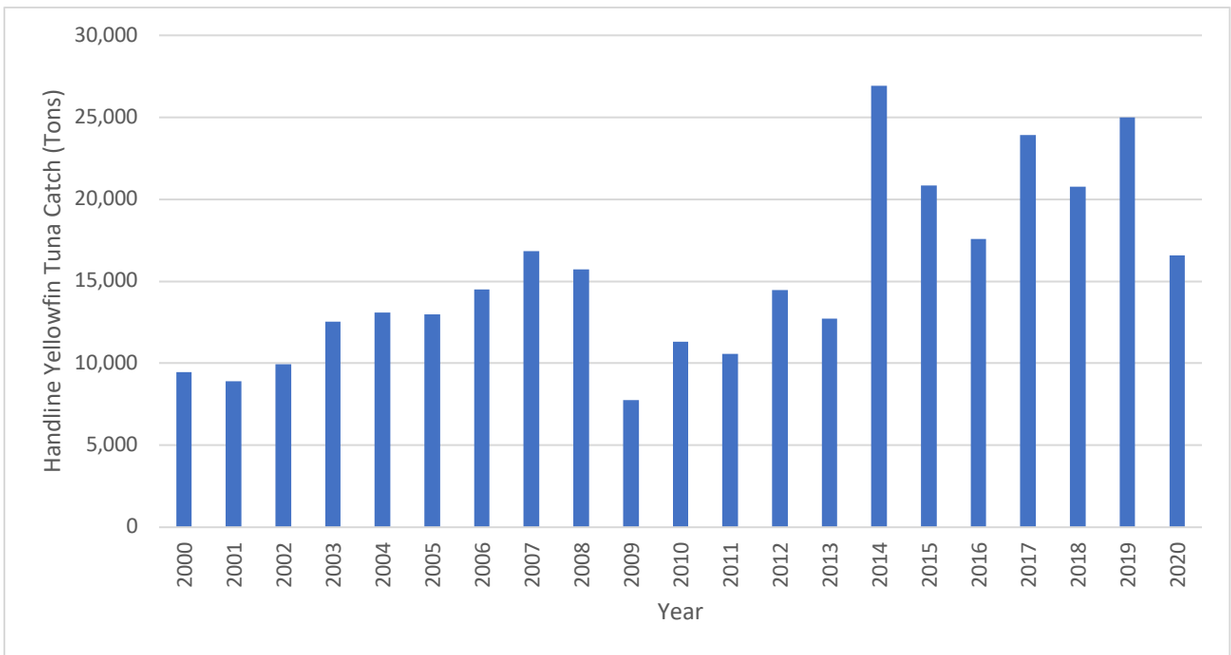

Figure 18. Yellowfin Tuna Catch in the Philippines by Handline from 2000 to 2020. (Source: WPEA Philippines, 2020).

Handline fishing of yellowfin tuna in 2019 was 24,988 tons, while in 2020 it decreased to 16,584 tons which is 33% reduction. Moreover, from 2014 where the peak of yellowfin tuna catch was recorded, there was 10,341 tons (38%) decrease in 2020.

The Philippine Fisheries Development Authority (PFDA) in General Santos City Fish Port Complex has provided information on the distribution of handline catch per specie in region 12 (SOCSKSARGEN), Philippines as illustrated in Figure 19.

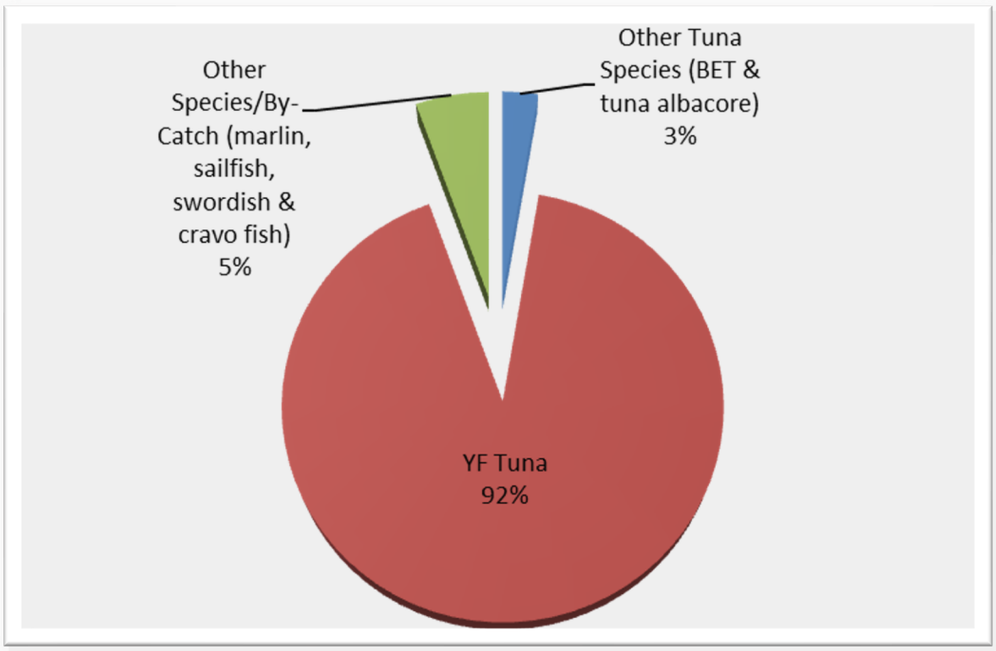

Figure 19. Handline Fishing Catch per Specie in Region 12 in 2020. (Source: PFDA, 2020)

Based on this, it is concluded that in the handline fishing in region 12, the majority of the catch is yellowfin tuna with 92% of the total catch. Other handline catch includes other tuna species such as bigeye and albacore (3%), and other by-catch such as blue marlin (*Makaira mazara*), sailfish (*Istiophorus platypterus*), swordfish (*Xiphias gladius*) and moon fish (*Lampris guttatus*)(5%). Subsequently, the source of this bulk of fish is shown in Figure 20.

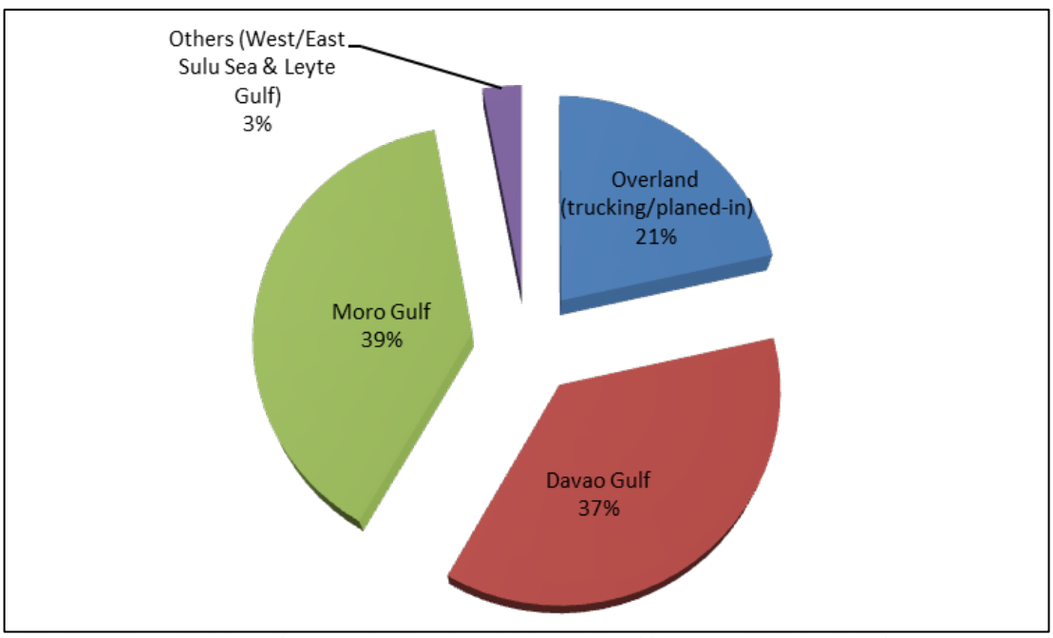

Figure 20. Handline Fishing Ground in Region 12 in 2020. (Source: PFDA, 2020).

Most of the fish caught by handline is from Moro Gulf (39%) in FMA 3 and Davao Gulf (37%) in FMA 2.

Based on NSAP monitoring, handline catch of yellowfin tuna averaged 728 mt per month during 2004–2019 with low catches observed in years 2012 and 2015 brought about by restrictions in the traditional fishing grounds demonstrated in Figure 21.

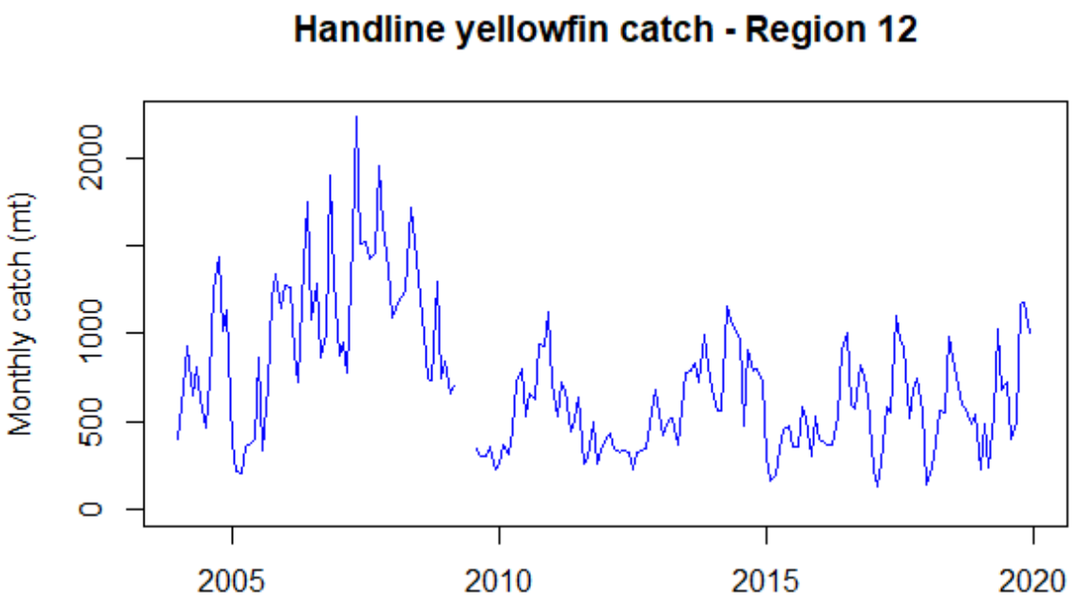

Figure 21. Raised Monthly Tuna Catch in the Philippine Region 12 (SOCCSKSARGEN) Handline Fishery Based on NSAP Monitoring. (Source: WCPFC-SC16-2020/SA-IP-19 Rev.01).

Monthly yellowfin tuna nominal CPUE for the handline fleet averaged 91 kgs per boat day and fluctuated from 40 to 170 kgs per boat day (Figure 22). The CPUE increased from 2004 to 2007, declined precipitously from 2008 until the end of 2009, rebounded strongly in 2010, and was relatively stable from 2011 to 2019, though there is high seasonal variability.

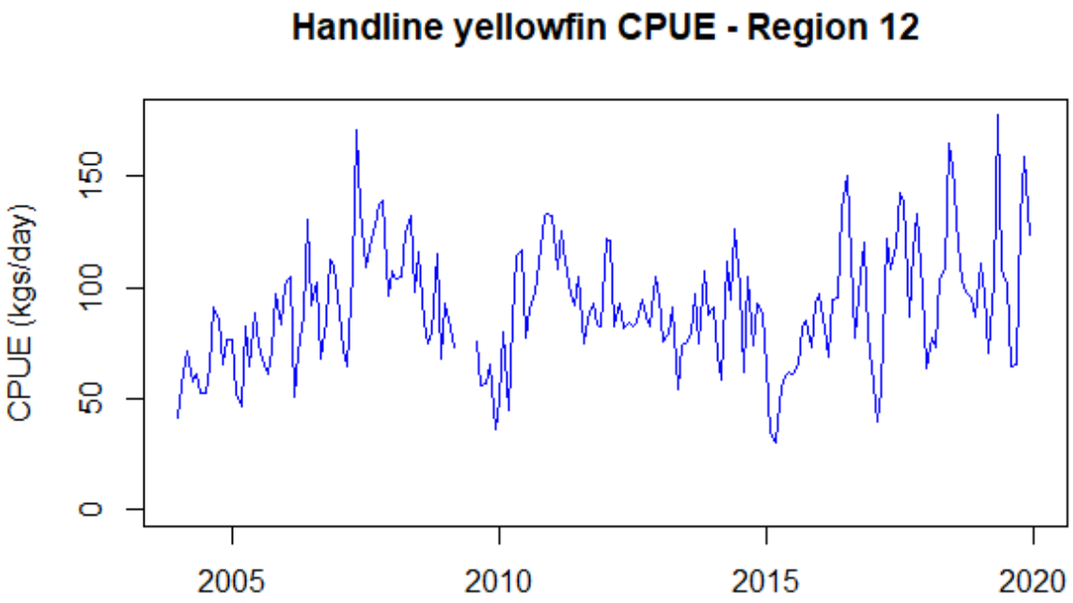

Figure 22. Nominal Monthly Yellowfin Tuna CPUE in the Philippine Region 12 (SOCCSKSARGEN) Handline Fishery Based on NSAP Monitoring. (Source: WCPFC-SC16-2020/SA-IP-19 Rev.01).

The GLM analysis considered four models based on effects of: 1) *YR: QTR* (Figure 23 black line), 2) *YR: QTR* and *Vessel* (Figure 23 blue line), 3) *YR: QTR* and *Area* (Figure 23 red line), and 4) *YR: QTR, Vessel,* and *Area* (Figure 23 grey line). Results and diagnostics indicated that models based on *YR: QTR* and *Vessel* and *YR: QTR, Vessel,* and *Area* were statistically preferred. Relative trends were similar for all models, with *YR: QTR* and *Area* having the most optimistic trend. Inspection of the *Area* declaration indicated that Moro Gulf was declared for ~53% of the fishing areas from 2004 to 2019; therefore, the area effect is not very informative as an explanatory effect in the model. The trend based on *YR: QTR* and *Vessel* is considered the most representative to illustrate relative abundance of yellowfin tuna for the handline.

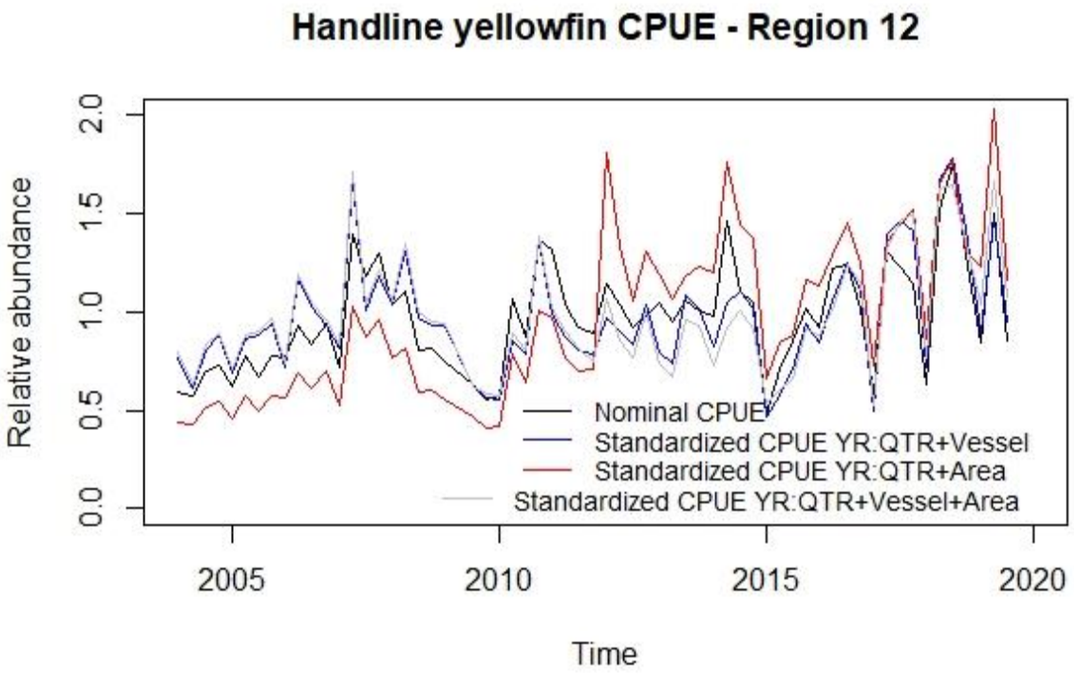

Figure 23. Quarterly Relative Abundance of Yellowfin Tuna in the Philippine Region 12 (SOCCSKSARGEN) Handline Fishery as Determined by Generalized Linear Models (GLMs). Each series is normalized to a mean value of 1.0. (Source: WCPFC-SC16-2020/SA-IP-19 Rev.01).

In the comparison between nominal yellowfin CPUE and relative abundance, the relative abundance trend has less variability and generally follows the trend in nominal CPUE. While the GLMs included a *Vessel* effect, in reality the relative abundance trend may be biased because the analysis does not adequately quantify efficiency for each handline vessel. The nominal increase in CPUE for yellowfin tuna (Figure 22) from 2004 to the end of 2008 may be related to increased vessel efficiency, such as handline vessels having an increasing number of *pakura* or small boats with engines that were introduced in 2005. Thus, the increasing CPUE and relative abundance in reality may relate to vessels with more *pakura* catching more fish per boat day, i.e., an increase in catchability.

9.1.1.3. WCPO Yellowfin Stock Status and Assessment

The 2020 stock assessment for yellowfin tuna uses 9 assessment regions for the entire WCPO as illustrated in Figure 24. The highest fishing impact of yellowfin tuna was recorded in regions 3, 4, 7 and 8 due to purse seine fishing in the Pacific.

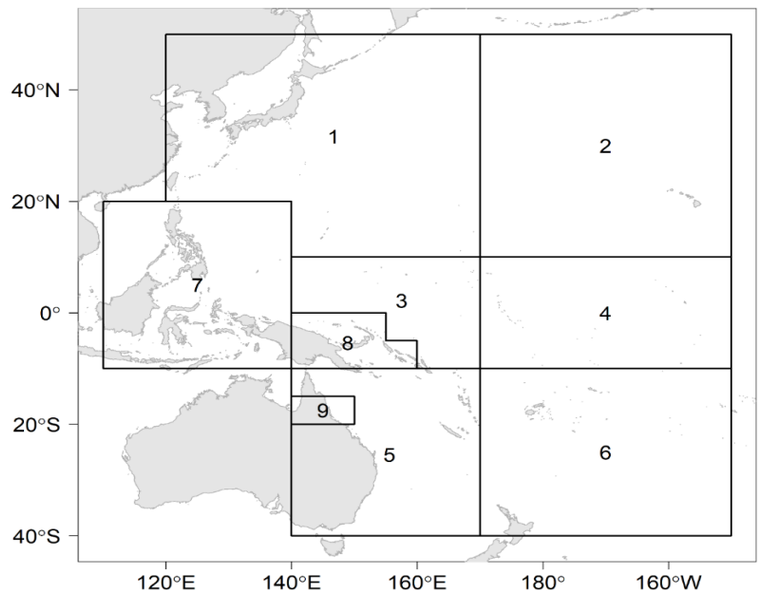

Figure 24. Geographical Area Covered by Yellowfin Tuna Stock Assessment in 2020. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

Estimates of stock status from the structural uncertainty grid were generally more optimistic than from the 2017 assessment. This is strongly linked to the incorporation of the new growth. However, alternative treatment of tag data and assumptions regarding selectivity to better fit the data also resulted in a more optimistic stock status.

All models in the structural uncertainty grid (Table 9) show WCPO yellowfin tuna to be above 20%$SB_{F=0}$, which is consistent with the previous assessment. Median terminal depletion ($SB_{recent}/SB_{F=0}$) was 0.58 (80 percentile range: 0.51-0.64). The influence of more positive recruitments estimated in the terminal period of the previous stock assessment led to more optimistic stock status in the recent period but have now moved through the population.

All models in the structural uncertainty grid showed exploitation of WCPO yellowfin tuna to be below F_{MSY}. Median F_{recent}/F_{MSY} was 0.36 (80 percentile range: 0.27-0.47).

The median catch in the last year of the assessment (2018) was 711,072 mt which was less than the median MSY (1,091,200 mt).

Based on the uncertainty grid adopted, the WCPO yellowfin tuna spawning biomass is above the biomass LRP, and recent F is below F_{MSY}. The stock is not experiencing overfishing (100% probability $F<F_{MSY}$) and is not in an overfished condition (0% probability $SB/SB_{F=0}$<LRP). Additionally, stochastic projections predict there to be no risk of breaching the LRP (0% probability $SB_{2048}/SB_{F=0}$<LRP).

Table 9. Summary of Reference Points Over the 72 Models in the Structural Uncertainty Grid for Yellowfin Tuna. 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. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

	Mean	Median	Minimum	10th percentile	90th percentile	Maximum
C_{latest}	709,389	711,072	700,358	702,279	712,761	714,073
$Y_{Frecent}$	779,872	784,200	661,600	707,720	877,040	908,000
f_{mult}	2.87	2.80	1.70	2.12	3.72	4.29
F_{MSY}	0.11	0.10	0.08	0.09	0.12	0.15
MSY	1,090,706	1,091,200	791,600	874,200	1,283,920	1,344,400
F_{recent}/F_{MSY}	0.37	0.36	0.23	0.27	0.47	0.59
$SB_{F=0}$	3,641,228	3,603,980	2,893,274	3,231,353	4,050,429	4,394,277
SB_{MSY}	860,326	858,700	349,100	590,090	1,114,400	1,322,000
$SB_{MSY}/SB_{F=0}$	0.23	0.24	0.12	0.18	0.28	0.30
$SB_{latest}/SB_{F=0}$	0.54	0.54	0.40	0.47	0.60	0.66
SB_{latest}/SB_{MSY}	2.43	2.28	1.47	1.67	3.29	4.89
$SB_{recent}/SB_{F=0}$	0.58	0.58	0.42	0.51	0.64	0.68
SB_{recent}/SB_{MSY}	2.59	2.43	1.54	1.77	3.57	5.27

With the fishing effort and catch properly regulated at the same levels as in 2016-2018, there is no probability of the stock dropping below the Limit Reference Point (LRP). Overall, the fish stock is in healthy and sustainable status. The spawning potential per region and the overall assessment region is shown in Figure 25 with attribution to different fishing gears. It can be observed that the spawning potential of yellowfin tuna in the overall region is on the high side or is increasing over the years.

The current mortality rate of yellowfin tuna falls below the F_{MSY} which means that there is no overfishing. In Figure 26, the annual fishing mortality of juvenile and adult yellowfin tuna from 1950 to 2020 is shown. It is observed that the mortality of juvenile fish in 2015 and later is more than the adult fish.

Due to the purse seine fishing in the Pacific, there is a highest fishing impact in the tropical regions. During the 16th Regular Session, WCPFC considers reducing the depletion by reducing taking of juveniles so as to increase the maximum yields and by taking other precautionary approach. This will also increase the spawning potential in the tropical regions.

The Majuro plot (Figure 27) summarizes the results for each of the models in the structural uncertainty grid with marginal distributions for spawning potential depletion and fishing mortality, where the brown triangle is the median of the structural uncertainty grid. The Kobe plot (Figure 28) represents estimates of stock status in terms of spawning biomass depletion and fishing mortality relative to *MSY* quantities and marginal distributions of each are presented with the median of the structural uncertainty grid displayed as a brown triangle.

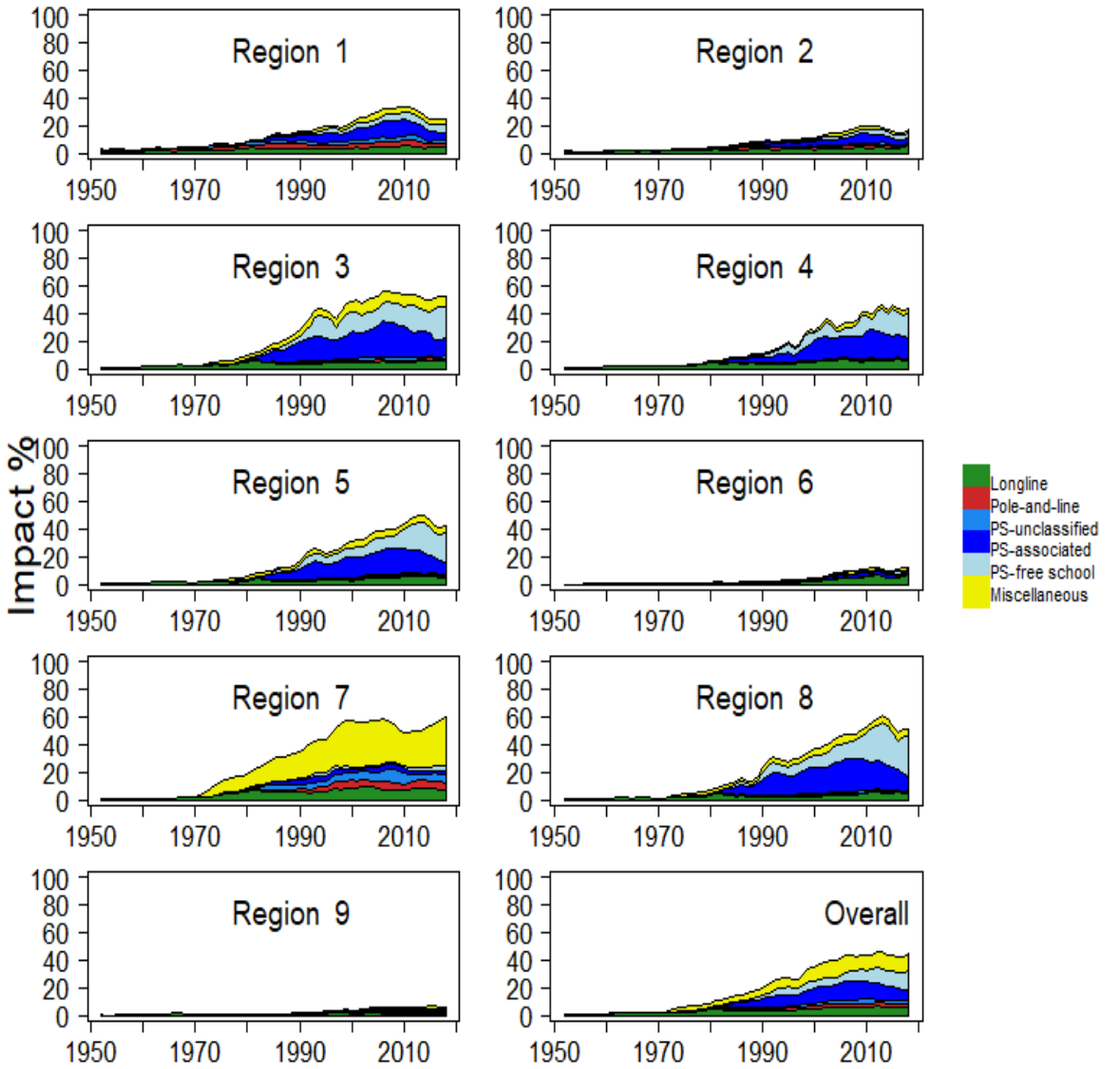

Figure 25. Spawning Potential of Yellowfin Tuna by Region and Overall, Region. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

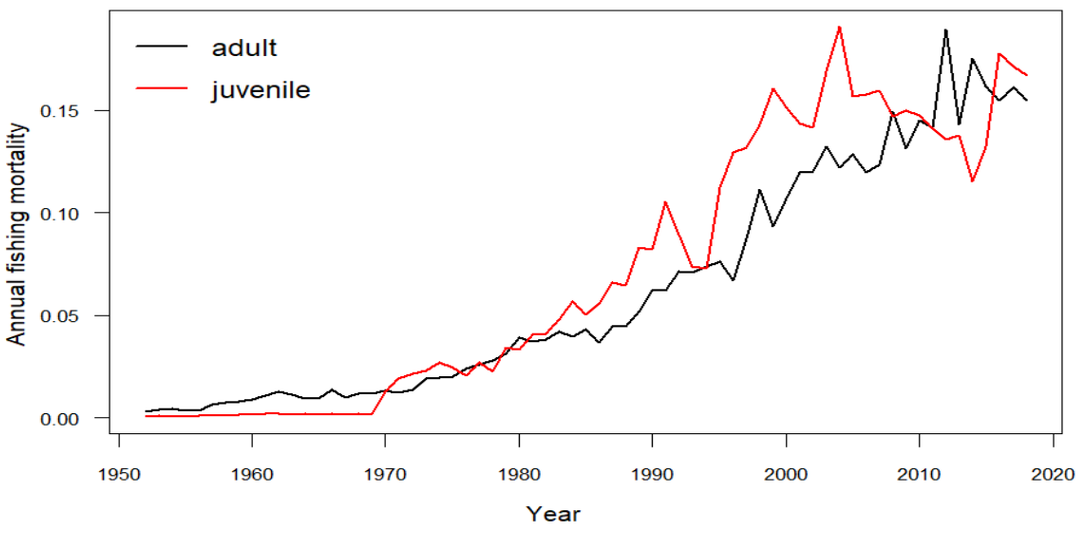

Figure 26. Estimated Annual Average Mortality for Juvenile and Adult Yellowfin Tuna. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

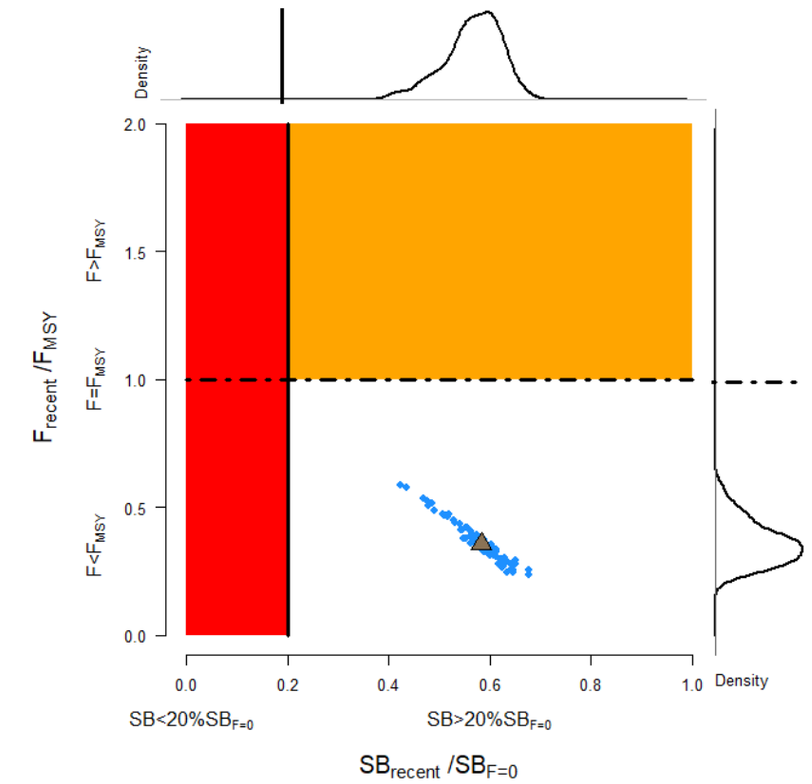

Figure 27. Majuro Plot Representing Yellowfin Tuna Stock Status in Terms of Recent Spawning Potential Depletion (2015–2018) and Fishing Mortality. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

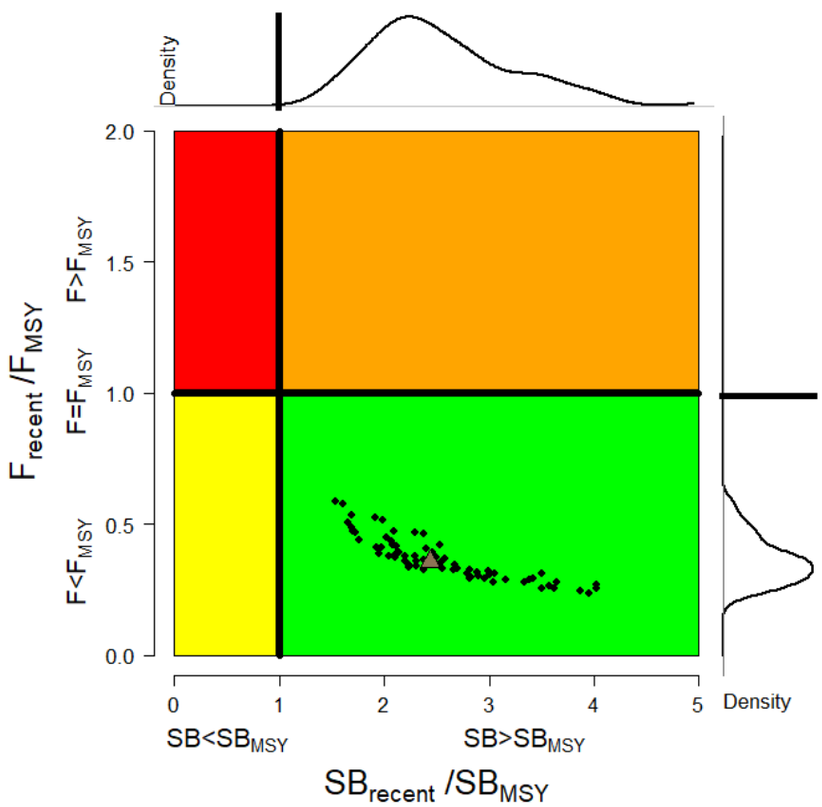

Figure 28. Kobe plot for the Recent Spawning Potential of Yellowfin Tuna (2015–2018) Summarizing the Results for Each of the Models in the Structural Uncertainty Grid. (Source: WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020).

9.1.1.4. WCPO Yellowfin Stock Management

Based on the 2020 stock assessment results, SC16 recommends as a precautionary approach that the fishing mortality on yellowfin tuna stock should not be increased from the level that maintains spawning biomass at 2012-2015 levels until the Commission can agree on an appropriate target reference point.

Currently, the WCPO yellowfin tuna is managed under WCPFC Conservation Management Measure 2021-01, the Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean applicable in the high seas and all EEZs in the Convention Area. Under this measure, pending the agreement on a target reference point, it is agreed that 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.

Under this measure, purse seine fishery is prohibited to fish on FADs for 3 months from July-September in the high seas and EEZs. Additional 2 months except for Philippines and Kiribati is added for other countries. In-zone purse seine limits are set for all member countries. Philippines purse seine limit in its EEZ is set at 42,000 fishing days. In the HSP1, Philippines effort limit is set at 4,659 days. Capacity limit is also set for purse seine vessels larger than 24 meters which shall be kept at the applicable level under CMM 2013-01. Other commercial fisheries shall not exceed the average level for the period 2001-2004 or the level of 2004. CMM 2018-01 was extended by CMM 2020-01 to be effective till February 15, 2022.

9.1.1.5. Principle 1 Performance Indicator Scores and Rationales

PI 1.1.1 – Stock Status - Yellowfin 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			
	Guidepost	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				
While there was a long-term decrease in spawning biomass from the 1970s for yellowfin tuna, depletion rates have been relatively stable over the last decade. In the 2020 stock assessment of yellowfin in the WCPO, all models in the structural uncertainty grid show WCPO yellowfin tuna to be above 20%$SB_{F=0.}$ The median value of spawning biomass depletion ratio ($SB_{recent}/SB_{F=0}$) was 0.58 with 80 percentiles with range 0.51 to 0.64 with 0% probability (0 out of 72 models) that the recent (2015-2018) spawning biomass had breached the adopted LRP. The median catch in the last year of the assessment (2018) was 711,072 mt which was less than the median MSY (1,091,200 mt). The grid's median of relative recent (2014-2017) fishing mortality (F_{recent}/F_{MSY}) was 0.36 with a 10^{th} to 90^{th} percentile with a range of 0.27 to 0.47 with 0% probability (0 out of 72 models) that the recent fishing mortality was above F_{MSY}. Thus, the WCPO yellowfin tuna spawning biomass is above the biomass LRP, and recent F is below F_{MSY}. The stock is not experiencing overfishing (100% probability $F<F_{MSY}$) and is not in an overfished condition (0% probability $SB/SB_{F=0}$<LRP). Although there is a long-term increase in fishing mortality for both juvenile and adult yellowfin tuna, there is no directional trend since 2010. The stochastic projections indicated the potential stock consequences of fishing at "status quo" conditions (2016–2018 average longline and other fishery catch and 2018 purse seine effort levels) and long-term recruitment scenario using the uncertainty framework approach endorsed by SC. Projections indicate that median $SB_{2025}/SB_{F=0}$ = 0.58; median $SB_{2035}/SB_{F=0}$ = 0.59 and median $SB_{2045}/SB_{F=0}$ = 0.58. The risk that $SB_{2048}/SB_{F=0}$ is less than the Limit Reference Point is 0%. Based on the foregoing, there is a high degree of certainty that the stock is above the point where recruitment would be impaired, which meets the requirements of scoring issue at the SG 60, SG 80 and SG 100 levels.				
Scoring Issue		SG 60	SG 80	SG 100
b	Stock status in relation to achievement of Maximum Sustainable Yield (MSY)			
	Guidepost		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				

Without a WCPO-wide target reference point in place, implicit target for yellowfin B_{MSY} is supported per CMM 2020-01 The 2020 stock assessment's structural uncertainty grid median for SBrecent/SB_{MSY} is at 2.43 with a range of 1.77 to 3.57 for the 90th percentiles, where recent =is the average from 2015 to 2018 and SBlatest/SB_{MSY} is at 2.28 with a range of 0.47 to 0.60 for the 90th percentiles for 2018. The minimum values for both are above 1 at 1.54 and 1.47 respectively.

The scoring issue is met at SG 80 level.

References

Vincent et al, 2020; WCPPC SC Summary Report 2020; Temblay-Boyer et al, 2017
WCPFC Conservation and Management Measure for Bigeye, Yellowfin and Skipjack in the Western and Central Pacific Ocean 2020-01, https://cmm.wcpfc.int/measure/cmm-2020-01

Stock status relative to reference points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Limit Reference Point (LRP) = 20%$SB_{F=0}$	0.2 x $SB_{F=0}$ =720,796 mt	$SB_{recent}/SB_{F=0}$ = 0.58 (recent = 2015 to 2018) > LRP $SB_{latest}/SB_{F=0}$ = 0.54 (latest= 2018) > LRP
Reference point used in scoring stock relative to MSY (SIb)	Level of spawning Biomass relative to MSY	SB_{MSY} = 858,700mt	SB_{recent}/SB_{MSY} = 2.43 (recent = 2015 to 2018) SB_{latest}/SB_{MSY} = 2.28 (latest= 2018)
Draft scoring range		**≥ 80**	
Information gap indicator		**Information sufficient to score PI**	
Data-deficient? (Risk-Based Framework needed)		**No**	

PI 1.1.2 – Stock rebuilding yellowfin 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			
	Guidepost	A rebuilding timeframe is specified for the stock that is shorter of 20 years or 2 times its generation time. For cases where 2 generations are 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.				
Scoring Issue		SG 60	SG 80	SG 100
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		**NA**		
Information gap indicator		**Information sufficient to score PI**		

PI 1.2.1 – Harvest strategy yellowfin 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			
	Guidepost	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**	**Not scored**
Rationale				
Agreed harmonized score: 60. MSC guidance defines a harvest strategy as a combination of monitoring, stock assessment, harvest control rules and management actions intended to achieve management objectives. The measures agreed by WCPFC across the different fisheries are all geared towards meeting the objectives for the yellowfin stock of LRP at 20%$SB_{F=0}$, however, formal harvest control rules are not yet in place. WCPFC17 adopted the updated Indicative Workplan for the Adoption of Harvest Strategies under CMM 2014-16. Yellowfin tuna is therefore considered to meet the SG 60 level of this scoring issue but not the SG 80 or SG 100 levels.				
Scoring Issue		SG 60	SG 80	SG 100
b	Harvest strategy evaluation			
	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	**Yes**	**Yes**	**Not scored**
Rationale				
The latest stock assessment presents a positive indication of stock status with the WCPO yellowfin tuna spawning biomass above the biomass LRP, and recent F is below F_{MSY}. This is indicative of a harvest strategy meeting its objectives. Therefore, yellowfin tuna is considered to meet both the SG 60 and SG 80 levels of this scoring issue. Without the formal HCRs and harvest strategy in place, evaluation cannot be assessed.				

PI 1.2.1		There is a robust and precautionary harvest strategy in place.		
Scoring Issue		SG 60	SG 80	SG 100
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 mechanisms are in place for major fisheries, purse seine and longline which may include logbook monitoring, VMS coverage, observer coverage (though limited for longline), landing validations, tagging data and biological studies among others, making it possible to conduct a robust stock assessment. This meets the SG 60 requirements.				
Scoring Issue		SG 60	SG 80	SG 100
d	Harvest strategy review			
	Guidepost			The harvest strategy is periodically reviewed and improved as necessary
	Met?			**Not Scored**
Rationale				
With 1.2.1a not meeting SG 80 requirements, the PI is not assessed.				
Scoring Issue		SG 60	SG 80	SG 100
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				
The PI is not relevant species noting that sharks are not target species of this fishery.				
Scoring Issue		SG 60	SG 80	SG 100
f	Review of alternative measures			
	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted

		unwanted catch of the target stock.	target stock and they are implemented as appropriate.	catch of the target stock, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**
Rationale				
There is no unwanted catch within the fishery, therefore the scoring issue is not relevant. No alternative measure is in place.				
References				
Vincent et al, 2020; WCPPC SC Summary Report 2020				
Draft scoring range	**60-79**			
Information gap indicator	**Information sufficient to score PI**			

PI 1.2.2 – Harvest control rules and tools yellowfin 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			
	Guidepost	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**	**Not scored**
Rationale				
Generally understood HCRs are not in place. However, in the case of yellowfin, it is a stock that has not previously been reduced below MSY in its stock assessments. The fishery has always been maintained well above the TRP and therefore with very low probability of becoming overfished or to experience overfishing. Stochastic projections predict there to be no risk of breaching the LRP. Therefore, this stock meets the requirements to be considered against "availability" requirements, thus meeting the requirement for **SG 60**. While the HCRs are yet to be formalized in the WCPFC, there is a range of measures formulated to keep fishing mortality to acceptable levels. CMM 2016-04 provides for the workplan for the development of harvest strategies thereby defining limit reference points and harvest control rules. The scoring issue is met at SG 60 level.				
Scoring Issue		SG 60	SG 80	SG 100
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**	**Not scored**
Rationale				
With HCRs still to be develop by WCPFC per CMM 2016-04, the robustness to uncertainty cannot be evaluated. The SG80 requirements are not considered to be met. The scoring issue it not met.				

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place.		
Scoring Issue		SG 60	SG 80	SG 100
c	HCRs evaluation			
	Guidepost	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**	**Not scored**

Rationale
MSC requires consideration of current exploitation levels as part of evaluation of effectiveness of HCR. With grid median fishing mortality in the recent years (2014-2017) at .37 of F_{MSY}, this is indicative of no overfishing occurring, thus the range measures in place are effective, meeting the SG 60 level requirement. With the workplan still under development SG 80 is not met.

References
Vincent et al, WCPFC17 Summary Report, 2020, WCPFC CMM 2014-06

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

PI 1.2.3 – Information and monitoring yellowfin 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			
	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	**Yes**	**Yes**	**No**
Rationale				
WCPO yellowfin is assessed and managed as a single stock in the WCPFC Convention Area. All WCPFC CCMs are required as member obligations to provide catch and effort data to WCPFC with logsheet data raised to best estimates of total catch. Length/weight frequency data are collected from sampling programs and observer reports. Fleet composition is provided by CCMs annually as part of their Part 1 Report. Size and age data is based on otolith data collected and modelled using VB model. SPC noted benefits of this approach and that this process appears to work relatively well.				

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
b	Monitoring			
	Guidepost	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				
With annual reporting commitments of the CCMs in place and reviewed in regular annual meetings of the Scientific Committee Meetings, and scheduled stock assessment of yellowfin tuna, stock abundance and removals are monitored, however, with some CCMs not yet providing operational data it can't be monitored with high degree of certainty.				

PI 1.2.3	Relevant information is collected to support the harvest strategy		
Scoring Issue	SG 60	SG 80	SG 100
c	Comprehensiveness of information		
	Guidepost	There is good information on all other fishery removals from the stock.	
	Met?	**Yes**	

Overall Rationale
WCPFC has a mechanism for collecting catch, effort and fleet information from its CCMs necessary for the management of the stock. In the Philippines, stock abundance may also be obtained through the National Stock Assessment Program in Region 12. While catch reports/logsheet submission is required by BFAR, the fishery has neither maintained its records nor submitted to BFAR. The scoring issue (a) and (b) are met at SG 60 and SG 80 levels but not SG100. Scoring issue c is met at SG 80.

References
Banks et al. 2011, Temblayer-Boyet et al. 2017 WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020 NFRDI NSAP Program https://nsap.nfrdi.da.gov.ph/about 2021 Activity Progress Report: WPEA-Improved Tuna Monitoring Activity, https://www.wcpfc.int/doc/2022/2021-activity-progress-report-wpea-%E2%80%93-improved-tuna-monitoring-activity WCPFC Convention Text https://www.wcpfc.int/convention-text

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

PI 1.2.4 – Assessment of stock status yellowfin 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			
	Guidepost		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**
Scoring Issue		SG 60	SG 80	SG 100
Rationale				
With additional 3 more years of data available to do the most recent assessment for yellowfin tuna (*Thunnus albacares*) in 2020, the integrated model-based assessment uses components including growth, natural mortality, maturity, fecundity, recruitment, fishery dynamics and dynamics of tagged fish. New developments to the stock assessment include addressing recommendations of the 2017 stock assessment report, new information on age and growth from otoliths and the integration of growth information from tag recaptures, as well as the implementation of the Richards growth model; updates to the definition of reproductive potential; implementation of a composite 'index' longline fishery for each model region which received that region's standardized CPUE index, and concurrently a 'pseudo catch conditioned' approach taken for the assessment. The recent assessment took into account the major features relevant to the biology of yellowfin tuna and the nature of the UoA. Thus, SG80 and SG100 requirements are met.				
b	Assessment approach			
	Guidepost	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**	
Scoring Issue		SG 60	SG 80	SG 100
Rationale				
The methodology used for the assessment is based on the general approach of integrated modeling which is carried out using the stock assessment framework MULTIFAN- CL2. MFCL implements a size-based, age- and spatially structured population model. Model parameters are estimated by maximizing an objective function, consisting of both likelihood (data) and prior information components. With this approach yellowfin stock status is estimated relative to target and limit reference point. Requirements of SG60 and SG80 levels are met.				

c	Uncertainty in the assessment			
	Guidepost	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
A feature of the 2020 yellowfin tuna stock assessments in the WCPO is the use of an 'uncertainty grid'. The uncertainty grid is a group of models that are run to explore the interactions among selected axes of uncertainty that relate to biological assumptions, data inputs and data treatment. The axes are generally selected from one-off sensitivity runs of a diagnostic (or base case) model to indicate uncertainties that have notable effects on the estimates of key model parameters and management quantities. The uncertainty grid typically involves numerous models, as it includes models for all combinations of the uncertainty axes and alternative assumptions within each axis. Importantly, the uncertainty grid captures variability in model estimates due to assumptions in model structure that are not accounted for by statistical uncertainty estimated in a single model run, or a set of one-off sensitivities. With these, SG60, SG80 and SG100 requirements are met.

Scoring Issue	SG 60	SG 80	SG 100
d	Evaluation of assessment		
	Guidepost		The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?		**Yes**
Scoring Issue	SG 60	SG 80	SG 100

Rationale
The model-based assessment process was undertaken using widely acceptable and recognized assessment software which has undergone continuous development over the years supported by background analyses and research. The assessment covers different levels of uncertainties with different reference points such as MSY reference points and depletion-based reference levels ensuring the robustness of the assessment. Scoring Issue (d) met SG 100 level requirements.

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

Rationale
Its structure is subjected to review based on available new information. The assessment undergoes regular internal peer review but not regular external review. while Scoring Issue (3) is met at SG 80 level.
References
Vincent et al, 2020; WCPPC SC Summary Report 2020 WCPFC WCPO Yellowfin Tuna Stock Status and Management Advise, 2020 SC16-SA-WP-04 Stock assessment of yellowfin tuna in the western and central Pacific Ocean (31July) - Rev.03 https://www.wcpfc.int/node/46611

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

9.1.2. Principle 1 – Bigeye Tuna (*Thunnus obesus*)

9.1.2.1. Biology and Ecology of Bigeye Tuna

Tuna is the most eaten fish in the world which belongs to the mackerel family. As a commodity, tuna accounts for more than 8% of global trade. They are nomadic and can be found throughout the world's oceans. This fish has 8 species that vary in quality, size and color. The main species include skipjack, albacore, yellowfin, bluefin and bigeye. Bigeye is considered to be the "white beef" and is perfect as sashimi as well as frozen or fresh. There are 4 bigeye stocks on the major commercial species sold in the global market. They are measured to be 7% of the total global catch.

From its name, bigeye is easily identified with its big eyes. They have dark metallic blue on their backs and upper sides, and white on their belly and lower sides. See Figure 29. During the day, this fish can swim up to 500 meters deep. They live in deeper waters compared to the other varieties of tuna. They have a layer of fat that protects them from cold temperatures and keeps its flesh juicy.

Figure 29. BET Caught During the Hot Reels Sportfishing. (Source: Angler Journal, https://www.anglersjournal.com/adventure/bigeye-tuna-with-an-attitude)

They are found in the subtropical and tropical areas of the Atlantic, Indian, and Pacific Oceans. Tuna is at the top of the marine food chain and are carnivores and predators that maintains the balance in the ocean ecosystem. The eggs they release are also foods to other ocean creatures.

Bigeye is a large variety of tuna that can weigh up to maximum of 210 kg and lasts for 15 years. For every 1 kg gain of tuna, it requires 10 kg of mid-size fish, 100 kg of small fish, 1,000 kg of herbivore small fish, and 10,000 kg of phytoplankton.

Similar to adult yellowfin tuna and smaller than bluefin, bigeye sizes between 40 to 180 cm. Compared to yellowfin and skipjack, bigeye grows slowly and can only reach its full maturity at 3 years old.

According to a study by Shanghai Ocean University, male bigeye was found to be more widespread than females. The female bigeye reaches sexual maturity when they average the length of 100 cm. There is no significant reproductive seasonality between sexes.

Since bigeye are in the deep waters, fishermen use deep-set longlines to catch them. It has belted hooks at intervals used to attract tunas. Longlines represents 10% of the global tuna catches, while 34% of this is from BET caught in the Eastern Pacific Ocean. Because they swim together, bigeye is already considered to be by-catch in skipjack tuna fisheries.

9.1.2.2. Catch and Landings

As per the 2019 WCPFC-CA bigeye has a total catch of 135,442 tons which is a decrease from 2018. The 2019 bigeye tuna catch is a summation of 72,391 tons (53%) from longline, 46,740 tons (35%) from purse seine, 1,496 tons (1%) from pole-and-line, 143 tons (0.1%) from troll, and the remainder 14,672 tons (11%) from other gears. The bulk of this quantity is taken from central Pacific areas and the minority from sub-tropical regions. The annual distribution of the catch per gear over the years is shown in Figure 30.

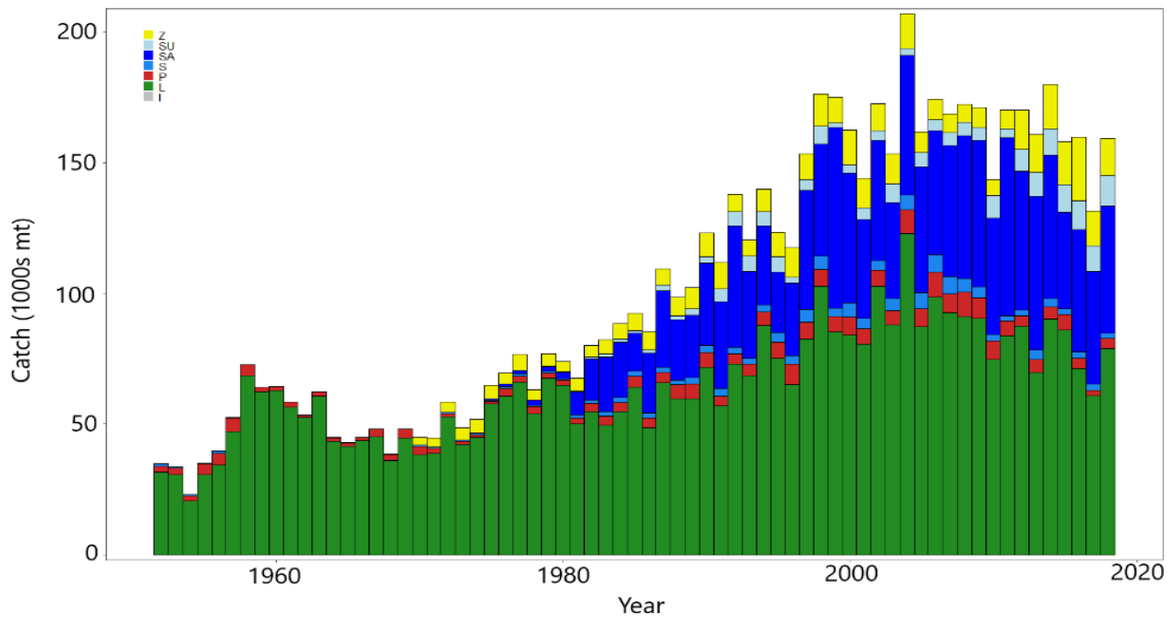

Figure 30. Time Series Annual Catch of Bigeye by Gear Over WCPFC-CA Region. (Source: WCPO BET (Thunnus obesus) Stock Status and Management Advice, 2021)

In the Philippines and Indonesia domestic surface fisheries, they take a high volume of small bigeyewith length ranging from 20 to 50 cm. While in the fisheries using purse seine on FADs can get 25 to 75 cm of bigeye. Moreover, longline can catch fish of adult bigeye of from 80 to 160 cm.

At the WPEA Workshop with WCPFC, the bigeye catches in the Philippines for 2020 has been reconciled at 4.035 tons and broken down by gear in Figure 31. For bigeye, the major fishing gear used is ring net which gathered 1,363 tons (34%), followed by handline (26%), purse seine (24%), hook-and-line (13%), and others (3%). The bigeye catch through handline fishing over the years is illustrated in Figure 32. The 2020 bigeye handline catch of 1,062 tons is 232 tons lesser than the peak in 2017 which is 18% in reduction, but this is 87 tons (9%) increase from the previous year.

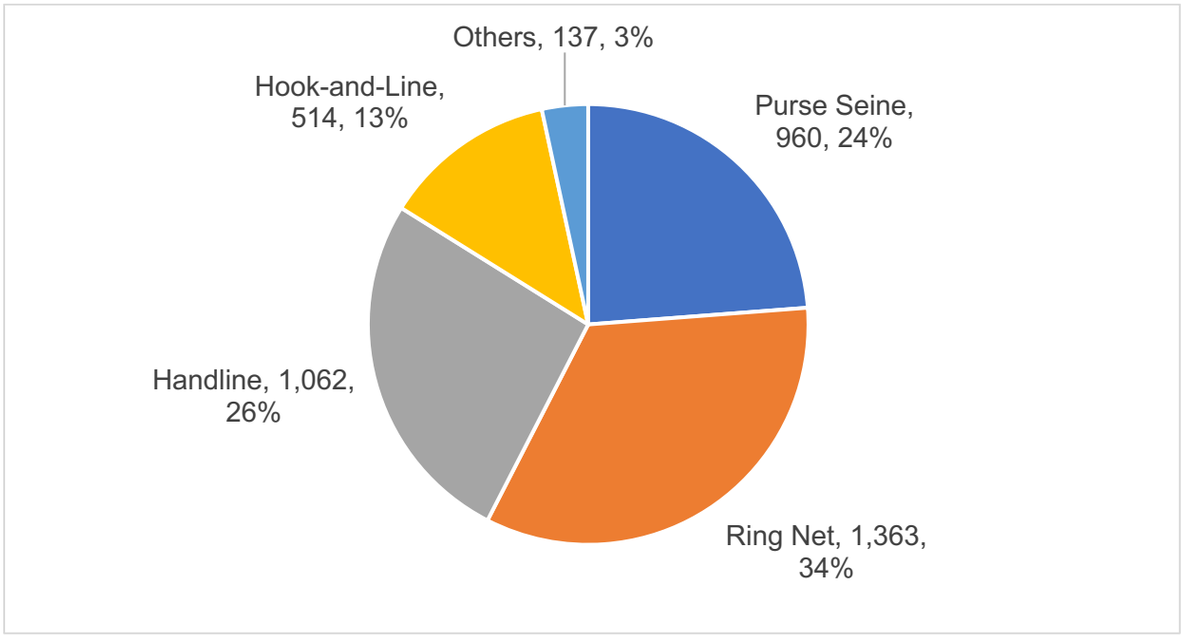

Figure 31. Bigeye Catch (tons) in the Philippines in 2020 by Fishing Gear. (Source: Philippine WPEA Workshop, 2021).

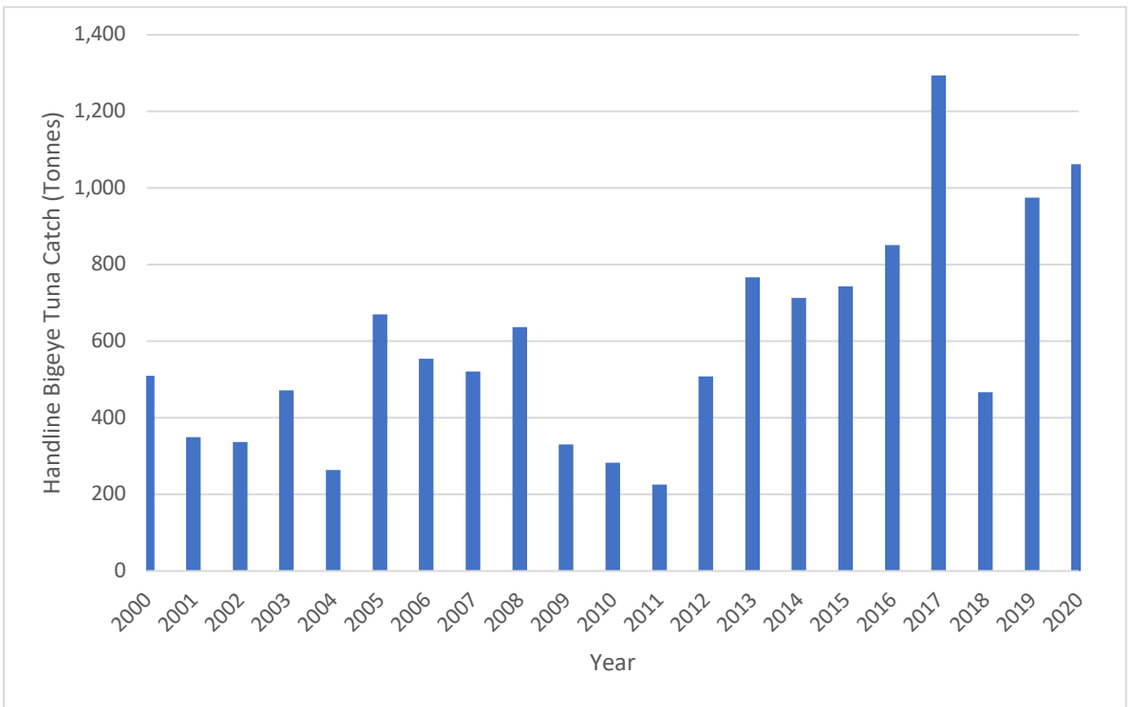

Figure 32. Bigeye Catch in the Philippines by Handline from 2000 to 2020. (Source: Philippine WPEA Workshop, 2021).

9.1.2.3. WCPO Bigeye Stock Status and Assessment

The spatial structure illustrated by Figure 33 was used In the recent 2020 stock assessment for bigeye. Table 10 provides a 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. F_{mult} is the multiplier of recent (2014-2017) fishing mortality required to attain MSY. SC16 noted that the results from the uncertainty grid adopted 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.

Figure 33. Spatial Structure for 2020 Bigeye Stock Assessment. (Source: WCPO Bigeye tuna Stock Status and Management Advice, 2021)

Table 10. Summary of Reference Points Over the 24 Models in the Structural Uncertainty Grid for BET. (Source: WCPO Bigeye tuna Stock Status and Management Advice, 2021)

	Mean	Median	Minimum	10thpercentile	90th percentile	Maximum
C_{latest}	159,738	159,288	157,297	157,722	162,033	162,271
$Y_{Frecent}$	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 median values of relative recent (2015-2018) spawning biomass depletion ($SB_{recent}/ SB_{F=0}$) and relative recent (2014-2017) fishing mortality (F_{recent}/F_{MSY}) over the uncertainty grid of 24 models (Table BET-1) were used to define stock status. The values of the upper 90thand lower 10th percentiles of the empirical distributions of relative spawning biomass and relative fishing mortality from the uncertainty grid were used to characterize the probable range of stock status.

SC16 noted that the catch in the last year of the assessment (2018) was median 159,288 mt which was greater than the median MSY (140,720 mt).

Based on the uncertainty grid adopted by SC16, the WCPO bigeye 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 $F<F_{MSY}$).

Figure 34 demonstrates juvenile and adult fishing mortality rates from the diagnostic model. There was a decline in the stock between 1950s to 2000s. However, in the recent years' stock assessment, it was found out that it is levelling off since 2010 with low risk of falling below LRP. It is evident that there is a huge gap on the mortality between the juvenile and adult fish.

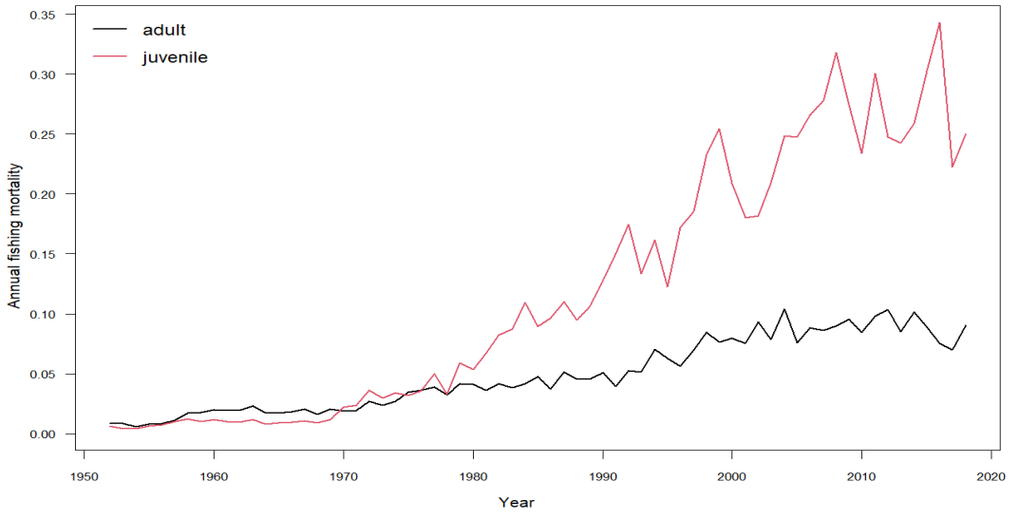

Figure 34. Estimated Annual Average Mortality for Juvenile and Adult Bigeye. (Source: WCPO Bigeye tuna Stock Status and Management Advice, 2021)

The reduction in spawning of bigeye by region and overall is shown in Figure 35. It is observed that the spawning potential of bigeye in the overall region increasing throughout the years.

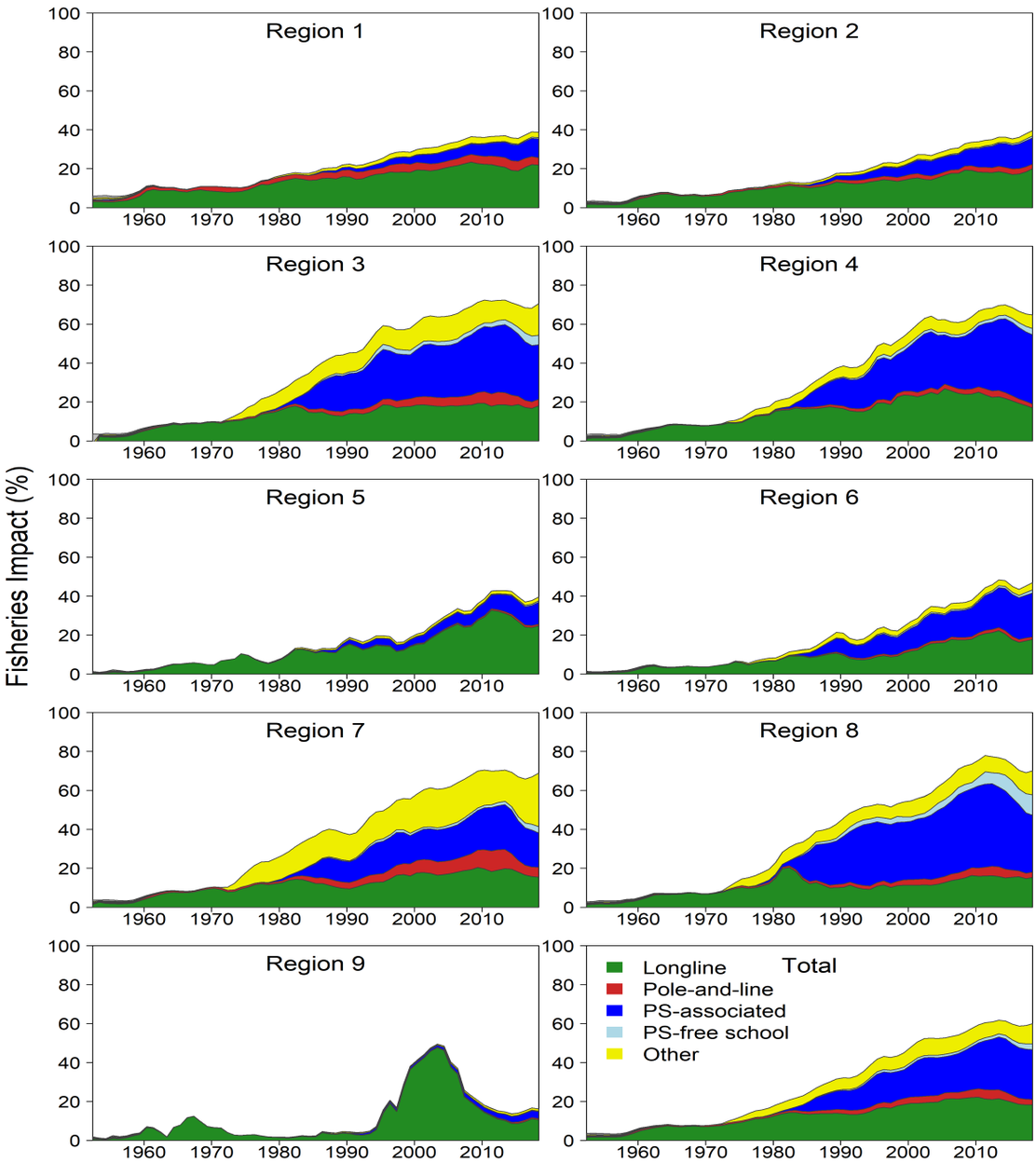

Figure 35. Spawning Potential of Bigeye by Region and Overall, Region. (Source: WCPO Bigeye tuna Stock Status and Management Advice, 2021)

SC16 noted that levels of fishing mortality and depletion differ among regions, and that fishery impact was higher in the tropical regions (Regions 3,4,7 and 8 in the stock assessment model), with particularly high fishing mortality on juvenile bigeye in these regions. There is also evidence that the overall stock status is buffered with biomass kept at more elevated level overall by low exploitation in the temperate regions (1, 2, 6 and 9). SC16 therefore re-iterates that WCPFC17 could continue to consider measures to reduce fishing mortality from fisheries that take juveniles, with the goal to increase bigeye fishery yields and reduce any further impacts on the spawning biomass for this stock in the tropical regions.

The Majuro (Figure 36) and Kobe (Figure 37) plots summarizes the results for each of the 24 models in the structural uncertainty grid. The plots represent estimates of stock status in terms of spawning biomass depletion and fishing mortality, and marginal distributions of each are presented. The median is shown in blue.

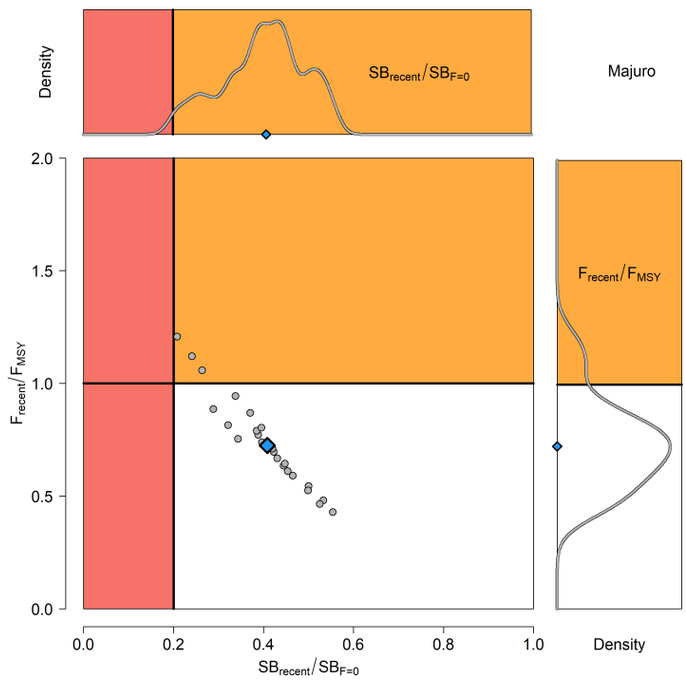

Figure 36. Majuro Plot for the Recent Spawning Potential of Bigeye (2015–2018). (Source: WCPO Bigeye tuna Stock Status and Management Advice, 2021)

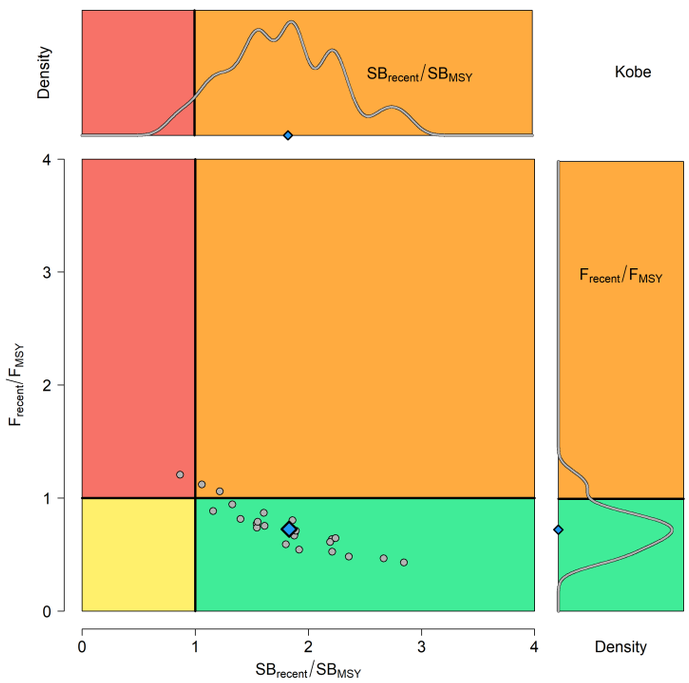

Figure 37. Kobe Plot for the Recent Spawning Potential (2015–2018). (Source: WCPO Bigeye tuna Stock Status and Management Advice, 2021)

9.1.2.4. WCPO Bigeye Stock Management

Based on the recent stock assessment results, SC16 recommends as a precautionary approach that the fishing mortality on bigeye stock should not be increased from the level that maintains spawning biomass at 2012-2015 levels until the Commission can agree on an appropriate target reference point.

Currently, the WCPO bigeye tuna is managed under WCPFC Conservation Management Measure 2021-01, the Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean applicable in the high seas and all EEZs in the Convention Area. Under this measure, pending the agreement on a target reference point, it is agreed that 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.

Under this measure, purse seine fishery is prohibited to fish on FADs for 3 months from July-September in the high seas and EEZs. Additional 2 months except for Philippines and Kiribati is added for other countries. In-zone purse seine limits are set for all member countries. Philippines purse seine limit in its EEZ is set at 42,000 fishing days. In the HSP1, Philippines effort limit is set at 4,659 days. Capacity limit is also set for purse seine vessels larger than 24 meters which shall be kept at the applicable level under CMM 2013-01. Other commercial fisheries shall not exceed the average level for the period 2001-2004 or the level of 2004.

9.1.2.5. Principle 1- Bigeye Performance Indicator Scores and Rationales

PI 1.1.1 – Stock status 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			
	Guidepost	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				
Based on the adopted uncertainty grid, 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). The scoring issue is met at all SG levels.				

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
b	Stock status in relation to achievement of Maximum Sustainable Yield (MSY)			
	Guidepost		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		**Yes**	**Yes**
Rationale				
Based on the adopted uncertainty grid recent fishing mortality F is very likely below F_{MSY}. It is likely not experiencing overfishing (87.5% probability $F<F_{MSY}$). The scoring issue is met at SG 80 and SG 100 levels.				
References				

Ducharme-Barth et. Al. (2020); WCPFC-SC 2020			
Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Limit reference point	20%$SB_{F=0}$	$SB_{recent}/SB_{F=0}$ = 0.41 (All models across the uncertainty grid estimate stock above 20 %$SB_{F=0}$)
Reference point used in scoring stock relative to MSY (SIb)	MSY reference point	SB_{MSY}	SB_{recent} = 1.83SB_{MSY} (median of SC uncertainty grid)
References			
Ducharme-Barth et. Al. (2020); WCPFC-SC 2020			
Draft scoring range	**≥80**		
Information gap indicator	**Information sufficient to score PI**		
Data-deficient? (RBF needed)	**No**		

PI 1.1.2 – Stock rebuilding 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			
	Guidepost	A rebuilding timeframe is specified for the stock that is shorter of 20 years or 2 times its generation time. For cases where 2 generations are 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				
WCPO bigeye tuna does not require rebuilding.				
Scoring Issue		SG 60	SG 80	SG 100
b	Rebuilding evaluation			
	Guidepost	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				
WCPO bigeye tuna does not require rebuilding.				
References				
Draft scoring range		NA		
Information gap indicator		Information sufficient to score PI		

Scoring table 9. PI 1.2.1 – Harvest strategy 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**	**Not scored**
Rationale				
CMM 2021-01 is in place to provide for several components of harvest strategy to manage the stocks with limit reference point at 20% $SB_{F=0}$ in the absence of a formalized HCR, data collection and stock assessment process in place. The latest stock assessment indicates successful achievement of the objectives set for the stock. CMM 2014-06 is still in effect to develop formalized harvest strategy for bigeye with an established workplan. The scoring issue is only met at SG 60 level.				
Scoring Issue		SG 60	SG 80	SG 100
b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	**Yes**	**Yes**	**Not scored**
Rationale				
With bigeye stock assessed not to be overfished and no overfishing occurrence, the transitional harvest strategy seems to be working, though without the formalized harvest strategy in place, it cannot be fully evaluated. The scoring issue is met in SG 60 and SG 80 levels.				

PI 1.2.1	There is a robust and precautionary harvest strategy in place.		
Scoring Issue	SG 60	SG 80	SG 100
c Harvest strategy monitoring			
Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
Met?	**Yes**		
Rationale			
Data collection for bigeye tuna is in effect allowing for a robust stock assessment. The scoring issue is met at SG60 level.			
Scoring Issue	SG 60	SG 80	SG 100
d Harvest strategy review			
Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
Met?			**No**
Rationale			
Periodical review of harvest strategy cannot be done without formalized harvest strategy adopted by WCPFC. The scoring issue is not met.			
Scoring Issue	SG 60	SG 80	SG 100
e Shark finning			
Guidepost	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			
Sharks are not target species of the fishery. Therefore, this scoring issue is not applicable.			

PI 1.2.1		There is a robust and precautionary harvest strategy in place.		
Scoring Issue		SG 60	SG 80	SG 100
f	Review of alternative measures			
	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimize 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 minimize 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 minimize UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**

Rationale
There is no unwanted catch by the fishery. Therefore, scoring issue is not applicable.

References
Ducharme-Barth et. Al. (2020); WCPFC-SC 2020; CMM 2014-06; CMM 2018-01

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

PI 1.2.2 – Harvest control rules and tools 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			
	Guidepost	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**	**Not scored**
Rationale				
CMM 2021-01 is available to provide guidance on harvest of bigeye which based on the latest stock assessment, exploitation rate is not at a rate that can impair the stock. However, WCPFC has agreed to a work plan that develops well-defined HCRs (CMM 2014-06). The scoring issue is only met at SG 60 level.				
Scoring Issue		SG 60	SG 80	SG 100
b	HCRs robustness to uncertainty			
	Guidepost		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**	**Not scored**
Rationale				
The robustness of HCRs cannot be assessed without the formalized HCRs adopted. The scoring issue is not met at SG 80 level.				

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place.		
Scoring Issue		SG 60	SG 80	SG 100
c	HCRs evaluation			
	Guidepost	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**	**Not scored**

Rationale

The latest stock assessment indicates effectiveness of transitional HCRs per CMM 2021-01.

The scoring issue is met at all SG 60 levels.

References

Ducharme-Barth et. Al. (2020); WCPFC-SC 2020; CMM 2018-01; CMM 2014-06

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

PI 1.2.3 – Information and monitoring 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			
	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	**Yes**	**Yes**	**No**
Rationale				
WCPFC has a reporting process for all member countries to provide catch, effort, and size information for bigeye tuna. WCPFC Scientific Committee and SPC assesses the information vis-a-vis biological research. In the Philippines, while catch reports/logsheet submission is required by BFAR, the fishery has not maintained its records. The scoring issue is met at SG 60 and SG 80 levels but not at SG 100.				
Scoring Issue		SG 60	SG 80	SG 100
b	Monitoring			
	Guidepost	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				
Member countries monitor abundance through logsheets and port sampling programs. In the Philippines there is a National Stock Assessment Program in place. The scoring issue is met at SG 60 and SG80 levels but not in SG100 level.				

PI 1.2.3	Relevant information is collected to support the harvest strategy		
Scoring Issue	SG 60	SG 80	SG 100
c Comprehensiveness of information			
Guidepost		There is good information on all other fishery removals from the stock.	
Met?		**Yes**	
Rationale			
Data collection protocol is in place to allow collection of comprehensive data. The scoring issue is met at SG80 level.			
References			
Ducharme-Barth et. Al. (2020); WCPFC-SC 2020			

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

PI 1.2.4 – Assessment of stock status 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			
	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		**Yes**	**Yes**
Rationale				
The 2020 stock assessment of WCPO bigeye tuna aimed to estimate population level parameters which indicate the stock status and impacts of fishing, such as time series of recruitment, biomass, biomass depletion and fishing mortality. It involved updates to fishery input and tag-recapture data, implementation of new features in the MFCL modeling software, and considered new information on biology, population structure and other population parameters. These changes are an important part of efforts to improve the modeling procedures and more accurately estimate fishing impacts, biological and population processes. The 2020 assessment includes further development of growth information by enhancing the previous otolith ageing with smaller fish using daily ageing and the integration of growth information from tag-recaptures. The scoring issue is met at SG100 level.				
Scoring Issue		SG 60	SG 80	SG 100
b	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	**Yes**	**Yes**	
Rationale				

The 2020 stock assessment of WCPO bigeye tuna summarizes the stock status in terms of reference points adopted by the Western and Central Pacific Fisheries Commission (WCPFC). The methodology used for the assessment is based on the general approach of integrated modeling, which is carried out using the stock assessment framework MULTIFAN-CL. MFCL implements a size-based, age- and spatially structured population model.

The scoring issue is met at both SG 60 and SG80 levels.

Scoring Issue		SG 60	SG 80	SG 100
c	Uncertainty in the assessment			
	Guidepost	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

One of the features of the bigeye tuna stock assessment in the WCPO is the use of an “uncertainty grid”. The uncertainty grid is a group of models that are run to explore the interactions among selected “axes” of uncertainty that relate to biological assumptions, data inputs and data treatment. The axes are generally selected from one-off sensitivity runs of a diagnostic (or base case) model to indicate uncertainties that have notable effects on the estimates of key model parameters and management quantities. The uncertainty grid approach may involve many models depending on the number of axes and the number of alternative assumptions for each axis, as models are run for all combinations of the axes and alternative assumptions within each axis. Importantly, the uncertainty grid captures variability in model estimates due to assumptions in model structure that are not accounted for by statistical uncertainty estimated in a single model run, or a set of one-off sensitivities.

The scoring issue is met at SG60, SG80 and SG100 levels.

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
d	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches

				have been rigorously explored
	Met?			**Yes**

Rationale
The assessment approach is tested to be robust with structure updated with the availability of new and additional information incorporated. The scoring issue is met at SG100 level.

Scoring Issue		SG 60	SG 80	SG 100
e	Peer review of assessment			
	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		**Yes**	**No**

Rationale
Internal review is being undertaken by SPC and reviewed in pre-assessment workshops and subjected to further review at the WCPFC Scientific Committee meeting. An external review is still unavailable. The scoring issue is met at SG80 level but not in SG100 level.

References
Ducharme-Barth et. Al. (2020); WCPFC-SC 2020; Farley et al., 2020; Eveson et al., 2020; Fournier and Archibald, 1982

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

9.2. Principle 2

9.2.1. Components

MSC Fisheries Standard v2.01 defines the different 5 components of the fishery in Table 11.

Table 11. Components of Principle 2 (Source: MSC Fisheries Standard v2.01).

	Component	Intent
1	Primary Species	Managed, in-scope (e.g., fish and shellfish) species. Primary species will usually be species of commercial value to either the UoA or fisheries outside the UoA, with management tools controlling exploitation as well as known reference points in place. In addition, the institution or arrangement that manages the species (or its local stock, see below) will usually have some overlap in jurisdiction with the fishery in the UoA.
2	Secondary Species	Secondary species include fish and shellfish species that are not managed according to reference points and birds/mammals/reptiles/amphibians (all species that are out of scope of the standard) that are not ETP species. These types of species could in some cases be landed intentionally to be used either as bait or as food for the crew or for other subsistence uses but may also in some cases represent incidental catches that are undesired but somewhat unavoidable in the fishery. Given the often-unmanaged status of these species, there are unlikely to be reference points for biomass or fishing mortality in place, as well as a general lack of data availability.
3	ETP Species	Endangered, Threatened or Protected Species
4	Habitat	The chemical and bio-physical environment, including biogenic structures, where fishing takes place.
5	Ecosystem	Broader ecosystem elements such as trophic structure and function, community composition, and biological diversity.

Figure 38 is used in designating Principle 2 species.

Per SA3.4.2, a species shall be considered ‘main’ if the catch of a species by the UoA comprises 5% or more by weight of the total catch of all species by the UoA, or; the species is classified as ‘Less resilient’ and the catch of the species by the UoA comprises 2% or more by weight of the total catch of all species by the UoA.

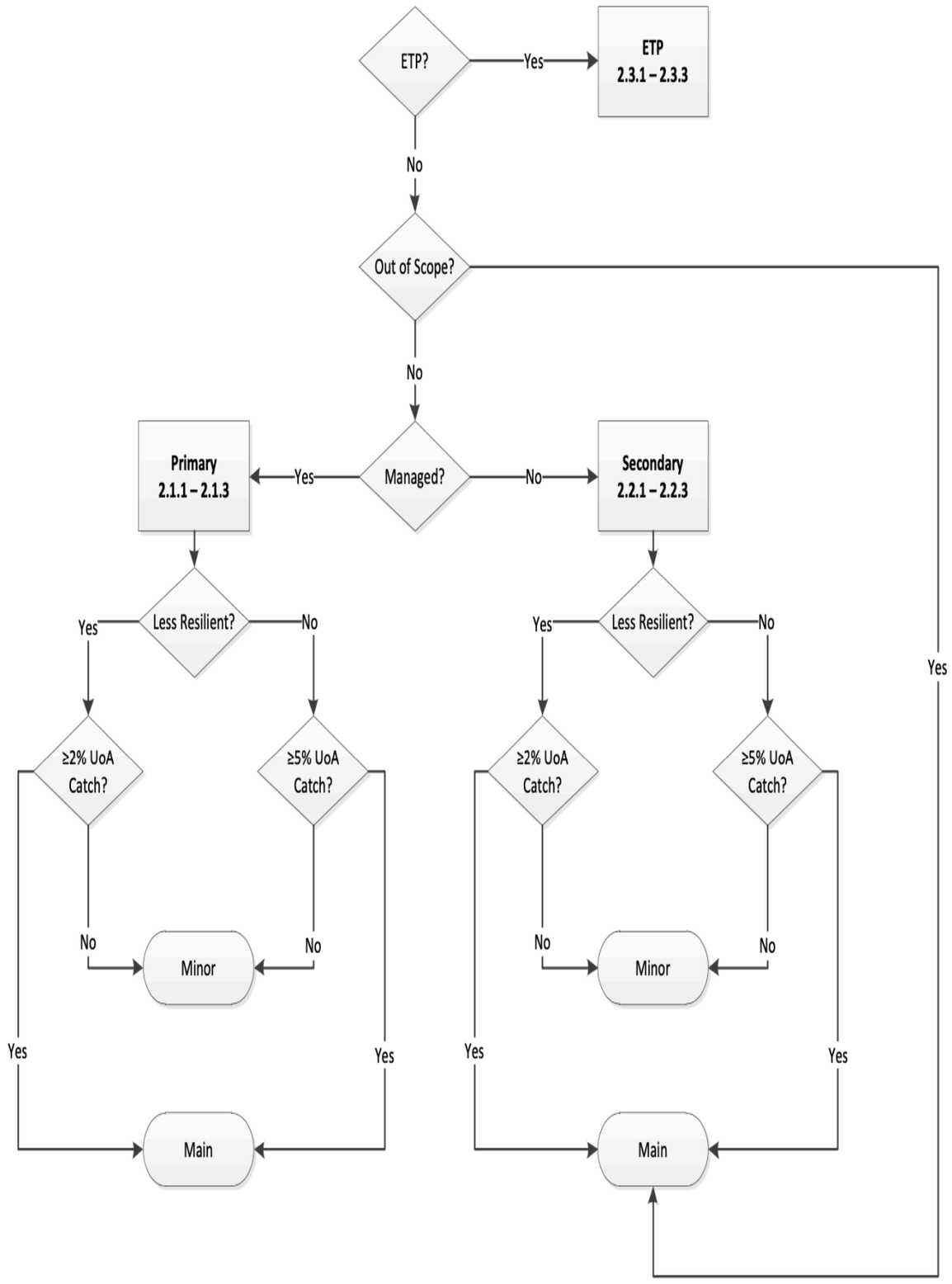

Figure 38. Decision Tree for Specie Designation. (Source: MSC Fisheries Standard v2.01).

9.2.2. Data Availability

The fishery has not provided catch reports or log sheets to be able to designate species classification. For purposes of assessment under Principle 2, catch and species composition estimated by the National Stock Assessment Program monitoring for handline fishery from 2004 to 2019 in Region 12 is used as indicative information source in Table 12. The information on bait fishery as a result of the survey is also included.

9.2.3. Non-target Species Designation

Table 12: Summary of Non-target Species Categorized for Evaluation

	Common Name	Scientific Name	Managed	Less Resilient	% of UoA	ETP	MSC Classification
1	Pacific Blue Marlin	*Makaira mazama*	Yes	Yes	10.68	N	Main Primary
2	North Pacific Albacore	*Thunnus alalunga*	Yes	No	1.15	N	Minor Primary
3	Sailfish	*Isthiophorus platypterus*	No	No	0.47	N	Minor Secondary
4	Black Marlin	*Makaira indica*	No	No	0.41	N	Minor Secondary
5	Southwest Pacific Swordfish	*Xiphias gladius*	No	No	0.22	N	Minor Secondary
6	Moonfish	*Lampris guttatus*	No	No	0.04	N	Minor Secondary
7	Squid (bait)	To be determined	No	No	Unknown	N	Minor Secondary
8	Round Scad (bait)	To be determined	No	No	Unknown	N	Minor Secondary
9	Skipjack Tuna (bait)	*Katsuwonus pelamis*	Yes	No	Unknown	N	Minor Primary

9.2.4. Bait Source and Stocks

Based on the online survey, the fishery reportedly uses squid, round scad and skipjack tuna as bait. The fishers usually sources these from General Santos City and nearby municipalities. When the supply of bait runs out during a fishing trip, they fish for bait using hooks and line.

9.2.5. Primary Species

Minor Primary Species: North Pacific Albacore

The North Pacific albacore stock was assessed in 2020 using a length-based, age-, and sex-structured Stock Synthesis (SS Version 3.30.14.08) model over the 1994-2018 period and it was assumed that there is instantaneous mixing of albacore on a quarterly basis. Biological parameters like growth, natural morality (M) and stock-recruitment steepness, were the same as for the 2017 assessment. All fisheries were assumed to have dome-shaped length selectivity curves, and age-based selectivity for ages 1-5 were also estimated for surface fisheries (troll and pole-and-line) to address age-based changes in juvenile albacore availability and movement. Selectivity curves were also assumed to vary over time for several fleets.

SC 16 noted that the Northern Committee (NC) of the Western and Central Pacific Fisheries Commission (WCPFC), which manages this stock together with the Inter American Tropical Tuna Commission (IATTC), adopted a biomass-based limit reference point (LRP) in 2014 (https://www.wcpfc.int/harvest-strategy) of 20% of the current spawning stock biomass when F=0 ($20\%SSB_{current,\ F=0}$). The $20\%SSB_{current,\ F=0}$ LRP is based on dynamic biomass and fluctuates depending on changes in recruitment. For north Pacific albacore tuna, this LRP is calculated as 20% of the unfished dynamic female spawning biomass in the terminal year of this assessment (i.e., 2018) (https://www.wcpfc.int/meetings/nc13). However, neither the IATTC nor the WCFPC have adopted F-based limit reference points for the north Pacific albacore stock.

Stock status is depicted in relation to the limit reference point (LRP; $20\%SSB_{current,\ F=0}$) for the stock and the equivalent fishing intensity ($F_{20\%}$; calculated as $1\text{-}SPR_{20\%}$) (Figure 39). Fishing intensity (F, calculated as 1-SPR) is a measure of fishing mortality expressed as the decline in the proportion of the spawning biomass produced by each recruit relative to the unfished state. For example, a fishing intensity of 0.8 will result in a SSB of approximately 20% of SSB_0 over the long run. Fishing intensity is considered a proxy of fishing mortality.

Table 13. **Estimates of Maximum Sustainable Yield (MSY), Female Spawning Biomass (SSB), and Fishing Intensity (F) Based Reference Point Ratios for North Pacific Albacore. (Source: North Pacific Albacore Tuna (Thunnus alalunga) Stock Status and Management Advice, 2021)**

Quantity	Base Case	Growth CV = 0.06 for L_{inf}	Update of 2017 base case model to 2020 data
MSY (t) [A]	102,236	84,385	113,522
SSB_{MSY} (t)[B]	19,535	16,404	21,431
SSB_0 (t)[B]	136,833	113,331	152,301
SSB_{2018} (t) [B]	58,858	34,872	77,077
$SSB_{2018}/20\%SSB_{current,\ F=0}$ [B]	2.30	1.63	2.63
$F_{2015\text{-}2017}$	0.50	0.64	0.43
$F_{2015\text{-}2017}/F_{MSY}$	0.60	0.77	0.52
$F_{2015\text{-}2017}/F_{0.1}$	0.57	0.75	0.49
$F_{2015\text{-}2017}/F_{10\%}$	0.55	0.71	0.48
$F_{2015\text{-}2017}/F_{20\%}$	0.62	0.80	0.54
$F_{2015\text{-}2017}/F_{30\%}$	0.71	0.91	0.62
$F_{2015\text{-}2017}/F_{40\%}$	0.83	1.06	0.72
$F_{2015\text{-}2017}/F_{50\%}$	1.00	1.27	0.86

A – MSY includes male and female juvenile and adult fish
B – Spawning stock biomass (SSB) in this assessment refers to mature female biomass only.

The Kobe plot shows that the estimated female SSB has never fallen below the LRP since 1994, albeit with large uncertainty in the terminal year (2018) estimates. Even when alternative hypotheses about key model uncertainties such as growth were evaluated, the point estimate of female SSB in 2018 (SSB_{2018}) did not fall below the LRP, although the risk increases with this more extreme assumption (Figure 39. The SSB_{2018} was estimated to be 58,858 t (95% CI: 27,751 – 89,966 t) and 2.30 (95% CI: 1.49 – 3.11) times greater than the estimated LRP threshold of 25,573 t (95% CI: 19,150 – 31,997 t) (Table 13). Current fishing intensity, $F_{2015\text{-}2017}$ (0.50; 95% CI: 0.36 – 0.64; calculated as 1- $SPR_{2015\text{-}2017}$), was at or lower than all seven potential F-based reference points identified for the north Pacific albacore stock (Table 14).

Based on these findings, the following information on the status of the north Pacific albacore stock is provided:

1. The stock is likely not overfished relative to the limit reference point adopted by the Western and Central Pacific Fisheries Commission ($20\%SSB_{current,\ F=0}$), and

2. No F-based reference points have been adopted to evaluate overfishing. Stock status was evaluated against seven potential reference points. Current fishing intensity ($F_{2015\text{-}2017}$) is likely at or below all seven potential reference points (see ratios in Table 15).

In Figure 40 (**A**)Kobe plot shows the status of the north Pacific albacore (*Thunnus alalunga*) stock relative to the $20\%SSB_{current,\ F=0}$ biomass-based limit reference point, and equivalent fishing intensity ($F_{20\%}$; calculated as 1-$SPR_{20\%}$) over the base case modeling period (1994-2018). The blue triangle indicates the start year (1994) and black circle with 95% confidence intervals indicates the terminal year (2018). (**B**) Kobe plot shows current stock status and 95% confidence intervals of the base case model (black; closed circle), an important sensitivity run of CV = 0.06 for L_{inf} in the growth model (blue; open square), and a model representing an update of the 2017 base case model to 2020 data (red; open triangle). The coefficients of variation of the $SSB/20\%SSB_{current,\ F=0}$ ratios are assumed to be the same as for the $SSB/20\%SSB_0$ ratios. Fs in this figure is not based on instantaneous fishing mortality. Instead, the Fs are indicators of fishing intensity based on SPR and calculated as 1-SPR so that the Fs reflects changes in fishing mortality. SPR is the equilibrium SSB per recruit that would result from the current year's pattern and intensity of fishing mortality. Current fishing intensity is calculated as the average fishing intensity during 2015-2017 ($F_{2015\text{-}2017}$), while current female spawning biomass refers to the terminal year of this assessment (i.e., 2018). The model representing an update of the 2017 base case model is highly similar to but not identical to the 2017 base case model due to changes in data preparation and model structure.

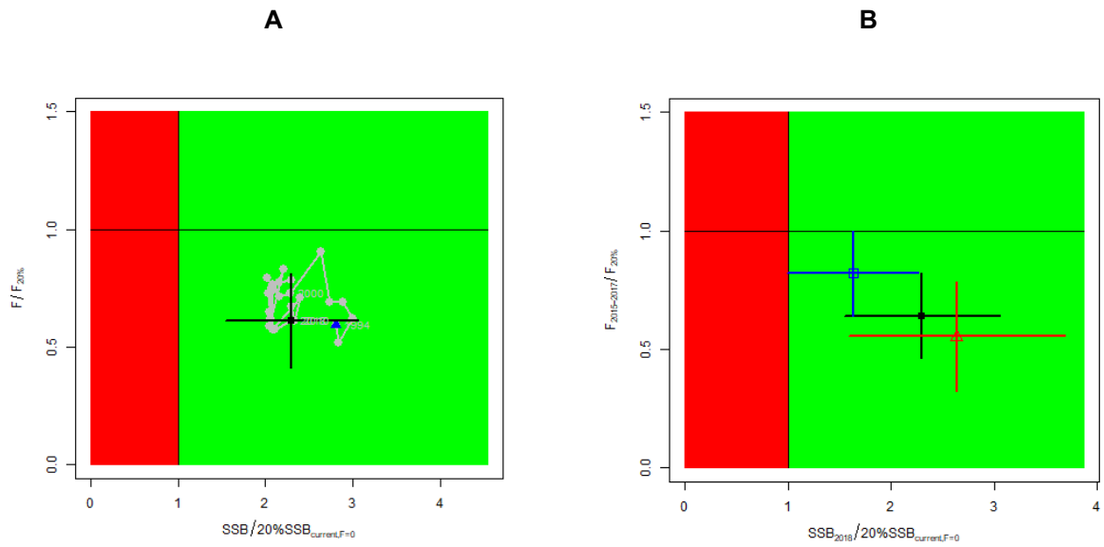

Figure 39. Kobe Plots for North Pacific Albacore. (Source: North Pacific Albacore Tuna (*Thunnus alalunga*) Stock Status and Management Advice, 2021)

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Minor Primary Species: SKIPJACK

Skipjack (SKJ) catch in 2018 was 1,795,048 mt, a 10% increase from 2017 and a 1% decrease from 2013-2017. Purse seine catch in 2018 (1,469,520 mt) was a 15% increase from 2017 and a 2% increase from the 2013-2017 average. Pole and line catch (138,534 mt) was a 4% increase from 2017 and a 9% decrease from the average 2013-2017 catch. Catch by other gear (182,888 mt) was a 16% decrease from 2017 and 19% decrease from the average catch in 2013-2017.

Stock assessment for SKJ was conducted in 2019. SC15 agreed to use the 8-region model (Figure 40) to describe the stock status of skipjack tuna because SC15 considers that it better captures the biology of skipjack tuna than the existing 5 region structure. Stock status was determined over an uncertainty grid of 54 models summarized in Table 14.

The median values of recent (2015–2018) spawning biomass depletion ($SB_{recent}/SB_{F=0}$) and relative recent (2014–2017) fishing mortality (F_{recent}/F_{MSY}) over the uncertainty grid of 54 models were used to define stock status. The values of the upper 90th and lower 10th percentile of the empirical distributions of relative spawning biomass and relative fishing mortality from the uncertainty grid were used to characterize the probable range of stock status.

SC15 noted that the median level of spawning potential depletion from the uncertainty grid was $SB_{recent}/SB_{F=0}$ = 0.44 with a probable range of 0.37 to 0.53 (80% probability interval). There were no individual models where $SB_{recent}/SB_{F=0}$ < 0.2, which indicated that the probability that recent spawning biomass was below the LRP was zero.

SC15 noted that the grid median F_{recent}/F_{MSY} was 0.45, with a range of 0.34 to 0.60 (80% probability interval) and that no values of F_{recent}/F_{MSY} in the grid exceed 1. Therefore, SC15 noted that there was a zero probability that the recent fishing mortality exceeds F_{MSY}.

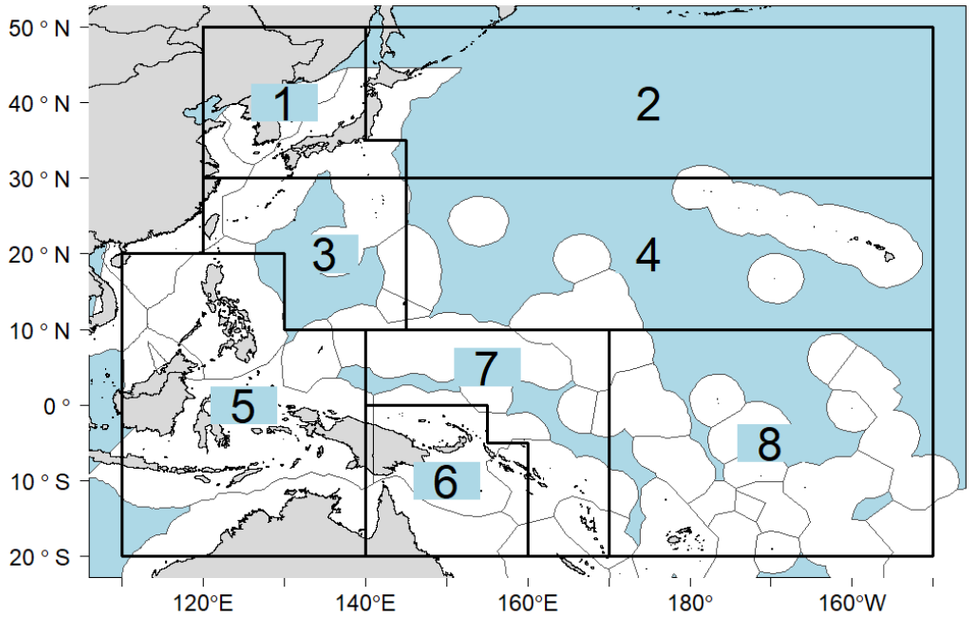

Figure 41. Eight Region Spatial Structure Used in the 2019 Stock Assessment Model of Skipjack Tuna. (Source: Skipjack Tuna (*Katsuwonus pelamis*) Stock Status and Management Advice, 2019).

Table 14. Summary of Reference Points Over the Various Models in the Structural Uncertainty Grid for Skipjack Tuna. (**Source: Skipjack Tuna (*Katsuwonus pelamis*) Stock Status and Management Advice, 2019).** F_{mult} is the multiplier of recent (2014-2017) fishing mortality required to attain MSY, F_{recent} is the average fishing mortality of recent (2014-2017), SB_{recent} is the average spawning potential of recent years (2015-2018) and SB_{latest} is the spawning potential in 2018.

	Mean	Median	Minimum	10th %ile	90th %ile	Maximum
C_{latest}	1,755,328	1,755,693	1,749,846	1,753,471	1,757,057	1,757,083
$Y_{Frecent}$	1,877,914	1,864,040	1,679,600	1,737,702	2,043,556	2,135,200
f_{mult}	2.282	2.258	1.472	1.757	2.957	3.705
F_{MSY}	0.223	0.222	0.180	0.189	0.264	0.270
MSY	2,296,566	2,294,024	1,953,600	1,995,987	2,767,083	2,825,600
F_{recent}/F_{MSY}	0.461	0.447	0.270	0.343	0.600	0.679
$SB_{F=0}$	6,220,675	6,299,363	5,247,095	5,580,942	6,913,431	7,349,557
SB_{MSY}	1,100,947	1,064,400	631,900	723,742	1,544,060	1,688,000
$SB_{MSY}/SB_{F=0}$	0.175	0.176	0.117	0.131	0.225	0.23
$SB_{latest}/SB_{F=0}$	0.414	0.415	0.325	0.36	0.487	0.525
SB_{latest}/SB_{MSY}	2.468	2.382	1.551	1.779	3.356	3.925
$SB_{recent}/SB_{F=0}$	0.440	0.440	0.336	0.372	0.530	0.551
SB_{recent}/SB_{MSY}	2.623	2.579	1.601	1.892	3.613	4.139

The Majuro plot shows the recent fishing mortality and spawning potential relative to the unfished spawning potential for all models in the structural uncertainty grid for (i) spawning potential in the recent time period (2015–2018) (Figure 41), and (ii) spawning potential in the latest time period (2018) in Figure 42. Vertical green line denotes the interim TRP. The brown triangle indicates the median of the estimates. The size of the circle relates to the weight of that particular model run.

The Kobe plot shows the recent fishing mortality and spawning potential relative to spawning potential at MSY for all models in the structural uncertainty grid for (i) spawning potential in the recent time period (2015–2018) in Figure 43, and (ii) spawning potential in the latest time period (2018) in Figure 44. The brown triangle indicates the median of the estimates. The size of the circle relates to the weight of that particular model run.

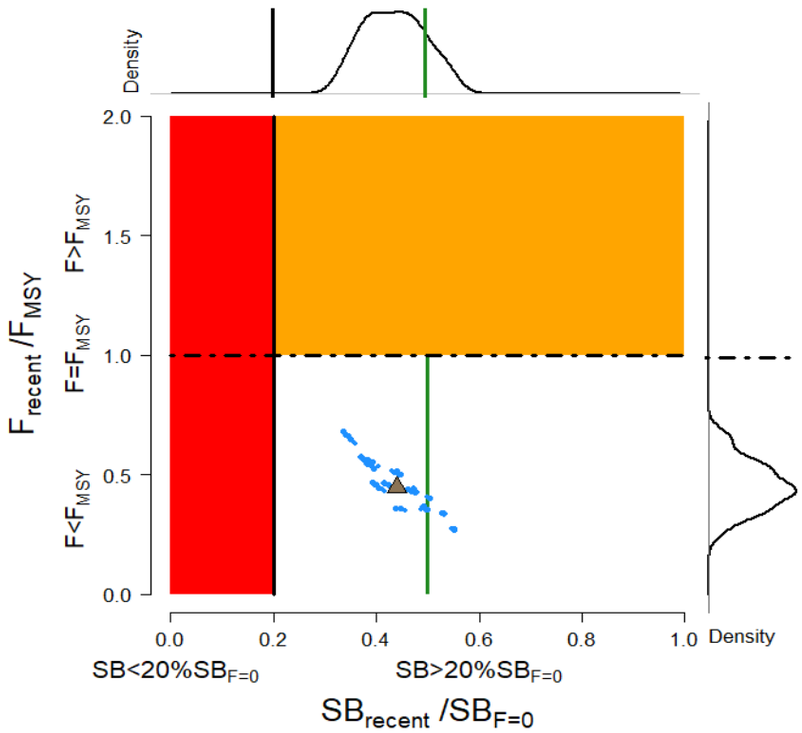

Figure 41. Majuro Plot for the Recent Spawning Potential (2015 – 2018) of Skipjack Tuna. (Source: Skipjack Tuna (*Katsuwonus pelamis*) Stock Status and Management Advice, 2019).

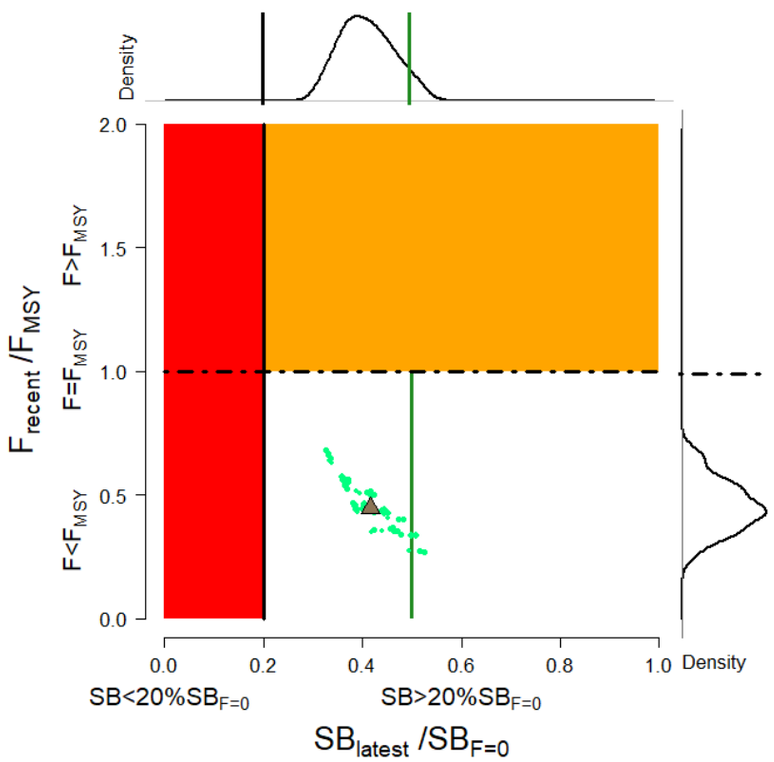

Figure 42. Majuro Plot for the Latest Spawning Potential (2018) of Skipjack Tuna. (Source: Skipjack Tuna (*Katsuwonus pelamis*) Stock Status and Management Advice, 2019)

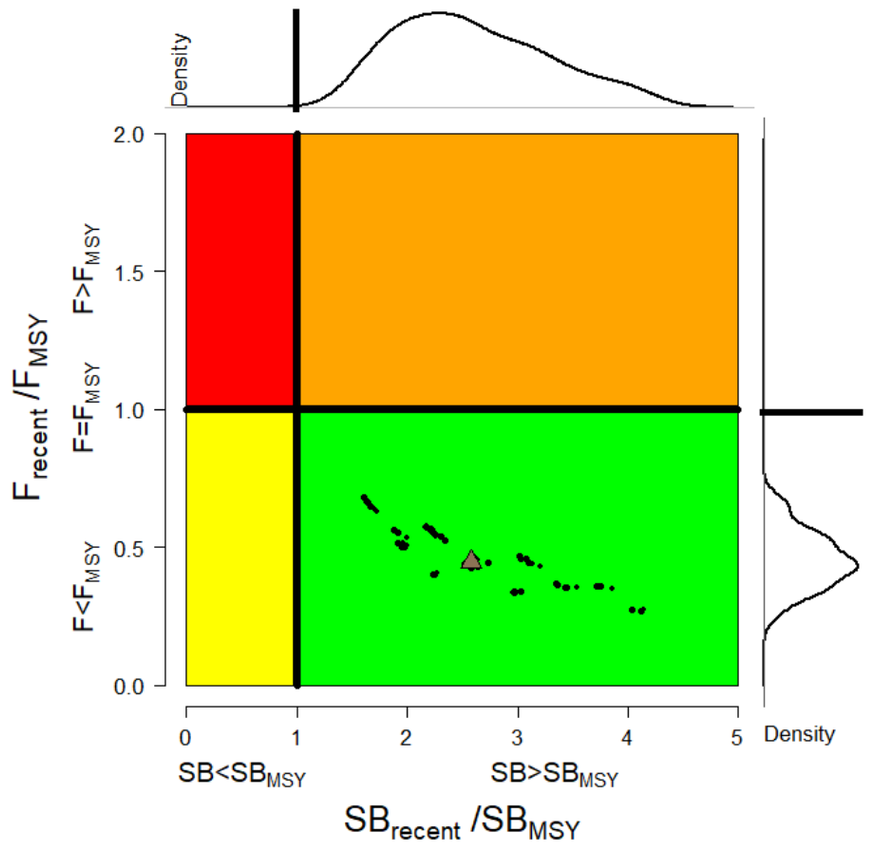

Figure 43. Kobe Plot for the Recent Spawning Potential (2015 – 2018) of Skipjack Tuna. (Source: Skipjack Tuna (*Katsuwonus pelamis*) Stock Status and Management Advice, 2019)

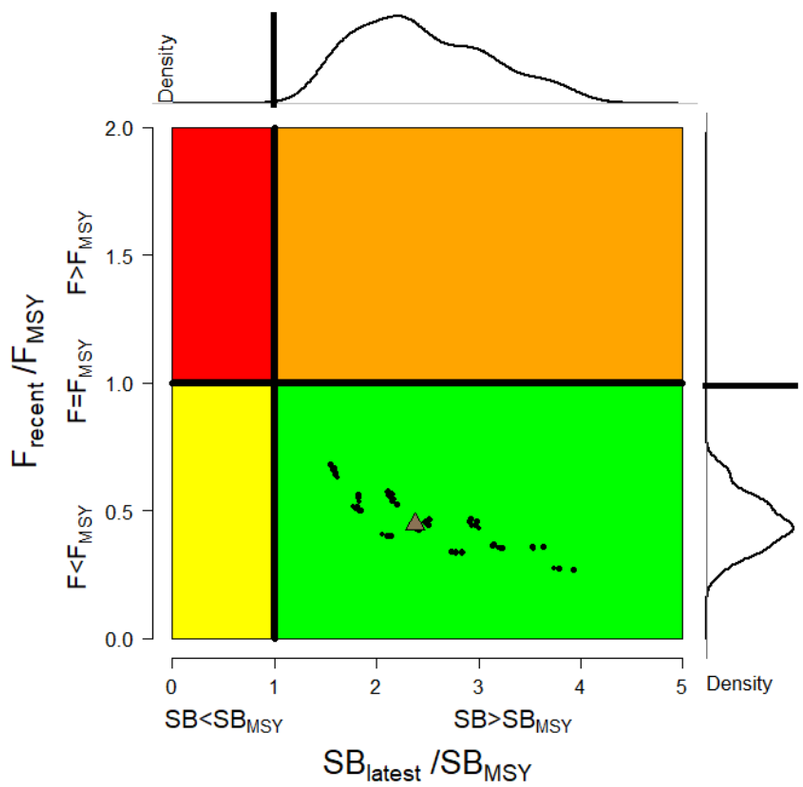

Figure 44. Kobe Plot for the Latest Spawning potential (2018) of Skipjack Tuna. (Source: Skipjack Tuna (*Katsuwonus pelamis*) Stock Status and Management Advice, 2019).

SC15 noted that the skipjack assessment continues to show that the stock is currently moderately exploited, and the level of fishing mortality is sustainable. The stock was assessed to be above the adopted Limit Reference Point and fished at rates below F_{MSY} with 100% probability. Therefore, the skipjack stock is not

overfished, nor subject to overfishing. At the same time, it was also noted that fishing mortality is continuously increasing for both adult and juvenile while the spawning biomass reached the historical lowest level.

The skipjack interim Target Reference Point (TRP) is 50% of spawning biomass in the absence of fishing. The trajectory of the median spawning biomass depletion indicates a long-term trend and has been under the interim TRP since 2009 (i.e., for 10 years). Since the median spawning biomass has been consistently below the interim TRP, SC15 recommends that the Commission take appropriate management action to ensure that the biomass depletion level fluctuates around the TRP (e.g., through the adoption of a harvest control rule).

9.2.6. Secondary Species

All other species in the NSAP monitoring are neither classified as primary, ETP nor target are classified as secondary. Noting that the catch composition of these stocks to UoA catch are less than 5%, they are classified as minor species. They include indo-pacific sailfish, black marlin, south Pacific swordfish, moonfish, squid and round scad.

Main Secondary Species: Pacific Blue Marlin

In 2016 a stock assessment was done for Pacific Blue Marlin (BUM). SC12 noted long term decline of total biomass of BUM with an average of 130,965 mt from 1971-1975 and further declined by 40% at 78,082 metric ton in 2014. Female spawning biomass is about 25% of spawning biomass maximum sustainable yield. Average fishing mortality on the stock from 2012-2014 is at 0.28 just 12% below FMSY. Current spawning potential was estimated at 21%. Annual recruitment averaged about 897,000 recruits during 2008-2014, and no long-term trend in recruitment was apparent.

Estimates of biological reference points along with estimates of fishing mortality (F), female spawning stock biomass (SSB), recent average yield (C), and spawning potential ratio (SPR) of BUM, derived from the base case model assessment model, where presented in Table 15 where “MSY” and “20%” indicate reference points based on maximum sustainable yield and a spawning potential ratio of 20%, respectively. SSB values represent female spawning biomass only.

Table 15. Estimates of Biological Reference Points for Pacific Blue Marlin. (Source: Pacific Blue Marlin (*Makaira nigricans*) Stock Status and Management Advice, 2019).

Reference Point	Estimate
F_{MSY} (age 2+)	0.32
$F_{20\%}$ (age 2+)	0.30
$F_{2012\text{-}2014}$ (age 2+)	0.28
SSB_{MSY}	19,853 mt
$SSB_{20\%}$	22,727 mt
SSB_{2014}	24,809 mt
MSY	19,901 mt
$C_{2012\text{-}2014}$	20,163 mt
SPR_{MSY}	0.18
$SPR_{2012\text{-}2014}$	0.21

The BUM Kobe plot (Figure 45) shows the stock status relative to MSY-based reference points for the base case model. The plot shows time series of estimates of relative fishing mortality (average of age 2+) and relative spawning stock biomass of BUM during 1971-2014. The dashed lines denote the 95% confidence intervals for the estimates in the year 2014.

Based on the results of this 2016 stock assessment update, the pacific blue marlin stock is not currently overfished and is not experiencing overfishing. Because pacific blue marlin is mainly caught as bycatch, direct control of the annual catch amount through the setting of a total allowable catch may be difficult. Since the stock is nearly full exploited, the ISC recommends that fishing mortality remain at or below current levels (2012-2014).

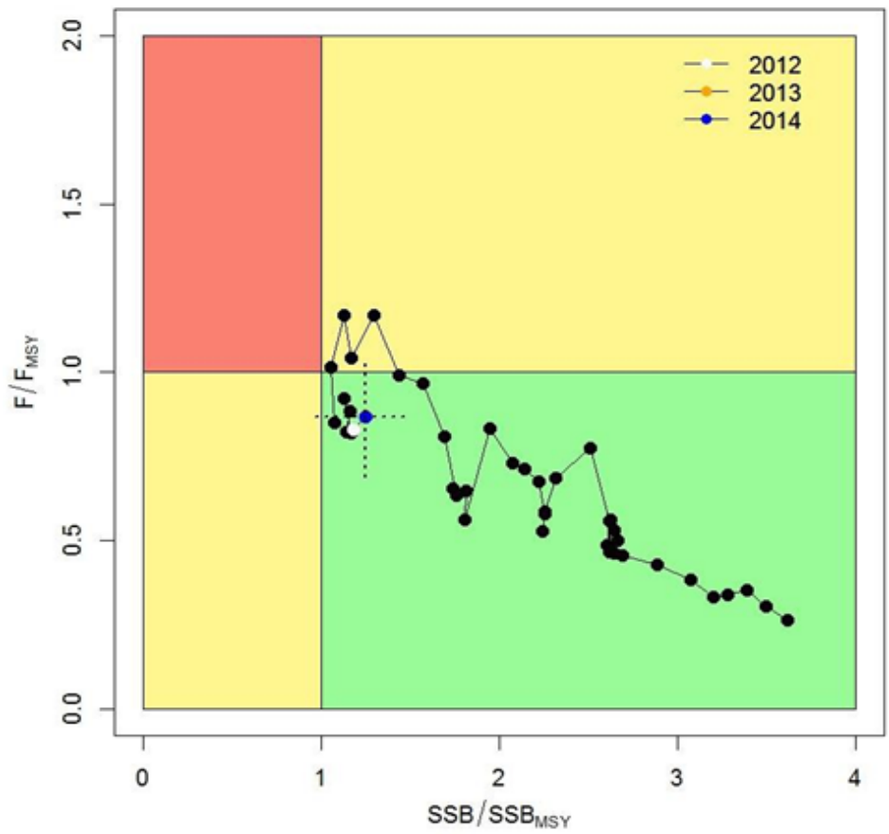

Figure 45. Kobe Plot for Pacific Blue Marlin. (Source: Pacific Blue Marlin (*Makaira nigricans*) Stock Status and Management Advice, 2019).

Secondary Minor: Swordfish

The latest stock assessment for swordfish was in 2017. The median values of relative recent (2012-2015) spawning biomass (SB_{recent}/SB_{MSY}) and relative recent fishing mortality (F_{recent}/F_{MSY}) over the uncertainty grid were used to measure the central tendency of stock status. The values of the upper 90th and lower 10th percentiles of the empirical distributions of relative spawning biomass and relative fishing mortality from the uncertainty grid were used to characterize the probable range of stock status.

Summary of reference points over all 72 individual models in the structural uncertainty grid are shown in Table 16. Note that $SB_{recent}/SB_{F=0}$ is calculated where SB_{recent} is the mean SB over 2012-2015 instead of 2011-2014 (used in the stock assessment report), at the request of the Scientific Committee.

Table 16. Summary of Reference Points for Swordfish. (Source: South Pacific Swordfish (*Xiphias gladius*) Stock Status and Management Advice, 2019)

	Mean	Median	Min	10%	90%	Max
C_{latest}	9,884	9,884	9,318	9,343	10,157	10,287
MSY	8,172	7,913	5,905	6,396	10,150	11,360
$Y_{Frecent}$	7,628	7,775	4,998	6,062	8,948	9,684
f_{mult}	1.27	1.15	0.66	0.79	1.89	2.32
F_{MSY}	0.16	0.14	0.10	0.10	0.22	0.23
F_{recent}/F_{MSY}	0.88	0.87	0.43	0.53	1.26	1.51
SB_{MSY}	17,314	17,740	7,278	8,943	26,661	30,460
SB_0	84,173	84,075	57,070	71,199	98,039	111,000
SB_{MSY}/SB_0	0.20	0.21	0.11	0.12	0.28	0.28
$SB_{F=0}$	78,619	78,301	61,996	64,342	92,120	100,691
$SB_{MSY}/SB_{F=0}$	0.22	0.23	0.10	0.12	0.32	0.33
SB_{latest}/SB_0	0.33	0.32	0.24	0.25	0.44	0.46
$SB_{latest}/SB_{F=0}$	0.35	0.35	0.26	0.27	0.44	0.49
SB_{latest}/SB_{MSY}	1.85	1.61	0.85	0.99	3.14	4.05
$SB_{recent}/SB_{F=0}$	0.36	0.35	0.27	0.29	0.43	0.48
SB_{recent}/SB_{MSY}	1.86	1.58	0.88	1.02	3.10	3.96

SC13 noted that the central tendency of relative recent spawning biomass was median ($SB_{recent}/SB_{F=0}$) = 0.35 with a probable range of 0.29 to 0.43 (80% probability interval). The central tendency of relative recent

fishing mortality was median (F_{recent}/F_{MSY}) = 0.87 with an 80% probability interval of 0.53 to 1.26. While this suggested that there was likely a buffer between recent fishing mortality and F_{MSY}, it also showed that there was some probability that recent fishing mortality was above F_{MSY}.

Based on the uncertainty grid adopted by SC13, the southwest Pacific swordfish spawning biomass is likely above the $20\%SB_{F=0}$, biomass LRP adopted for tunas and the SB_{MSY} level (noting that the Commission has yet to adopt an LRP for south Pacific swordfish) and it is highly likely that the stock is not in an overfished condition (0% probability). Recent F is likely below F_{MSY}, and it appears that the stock is not experiencing overfishing (32% probability of overfishing).

SC13 noted that there has been an increase in fishing mortality notably from the mid-1990s, and that the biomass relative to unfished levels is estimated to have declined rapidly during the period late-1990s to 2010 followed by a more gradual but continued decline after 2010, across the uncertainty grid. It was noted the fishing mortality was likely below F_{MSY}.

Majuro plots (Figure 46 and 47) summarize the results for each of the models in the structural uncertainty grid retained for management advice. The plots represent estimates of stock status in terms of spawning potential depletion and fishing mortality. The red zone represents spawning potential levels lower than the agreed limit reference point which is marked with the solid black line. The orange region is for fishing mortality greater than F_{MSY} (F_{MSY} is marked with the black dashed line). In Figure 47, the points represent $SB_{latest}/SB_{F=0}$, and the colors depict the models in the grid with three levels of steepness (0.65, 0.8 and 0.95). While in Figure 46, the points represent $SB_{recent}/SB_{F=0}$, and the colours depict the models in the grid with three levels of steepness (0.65, 0.8 and 0.95). Note, SB_{recent} is defined as the mean of SB over 2012-2015.

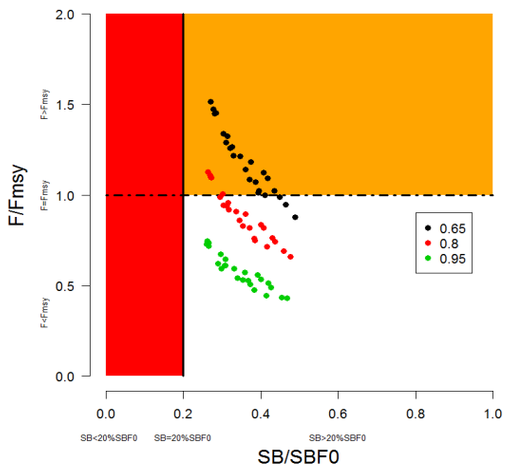

Figure 46. Majuro Plot for Latest Spawning Potential of Swordfish. (Source: South Pacific Swordfish (Xiphias gladius) Stock Status and Management Advice, 2019).

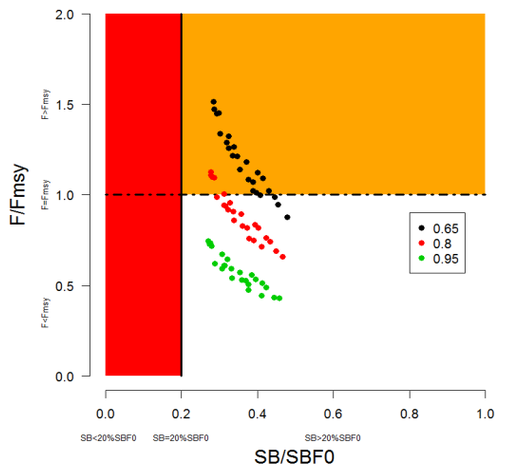

Figure 47. Majuro plot for Recent Spawning Potential (2012-2015) of Swordfish. (Source: South Pacific Swordfish (Xiphias gladius) Stock Status and Management Advice, 2019).

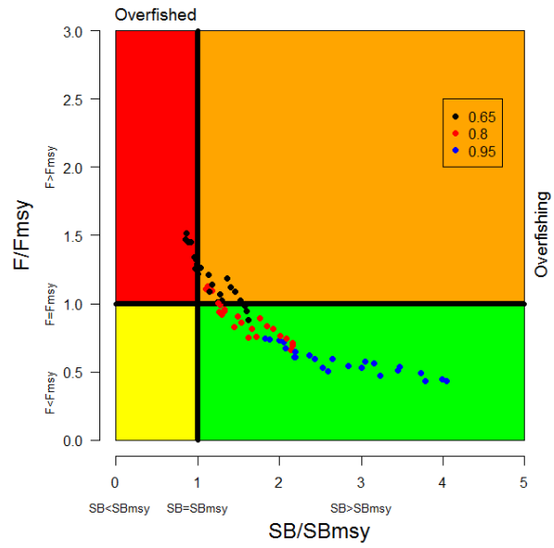

Figure 48. Kobe Plot of Swordfish using Latest Spawning Biomass. (Source: South Pacific Swordfish (Xiphias gladius) Stock Status and Management Advice, 2019).

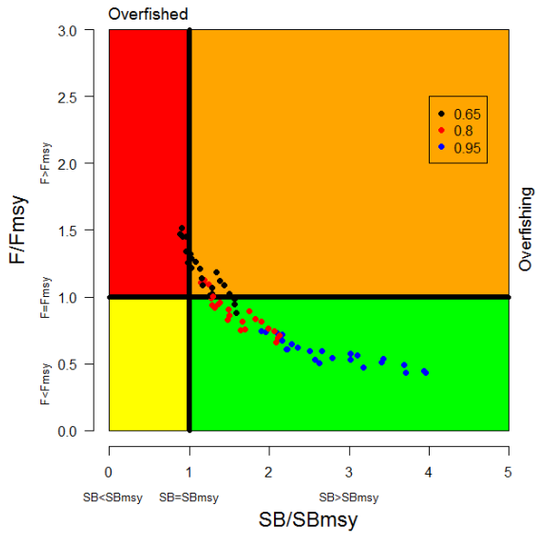

Figure 49. Kobe Plot of Swordfish using Recent Spawning Biomass. (Source: South Pacific Swordfish (Xiphias gladius) Stock Status and Management Advice, 2019).

Kobe plots summarizes the results for each of the models in the structural uncertainty grid, where the x-axis represents SB_{latest} /SB_{MSY} in Figure 48, while SB_{recent}/SB_{MSY} in Figure 49. The colours depict the models in the grid with three levels of steepness (0.65, 0.8 and 0.95).

9.2.7. ETP Species

There is a very low probability that the fishery catches endangered, threatened, and protected species noting the selective nature of the fishing method. However, with the absence of log sheets this cannot be ascertained. Though, there are reported interactions with manta rays (*Manta birostris*) and requiem sharks (*Spp.requiem*) in the municipal handline operation in the northern part of the country.

According to the 2017-2022 Sharks and Rays Philippine Status Report and National Plan of Action, there are four species under the Critically Endangered list for the IUCN Red List that exist in the Philippines: one shark, the Pondicherry shark (*Carcharhinus hemiodon*); and three batoids, namely, the Largetooth or Freshwater sawfish (Pristis microdon), Smalltooth sawfish (Pristis pectinate), and the Green sawfish (Pristis zijsron) (BFAR 2017). No evidence of interactions or catch of these species was identified in the handline fishery.

9.2.8. Habitats

The lines used in handline fishing are designed to be used in water columns and therefore do not touch seabed. The fishery operation is confined to the uppermost 200 meters of the water column or the ‘sunlit’ zone.

9.2.9. Ecosystem

The fishery operation is confined to FMA 2 and FMA3 of the Philippines which is part of FAO Area 71 and the Western and Central Pacific Ocean. The UoA has a low probability of causing irreversible impacts to the ecosystem.

SPC has led the development of two ecosystem models for the western and central Pacific Ocean (WCPO) over the past 25 years: SEAPODYM and the Warm Pool Ecopath model.

The Spatially Ecosystem and Populations Dynamics Model (SEAPODYM) has been continuously developed by SPC and CLS since 1995, with the aim of describing the distribution and dynamics of tuna, tuna-like species, and mid-trophic level species using advection- diffusion-reaction equations:

- The original model aimed to incorporate the effect of environmental variability on the distribution of skipjack tuna in the WCPO area, (SEPODYM, Lehodey et al., 1998).

- Over a fifteen-year period SEAPODYM then developed into a full life cycle model for tuna and tuna-like species (Lehodey et al., 2008), including data assimilating mid- trophic tuna forage sub-models (Lehodey et al., 2010) and projections into the future using various climate scenarios (Lehodey et al., 2013).

- Now SEAPODYM is applied to modelling each key tuna species in the Pacific and other ocean basins individually (Senina et al., 2018), providing abundance and distribution estimates for other studies (Miller et al., 2018), and including mark-recapture tagging data to directly inform movement parameters for target tuna species in the Pacific (Senina et al., 2020).

Since 2002, SPC has led the development of trophic mass balance ecosystem models to describe the dynamics of the WCPO pelagic ecosystem using Ecopath with Ecosim software, which was originally organized by Polovina (1984):

- In 2010, a third version of the model was developed using updated biological and ecological parameters and fitted to historical time-series of catch and effort for key species. These improvements provided a more reliable model that allowed the exploration of the potential impacts of climate change on target and non-target species and on the mid-trophic level species included in the model (mesozooplankton and micronekton) (Allain et al., 2012a; Le Borgne et al., 2011)

- In 2011, a workshop was organized at SPC, Noumea, to bring together experts on ecosystem research in the Pacific to synthesize progress and identify future priorities (Allain et al., 2012b). A key conclusion was the need to improve catch time-series of target and non-target species to in order improve the calibration and realism of trophic models in the Pacific.

- Using improved non-target species catch estimates, an updated Warm Pool Ecopath model was built in 2013 and used to explore the impact of hypothetical longline and purse-seine fishing practices (e.g., increase longline effort to increase bycatch species for domestic markets, and reducing purse seine effort on FADs) on the ecosystem (Allain et al., 2015; Griffiths et al., 2019a). The model indicated that the structure of the Warm Pool has considerable stability to increased catches of larger pelagic fishes but was sensitive to changes in the biomass of the forage groups that comprise the prey for large pelagic fish.

With the objective of using the Ecopath model to explore and predict the impact of climate change on the non-target species of interest for food security such as mahi mahi or wahoo, SPC, in collaboration with the Inter-American Tropical Tuna Commission (IATTC), convened a workshop on ecosystem modelling (EcoSEA) in October 2019. The aim was to draw together expertise to discuss the various existing ecosystem modelling platforms and to progress the development of the Warm Pool Ecopath model, particularly considering the availability of improved data on non-target species since the implementation of 100% observer coverage on purse seine vessels in 2010.

The workshop participants contributed to several substantial changes in the structure of the existing Warm Pool model, as well as the input data for parameterization. The existing model covered an important biogeographical and tuna fishery region in the WCPO, but it failed to capture the full spatial extent of the ecosystem and fisheries for which the WCPFC is responsible. Therefore, the model boundaries were extended to 150°W and latitudinally to span 20°N to 20°S to encompass a total area of 38,000,040 km2; this new model is named Western Tropical Pacific (WTP). This was also seen as a strategic decision, providing an option to link (spatially) with an existing Ecopath model of the eastern Pacific Ocean (EPO), the Eastern Tropical Pacific (ETP), built by the IATTC staff (Olson and Watters, 2003) (Figure 50), and to create a tropical Pacific-wide model more easily in future, should the opportunity arise.

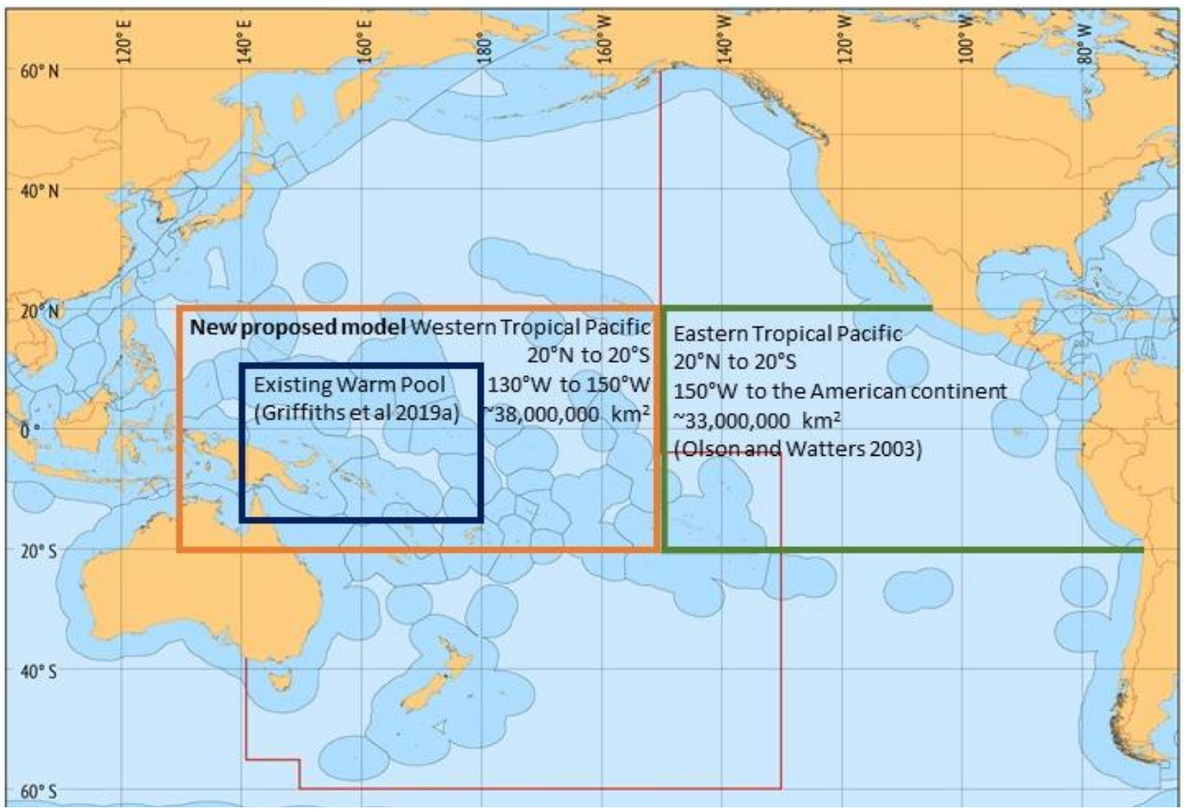

Figure 50. Map of the Pacific Showing the Previous Model Area for the Warm Pool Area and the New Proposed Area (WTP: Western Tropical Pacific), as well as the Existing Eastern Pacific Model (ETP). (Source: EcoSEA Workshop: Ecosystem Modelling in the WCPO: Current Status and Future Directions. 2020)

The structure of the new WTP model was also modified to align functional groups in the WTP and ETP models to facilitate comparisons of ecosystem processes, but also to assess the similarities and differences in the impacts by specific simulated fishing and environmental scenarios (e.g., increased FAD effort). Additional species or functional groups were also added to the model to maximize its relevance to the WCPO and to resource managers. For example, the results of the questionnaire sent to WCPFC Members indicated that seabirds, marine mammals, numerous sharks, billfishes and opah were important bycatch species, and they suggested that rays and barracudas be added. Stakeholders present at the workshop also identified mobulids, pelagic stingray, whale shark and barracudas as species that should be explicitly included in the model. At the conclusion of the workshop, a total of 65 functional groups were agreed upon by participants to characterize the WCPO model.

The base year of the model—the period for which the structure and trophic connections and flows define the ecosystem—was also changed from 2005 to 2013. This was implemented to not only take advantage of the increasing amount of bycatch and predator diet data available to parameterize the model, but to also characterize the model for a reasonably 'stable' environmental period, that is, a period lacking strong ENSO events. A particularly significant modification of the model was to the underlying diet matrix, which defines the trophic relationships and the magnitude of energy flow through the ecosystem.

This was possible due to over 19 years of sampling predator diets throughout the WCPO, which has yielded a total of 7118 stomachs from 38 species directly relevant to the model.

As of June 30, 2020, model building is underway. All data has now been included, namely the diet matrix, catch and discard biomass for each species by fishery, and the 262-time series of data that will be used for calibration to ensure the model can reproduce known data trends. The model is currently in the 'balancing' stage, where the biomass production of each of the functional groups due to growth is balanced against the loss of biomass to predators, biological processes and fishing mortality.

Over the coming months, once the model is balanced, various scenarios will be simulated regarding changes to fishing activities and/or the environment. The model will produce outputs of the changes in biomass (and catch where relevant) in individual species (e.g., target and non-target species) as well as ecological indicators, such as those described in a previous SPC ecosystem workshop (Allain et al., 2020, 2015, 2012a), for e.g., trophic level of the catch and the fishing in balance index. Together, such indicators can allow for the identification of changes to the structure and dynamics of the WCPO ecosystem.

9.2.10. Scoring Element

Table 17 – Scoring Elements

Component	Scoring elements	Designation	Data-deficient
e.g., P1, Primary, Secondary, ETP, Habitats, Ecosystems	e.g., species or stock (SA 3.1.1.1)	Main or Minor	
Primary Species	South Pacific Albacore, WCPO Skipjack	Minor	No
Secondary Species	Pacific Blue Marlin, WCNPO Swordfish	Minor	No

9.2.11 Principle 2 Performance Indicator Scores and Rationales

PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are likely to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI. OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorize this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Minor primary species stock status			
	Guide post			Minor primary species are highly likely to be above the PRI. OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			**No**

Overall Performance Indicator (PI) Rationale

Main primary species based on NSAP Monitoring of the handline fishery in Region 12:

The scoring issue is met at SG 60 and SG 80 levels.

Minor primary species based on NSAP Monitoring of the handline fishery in Region 12:

North Pacific albacore: Based on 2020 stock assessment, the stock is likely not overfished relative to the limit reference point adopted by the Western and Central Pacific Fisheries Commission ($20\%SSB_{current,\ F=0}$), and no F-based reference points have been adopted to evaluate overfishing. Stock status was evaluated against seven potential reference points. Current fishing intensity ($F_{2015\text{-}2017}$) is likely at or below all seven potential reference points.

WCPO Skipjack: The assessment continues to show that the stock is currently moderately exploited, and the level of fishing mortality is sustainable. The stock was assessed to be above the adopted Limit Reference Point and fished at rates below F_{MSY} with 100% probability. Therefore, the skipjack stock is not overfished, nor subject to overfishing. However, without a validated catch report/logsheets of the fishery, the list of primary fisheries cannot be determined with certainty, thus performance indicator cannot be fully assessed. Considering the precautionary approach, scoring issue at SG 60 is not met.
References
North Pacific Albacore Tuna Stock Status and Management Advice, 2021; Skipjack Tuna Stock Status and Management Advice, 2019; Pacific Blue Marlin Stock Status and Management Advice, 2019

Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets**
Data-deficient? (RBF needed)	**No**

PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimize the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	**No**	**No**	**Not evaluated**
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	**No**	**Not Assessed**	**Not Assessed**
c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		**No**	**Not assessed**
d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	**NA**	**NA**	**NA**

e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**

Overall Performance Indicator (PI) Rationale

Blue Marlin: No management measure is currently in place with favorable result of 2016 stock assessment where the stock is assessed as not overfished and no overfishing taking place.

North Pacific albacore: The stock is managed per CMM 2019-03 on Conservation and Management Measure for north Pacific albacore which requires that the total level of fishing effort shall not be increased beyond 2002-2004 annual average levels.

WCPO Skipjack: The stock is managed at the WCPFC level with CMM 2021-01 Conservation and Management Measure for bigeye, yellowfin, and skipjack in the western and central Pacific Ocean.
At the national level SKJ is managed under the following fisheries orders:

1. FAO 245-1- Regulations and Implementing Guidelines on Group Tuna Purse Seine Operations in the High Seas Pocket Number 1 as a Special Management Area, which put in place vessel limit, fishing days, fad closure and tonnage limit.
2. FAO 254- Regulations and Implementing Guidelines on Group Handline Fishing of the WCPFC Convention Area which puts in place VMS and observer coverage requirements.
2. FAO 236-5- Rules and Regulations on the Operations of Purse Seine and Ring Net Vessels Using Fish Aggregating Devices (FADs) locally known as Payaos during FAD Closure Period as Compatible Measure to WCPFC CMM.
3. FAO 226-Regulation on the Mesh Size of Tuna Purse Seine Nets and Trading of Small Tuna; and,
4. FAO 260- Rules and Regulations on the Implementation of Vessel Monitoring Measures (VMM) and Electronic Reporting System (ERS) for Commercial Philippines Flagged Fishing Vessels Targeting Straddling and Highly Migratory Fish Stocks.

However, without a validated catch report/logsheets of the fishery, the list of primary fisheries cannot be determined with certainty, thus management strategy cannot be fully assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.

References

WCPFC CMM 208-01; CMM 2021-01; CMM 2019-03; BFAR FAO245-1; FAO 254; FAO 236-5; FAO 226; FAO 260

Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery**
Data-deficient? (RBF needed)	**No**

PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			**Not Assessed**
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main primary species.	Information is adequate to support a strategy to manage all primary species and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	**No**	**Not Assessed**	**Not Assessed**
Overall Performance Indicator (PI) Rationale				
Without a validated catch report/log sheet of the fishery, the list of primary fisheries cannot be determined with certainty, thus adequacy of information to assess the UoA impact to primary species and for management purposes cannot be fully assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.				
References				

No catch report/logsheet provided by fishery.	
Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery**

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidepost	Main secondary species are likely to be above biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits. OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main secondary species are above biologically based limits.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Minor secondary species stock status			
	Guidepost			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			**Not Assessed**
Overall Performance Indicator (PI) Rationale				
Based on NSAP Monitoring of the handline fishery of Region 12, only Pacific blue marlin may be considered as a Main Secondary Species. Pacific blue marlin: Based on the results of 2016 stock assessment update, the Pacific blue marlin stock is not currently overfished and is not experiencing overfishing.				

Minor Secondary Species includes sailfish, black marlin, WCNP Pacific swordfish, moonfish, squid and round scad.

Among the minor secondary species only WC Pacific swordfish has stock assessment done in 2017 which shows that the stock is 100% not overfished and there is 68% probability of occurrence of no overfishing.

However, without a validated catch report/log sheet of the fishery, the list of secondary fisheries cannot be determined with certainty, thus UoA impact to secondary species cannot be fully assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.

References
No catch report/logsheet provided by fishery.

Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery**
Data-deficient? (RBF needed)	**Unknown**

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimize the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	**No**	**Not Assessed**	**Not Assessed**
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		**No**	**Not Assessed**
d	Shark finning			
	Guidepost	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**
e	Review of alternative measures to minimize mortality of unwanted catch			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**

Overall Performance Indicator (PI) Rationale
However, without a validated catch report/logsheets of the fishery, the list of secondary fisheries cannot be determined with certainty, thus management of secondary species cannot be assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.

References

Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery**

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Information adequacy for assessment of impacts on minor secondary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			**No**
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	**No**	**Not Assessed**	**Not Assessed**
Overall Performance Indicator (PI) Rationale				

However, without a validated catch report/log sheet of the fishery, the list of primary fisheries cannot be determined with certainty, thus adequacy of information to assess the UoA impact to primary species and for management purposes cannot be fully assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.	
References	
No catch report/logsheet provided by fishery.	
Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery**

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species. The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/ stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population /stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Direct effects			
	Guidepost	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	**No**	**Not Assessed**	**Not Assessed**
c	Indirect effects			
	Guide post		Indirect effects have been considered for the UoA and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.
	Met?		**No**	**Not Assessed**

Overall Performance Indicator (PI) Rationale

Currently, there are no limits set for ETP species at the national and international level. In a similar yellowfin handline fishery in the Philippines, they reported interactions with and catching of sharks. In the WCPFC silky sharks, whale shark and oceanic whitetip sharks are considered ETP and managed at the WCPFC level. Considering the diversity of sharks in the Philippines and their municipal fishing ground, it is unlikely that the said WCPFC-protected sharks can be found in the area. However, precautions should still be exercised.

In the case of SFPTHFAI fishery that operates in the PH EEZ of FMA 2 and 3, there is a chance for interaction. However, because of absence of information to verify this data, the list of ETP species cannot be determined with any certainty and these PIs are not fully assessed. Following

the precautionary approach, SG60 cannot be met.	
References	
Dinardo et al, 2020; No catch report/logsheet provided by the fishery.	
Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery**
Data-deficient? (RBF needed)	**Yes**

PI 2.3.2 – ETP species management strategy

PI 2.3.2		The UoA has in place precautionary management strategies designed to: meet national and international requirements. ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimize the mortality of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	There are measures in place that minimize the UoA-related mortality of ETP species and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimize mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimize mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Management strategy in place (alternative)			
	Guidepost	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	**No**	**Not Assessed**	**Not Assessed**
c	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy / comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	**No**	**Not Assessed**	**Not Assessed**

d	Management strategy implementation			
	Guidepost		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		**No**	**Not Assessed**
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	**No**	**Not Assessed**	**Not Assessed**

Overall Performance Indicator (PI) Rationale

At the WCPFC level ETPs are protected as follows:

CMM 2019-04 on Conservation and Management of Sharks which requires member countries to implement the FAO International Plan of Action and reporting it as part of Part 2 Annual Report. Full utilization of retained sharks on board their vessels and prohibiting the practice of finning should be implemented along with the practice of safe release in accordance with the guidelines.

CMM 2018-04 on Conservation and Management of Sea Turtles requires member countries to implement the FAO Guidelines to Reduce Sea Turtle Mortality in Fishing operations and ensure the safe handling of all captures sea turtles in order to improve their survival and report the same as part of Part 2 annual Report. Regional observers are also required to provide reports to the Commission.

CMM 2019-05 on Conservation and Management Measures on Mobulid Rays Caught in Association with Fisheries in the WCPFC Convention Area prohibits targeted fishing or intentional setting on mobulid rays. It also prohibits retaining on board, transshipping or landing any part or whole of mobulid rays. It requires prompt release of alive and unharmed mobulid rays in accordance with guidelines on handling practices.

However, without a validated catch report/log sheet of the fishery, the list of ETPs cannot be determined with certainty, thus management of ETPs cannot be assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.

References

CMM 2019-04; CMM 2019-04; CMM 2018-04; No catch report/ logsheet provided by fishery.

Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery.**

PI 2.3.3 – ETP species information

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including Information for the development of the management strategy. Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	**No**	**Not Assessed**	**Not Assessed**
b	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	**No**	**Not Assessed**	**Not Assessed**

Overall Performance Indicator (PI) Rationale
However, without a validated catch report/log sheet of the fishery, neither qualitative nor quantitative information can be gathered to estimate impact of UoA on ETP mortality that support management strategy. Thus, information adequacy for impact assessment and management of ETPs cannot be assessed. Considering the precautionary approach, scoring issues at SG 60 are not met.

References
No catch report/ logsheet provided by fishery.

Draft scoring range	**<60**
Information gap indicator	**Unavailability of verifiable catch report/logsheets of the fishery.**

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guidepost	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	**No**	**No**	**No**
b	VME habitat status			
	Guidepost	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	**No**	**No**	**No**
c	Minor habitat status			
	Guidepost			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			**No**

Overall Performance Indicator (PI) Rationale

The handline fishery deploys lines in deep water where they do not physically touch the benthic zone or the ecological region at the lowest level of a body of water which plays a vital role in the health of aquatic ecosystems. The use of FADs in its operation may need to be evaluated with regards to its impact on the habitat. The UoA occasionally fishes around existing anchored FADs. Impact of gear loss may need to be assessed during full assessment. However, considering the area covered by FMA 2 and FMA 3, FADs footprint is negligible compared to its total area.

Without direct information on the UoA, the impact on the vulnerable marine ecosystem (VME) habitat cannot be determined. SG60 is met on the basis of the general nature of the fishery. Studies need to be conducted on the impact of FADs on habitat.

Scoring issue is not met at SG 60 level.	
References	
Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI, though more information is sought on use of payaos (FADs) and their interaction with habitat**
Data-deficient? (RBF needed)	**Yes**

PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	**Yes**	**No**	**No**
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	**Yes**	**No**	**No**
c	Management strategy implementation			
	Guidepost		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		**No**	**No**
d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guidepost	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	**NA**	**NA**	**NA**

Overall Performance Indicator (PI) Rationale	
While based on the selective nature of the operation of the fishery, It is unlikely that they can do irreversible harm to the habitat. The use of FADs by the fishery is regulated at the national level in accordance with BFAR FAO 244 Series of 2012 on National Tuna Fish Aggregating Device Management Policy that limits the number of FADs per handline boat. Validated log sheets consistent with its VMS tracks of the fishery can ascertain operations in the deep oceanic waters of FMA 2 and FMA 3. Thus, absence of which will make it impossible if not difficult to assess the management strategy. Considering the precautionary approach, SIa and SIb at SG 60 level are met, while SIc and SId are not met at all levels.	
References	
BFAR FAO 244	
Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI, though more information is sought on use of payaos (FADs) and their interaction with habitat**

PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	The types and distribution of the main habitats are broadly understood. OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	**No**	**No**	**No**
b	Information adequacy for assessment of impacts			
	Guidepost	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	**No**	**No**	**No**
c	Monitoring			
	Guidepost		Adequate information continues to be collected to detect any increase in risk to the	Changes in all habitat distributions over time are measured.

			main habitats.	
	Met?		**No**	**No**

Overall Performance Indicator (PI) Rationale
The handline fishery deploys lines in deep waters where they do not physically touch the benthic zone or the ecological region at the lowest level of a body of water which plays a vital role in the health of aquatic ecosystems. The UoA is unlikely to reduce structure and function of the commonly encountered habitats. Information in the catch report/logbooks of the fishery such us GPS coordinates and fishing days can help determine physical impact of the gear and the FADs on the habitats. With VMS tracks showing the location of the operation can confirm whether the vessels fish or fish on VME habitats. However, the fishery has not provided the catch report/logsheets at this time. SG60 is not met. More information is sought on use of payaos (FADs) and their interaction with habitat to determine whether the fishery would meet SG80.
References
Catch reports/logsheets are not provided by the fishery.

Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI, though more information is sought on use of payaos (FADs) and their interaction with habitat**

PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	**Yes**	**No**	**No**

Overall Performance Indicator (PI) Rationale
Ecosystem modeling in the WCPO indicated that the tuna fishery impacts on top-level predators in the Pacific Ocean is substantial but with minor ecosystem impact. This suggests that the UoA is having irreversible impact or harm on ecosystem structure and functioning. There is sufficient information available from extensive ecosystem modelling and analysis on the impacts of the fishery on e.g., retained tuna and non-tuna species and elements (esp. trophic structure) to allow the main consequences for the ecosystem to be inferred. However due to unavailability of information direct on the UoA, impact on the key elements of the ecosystem cannot be determined.

References
EcoSEA Workshop: Ecosystem Modelling in the WCPO: Current Status and Future Directions, 2020

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (RBF needed)	**Yes**

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, which take into account the potential impacts of the UoA on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	**Yes**	**No**	**No**
b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is some objective basis for confidence that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	Testing supports high confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	**Yes**	**No**	**No**
c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		**No**	**No**

Overall Performance Indicator (PI) Rationale

The Western and Central Pacific Fisheries Commission is mandated to ensure the sustainable management of the target species and the by-catch of the fishery while also addressing the impacts of fishing on the wider ecosystem of the WCPO with adoption of binding conservation and management measures and resolutions. These CMMs are evaluated regularly and compliance by member countries are regularly assessed as well. Information is systematically reported, collected, and analyzed for management purposes.

Philippines is a member of WCPFC and was present at the 1995 FAO Conference, during which the FAO Code of Conduct for Responsible Fisheries is used as the framework for sustainable fisheries for an "Ecosystem Approach to Fisheries Management (EAFM).

The Philippines adopted a National Tuna Management Plan with specific goals and objectives formulated in accordance with Ecosystem Approach to Fisheries Management which is underpinned by the principle's ecosystem well-being, human well-being and good governance.
With unavailability of information from the UoA on the use of FADs, the sufficiency of management

cannot be determined.	
References	
WCPFC Convention; Philippine National Tuna Management Plan, 2018	
Draft scoring range	**60 – 79**
Information gap indicator	**Additional information on the UoA impact with the unavailability of verifiable logsheet information**

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	**No**	**No**	
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information and have been investigated in detail.
	Met?	**No**	**No**	**No**
c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood.
	Met?		**No**	**No**
d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		**No**	**No**
e	Monitoring			
	Guide		Adequate data continue to be collected to detect any increase in risk	Information is adequate to support the development of strategies to manage

	post		level.	ecosystem impacts.
	Met?		**No**	**No**

Overall Performance Indicator (PI) Rationale
WCPFC through SPC has done ecosystem modelling where the target species of tuna are the identified key elements. Information is sourced from landing data, logsheets, regional observer data, and tuna tagging studies adequate to understand the key elements of the ecosystem. Thus, the impact of the fishery on by-catch, ETPs, habitat and ecosystem as a whole can be inferred. However, at the UoA level, there is no data at this point to infer the main impacts of the UoA on the key ecosystem elements, and as the list of primary, secondary and ETP species cannot be constructed at this time. Thus, it cannot be said that adequate information is available on the components and their role in the ecosystem. SG60 is NOT met.
References
Lehodey et al., 2014; No catch report/logsheet provided by fishery.

Draft scoring range	**<60**
Information gap indicator	Information sufficient to score PI, but issues with the verifiability of the data have been discussed throughout the report.

9.3. Principle 3

9.3.1. Legal and Customary Framework

Philippines' adoption, ratification and accession to major agreements and instruments has given legal basis or framework for the management of fisheries at the national level. Philippines is a party to the 1984 United Nations Convention on the Law of the Sea (UNCLOS), UN Fish Stocks Agreement and FAO Compliance Agreement.

Philippines also committed to other instruments of interest related to environmental threats that impact fisheries such as the Convention on Biological Diversity (CBD), Convention on the International Trade in Endangered Species (CITES) of Wild Flora and Fauna, Convention of Migratory Species (CMS), World Trade Organization/General Agreements on Tariffs and Trade (WTO/GATT), Technical Barriers to Trade and Sanitary and Phytosanitary (TBT/SPS) Measures and Codex Alimentarius.

Among the non-binding agreements which Philippines is committed to are the FAO Code of Conduct for Responsible Fisheries and the International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

The evolution of tuna fishing in the past decade as an enterprising endeavor paved the way for the creation of tuna regional fisheries management organizations (tRFMOs) in order to facilitate transnational cooperation to manage fishery resources. Philippines as one of the active fishing nations is a member to some of these tRFMOs to include the Indian Ocean Tuna Commission (IOTC), International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Western and Central Pacific Fisheries Commission (WCPFC) which held its inaugural meeting in December 2004. Philippines is also a cooperating non-member to the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). These tRFMOs adopt conservation and management measures (CMMs) for sustainability of fishery resources. Member countries are expected to translate these CMMs to their national regulations.

The fisheries in the Philippines can be classified as municipal or commercial based on the vessel tonnage and fishing ground. Municipal fisheries operate boats of 3 gross tons or less inside municipal waters which are 15 kilometers from the coastline including offshore islands. This fishery is managed by the local government units. The commercial fisheries use vessels over 3 gross tons and operate beyond municipal waters in the Philippine exclusive economic zone. Commercial fisheries are regulated by the Bureau of Fisheries and Aquatic Resources under the Department of Agriculture.

In the country the following legislations serve as framework for fishery management:

9.3.1.1. Republic Act No. 8550, otherwise known as the Philippine Fisheries Code 1998 which was amended by Republic Act 10654 An Act to Prevent, Deter, Eliminate Illegal, Unreported and Unregulated Fishing in 2015

The Act sets out the general framework for managing the country's fisheries sector and designates the BFAR as the lead government agency responsible for conservation and management of fishery resources beyond municipal waters. With the amendment of the Act, increased penalties and sanctions for greater deterrence was legitimized, licensing of fishery activities according to harvest control rules and reference points put in place as part of regulation and the use of precautionary measure and ecosystem-based approached to fisheries management was affirmed.

9.3.1.2. Republic Act No. 7160, otherwise known as Local Government Code of 1991

The Act provides the local government units the jurisdiction and responsibilities to manage fisheries within the municipal waters and grants preferential use of municipal waters to municipal fishers.

9.3.1.3. Republic Act No. 8435, otherwise known as the Agriculture and Fisheries Modernization Act of 1997

The act provides measures to modernize the fisheries sector particularly with respect to credit and extension service.

9.3.1.4. Republic Act No. 9376, otherwise known as the Handline Fishing Law of 2007

The Act aims to further develop the handline fishery and regulates the traditional highly selective fishing method that used the hook and line, a passive fishing gear with a single vertical line carrying one hook and

used by simply dropping the line into the water and waiting for the fish to bite.

The BFAR through the DA Secretary issues various Fisheries and Administrative Orders in consonance to above legislations and adopted CMMs in the tRFMO level.

9.3.2. Consultation, Roles, and Responsibilities

At the tRFMO level, all cooperating member and non-member countries are participating in discussions and decision making in different capacities. Logistic and financial support are provided for members who may have difficulties supporting participation. Different committees and working groups are established to provide venues for discussion and consultation. In the case of the WCPFC, Scientific Committee, Technical Compliance Committee, and the Commission itself conducts regular meetings. Informal meetings and workshops are also held when necessary. Meetings and workshops are properly documented and accessible to all stakeholders via their websites.

The Philippine Fisheries Code clearly defines roles and responsibilities of fishery stakeholders. Article 2 of The Fisheries Code entitled "The Fisheries and Aquatic Resources Management Councils (FARMCs)" provides guidance on the creation of FARMCs at the municipal, city, regional and national level. This is to facilitate consultation of stakeholders and ensure that the voices of stakeholders are heard. Every sector is represented in the different councils. The National Fisheries and Aquatic Resource Management Council (NFARMC) is principally tasked to assist in the formulation of national policies for the protection, sustainable development and management of fishery and aquatic resources for the approval of the Secretary and assist the Department in the preparation of the National Fisheries and Industry Development Plans. Representation to the NFARMC consists of representatives from the Department of Agriculture, Department of Interior and Local Government, municipal fisheries, commercial fisheries, academe, aquaculture, processing, and NGOs.

The need for consultation is specifically expressed in the Department of Agriculture Administrative Order No. 10 Series of 2015, Implementing Rules and Regulations of RA 8550 as amended by RA10654, Rule 65.2 on Formulation of Rules and Regulations. Accordingly, all regulations to be formulated will have to undergo consultations in all affected regions as may be practicable taking into consideration the safety and accessibility of the venue to the stakeholders. Stakeholders will be given at least 15 days prior via publication in a newspaper of general circulation. Further, proposed regulation will be made public at the BFAR website and BFAR Regional Offices at least 7 days prior to consultation.

In 2018, a Special-Order No. 1117 was issued by the Secretary of the Department of Agriculture entitled, "Reconstituting the National Tuna Industry Council (NTIC), amending Special Order No. 659, Series of 2000." NTIC is a multi-agencies and multi-sectoral stakeholder council which shall act as the overall coordinating and advisory body on tuna fisheries development and management. This council is envisioned to do the following functions:

- Review and recommend policies, programs and strategic actions for the development and management of the tuna industry consistent with the National Tuna Management Plan (NTMP), Fisheries Code of the Philippines and other relevant laws and regulations.
- Review and recommend policies concerning bilateral and multilateral fishing relations, including RFMOs and trade relations.
- Support and coordinate implementation of relevant policies, plans, programs and projects.
- Call on and coordinate with other concerned government agencies; and,
- Establish mechanism or platform for consultation and collaboration among stakeholders.

Noting a new Secretary installed, a call for convening the NTIC is requested to re-operationalize the council.

In 2019, with Fisheries Administrative Order 263 entitled, "Establishment of Fisheries Management Areas for the Conservation and Management of Fisheries In Philippine Waters," a science-based, participatory and transparent governance framework and mechanism to sustainably manage fisheries.

The FAO enables stakeholders to work more closely together, through the FMA as a spatial platform, so both Local Government Units (LGUs) and BFAR are on the same page and follow more or less a harmonized approach in conserving and managing fisheries within the FMA, consistent with their mandate.

In the FMA, BFAR is the lead agency in organizing and operationalizing the FMAs across the country. It will monitor the effectiveness of the various FMAs, as each FMA reports annually to the BFAR National Office.

At the regional level, a BFAR Regional Fisheries Office (RFO) has been designated as the lead for a particular FMA. The lead RFO, in coordination with the other BFAR RFO, will convene the stakeholders and will be responsible for organizing the FMA Management Board and the Scientific Advisory Group.

The National Fisheries Research and Development Institute plays a critical role in providing the science information needed for each Fisheries Management Area. Through the NFRDI's National Stock Assessment Program, assistance is given to each FMA to identify the key species found within the FMA and establish the Reference Points. Based on these reference points, NFRDI and the NSAP teams at the regional levels may recommend the Harvest Control Rules as well as Harvest Control Measures or conservation and management measures.

Local Government Units (LGU) retain their power to manage and implement regulations of fisheries in municipal waters, as provided by law. LGUs will ensure that local regulations and management measures are consistent with the FMA resolutions, including the FMA EAFM Framework Plan, the established reference Points, the adopted harvest control rules and the recommended harvest control measures.

As may be appropriate or needed, the LGUs, in consultation with their respective FARMCs, enact local ordinances based on these FMA resolutions. The LGUs also prepare their respective EAFM action plan or update their existing coastal resources management plan to be consistent with the FMA EAFM Framework Plan, as may be appropriate.

At the end of each year, LGUs will submit a summary report to the FMA Management Board on their compliance with the FMA EAFM Framework Plan and the conservation and management measures based on the RPs and HCRs.

The FARMCs continue to exercise their power and perform their functions under the law. As its functions, FARMCs will continue to have recommendatory and advisory powers to the LGU. When the LGU develops or updates its EAFM action plan or enacts ordinances to adhere to the FMA resolutions, this should be done in consultation with the FARMCs.

Inter-LGU Alliances continue to carry out their work. Additionally, adjacent areas cooperatively managed by the Inter-LGU Alliances may be considered and treated as sub-FMAs, as may be appropriate, and agreed with the FMA Management Board. Inter-LGU Alliances may adjust their policies and plans to adhere to the FMA resolutions. Representatives from Inter-LGU Alliances may also participate actively in the FMA Management Board, as a representative of the LGUs, as may be agreed.

9.3.3. Long Term Objectives

The Conservation and Management Measures adopted by the WCPFC set the objectives for highly migratory and straddling fish stocks management at the regional level consistent with its Convention agreements to include Article 2 on ensuring through effective management the long-term conservation and sustainable use of highly migratory fish stocks in the WCPO in accordance with the 1982 Convention and Agreement and Article 5 on application of precautionary approach in decision-making. These are consistent with MSC standards.

The amended Fisheries Code of the Philippines in its declaration of policy likewise adopted the same principles with following long-term objectives:

- To achieve food security as the overriding consideration in the utilization, management, development, conservation and protection of fishery resources in order to provide the food needs of the population.
- To limit access to the fishery and aquatic resources of the Philippines for the exclusive use and enjoyment of the Filipino citizens.
- To ensure the rational and sustainable development, management and conservation of the fishery and aquatic resources in Philippine waters including the Exclusive Economic zone and in the adjacent high seas, consistent with the primordial objective of maintaining a sound ecological balance, protecting and enhancing the quality of environment.
- To protect the rights of fisherfolk, specially of the local communities with priority to municipal fisherfolk, in the preferential use of the municipal waters.
- To provide support to the fishery sector, primarily to the municipal fisherfolk, including women, youth sectors, through appropriate technology and research, adequate financial, production, construction of post-harvest facilities, marketing assistance and other services.
- To adopt the precautionary principle and manage fishery and aquatic resources in a manner

consistent with the concept of ecosystem-based approach to fisheries management and integrated coastal area management; and,
- To grant the private sector the privilege to utilize fishery resources under the basic concept, that the grantee, licensee or permittee thereof shall only be a privileged beneficiary of the State but also active participant and partner of the government in the sustainable development, management, conservation and protection of the fishery and aquatic resources of the country.

As mandated by the Fisheries Code Section 65(a) a Comprehensive National Fisheries Industry Development Plan (CNFIDP) was developed and implemented by BFAR through participative and open process involving different sectors within the fishing industry, non-government organizations, and relevant BFAR offices. CNFIPD is part of the primary planning systems together with the Municipal Fisheries Development Plan (MFDP) and the Comprehensive Post-harvest, Marketing and Ancillary Industry Plan (CPHMAIP).

The CNFIDP is a plan to attain the vision of a sustainable and competitive fishing industry, the following were identified needs:
- Sufficient contribution to national food security.
- Inclusive growth within the industry.
- Sustainable science-based fisheries and aquatic resource management practices.
- Compliance with international laws, policies, standards and enforcement of local laws and regulations.
- Strengthened capacities in infrastructure, technologies, human resource and information sharing; and,
- Resilience to environmental hazards.

Based on these, overall sectoral targets were formulated, and strategies and action plans were developed. The CNFIDP is currently undergoing review for reformulation.

The CPHMAIP hinges on the sectoral targets and strategies of both the Post-Harvest and Trade and Marketing sectors as outlined in the CNFIDP. It targets to achieve the following:
- 10% reduction in post-harvest losses in five years.
- 100% compliance to hygiene and sanitation standards; and,
- Increase in quantity and value of traded fish and fishery products for domestic export.

The plan was adopted in 2018 and expected to be implemented till 2022.

9.3.4. Fishery Specific Objectives

The National Tuna Management Plan is a relevant road map to the establishment of a sustainable tuna industry in the Philippines in the light of the need for sustainable exploitation of tuna resources and the need for transnational fishery cooperation. The plan applies to the catching, processing, and marketing of oceanic tunas. It covers both municipal and commercial fisheries using purse seine, ring net, handline, longline and other gears. It also covers operations of Philippine flagged vessels in area beyond national jurisdiction.

Specific goals and objectives have been formulated with the Ecosystem Approach to Fisheries Management (EAFM). The plan provides for specific measures, actions, timelines, and responsibilities for each of the following objectives:

Goal 1: Sustained Level of Production

- By 2023, achieve the catch level through science- and rules-based management under the guidance of the WCPFC CMM.
- By 2021, equitably distribute fishing access to stakeholders by providing zones for exclusive use of each fishing sector; and,
- By 2023, establish management measures to protect identified spawning and breeding grounds.

Goal 2: Improved socio-economic condition of fisherfolks by ensuring equitably accessed tuna resources.

- By 2023, improve municipal production by 1% annually by enhancing management; improve commercial fisheries production by 5% annually by improving fishing in the Philippines Rise and

West Philippine Sea; and acquisition of better fishing access to other coastal states in the western and central Pacific Ocean and the Indian Ocean.
- By 2023, reduce post-harvest losses from 25% to 15%; and
- By 2023, improve harvest-to-market efficiency by reducing/ minimizing/ streamlining the key players in the supply chain.

Goal 3: Strengthened governance/management of tuna fisheries.

- By 2019, strengthen science-based decision-making process and support while ensuring compliance with CMMs.
- By 2019, institutionalize timely and accurate data collection programs to ensure availability and access to scientific information in aid of management decisions.
- From 2018 to 2021, improve monitoring, control, and surveillance measures to prevent, deter, and eliminate IUUF for tuna stocks.
- By 2019, expand market access and product competitiveness for export for the benefit especially of MSMEs; and,
- By 2019, ensure compliance with food safety and quality standards and by 2023, reduce post-harvest losses by 10%.

The plan was adopted in 2018 and being implemented till 2023.

9.3.5. Compliance and Enforcement

At the WCPFC level, member countries are required to report their compliance to CMMs adopted by the Commission. In particular, the Annual Report Part 2 on each country is assessed by the WCPFC Technical and Compliance Committee which holds regular annual meetings.

CMM 2019-06, Conservation and Management Measure for Compliance Monitoring Scheme (CMS) was adopted to provide clear guidance. The CMS is designed to:

- Assess CCMs' compliance with their WCPFC obligations.
- Identify areas in which technical assistance or capacity building may be needed to assist CCMs to attain compliance.
- Identify aspects of CMMs which may require refinement or amendment for effective implementation.
- Respond to non-compliance by CCMs through remedial and/or preventative options that include a range of possible responses that take account of the reason for and degree, the severity, consequences and frequency of non-compliance, as may be necessary and appropriate to promote compliance with CMMs and other Commission obligations; and
- Monitor and resolve outstanding instances of non-compliance by CCMs with their WCPFC obligations.

The Commission, with the assistance of the Technical and Compliance Committee (TCC) shall evaluate CCMs' compliance with the obligations arising under the Convention and the CMMs adopted by the Commission and identify instances of CCM non-compliance, in accordance with the approach set out in this section.

The WCPFC Secretariat maintains the WCPFC online compliance case file system as a secure, searchable system to store, manage and make available information to assist CCMs with tracking alleged violations by their flagged vessels. A flag CCM shall provide updates into the online system on the progress of an investigation until its conclusion. CCMs that are relevant to a case shall be allowed to view those cases for vessels flying other flags. The WCPFC Secretariat notifies relevant CCMs when a case is entered into the online system.

The WCPFC maintains an IUU Vessel list per CMM 2019-07 Conservation and Management Measure to Establish a List of Vessels Presumed to Have Carried Out Illegal, Unreported and Unregulated Fishing Activities in the WCPO. The vessels are presumed to have carried out IUU fishing activities under the following circumstances:

- Harvest species covered by the WCPFC Convention in the Convention Area and are neither on the WCPFC record of authorized vessels nor a fishing vessel fishing exclusively in waters under the jurisdiction of its flag State, or

- Conduct fishing activities in waters under the jurisdiction of a coastal State, without permission of that State, or in contravention of its law and regulations, or
- Do not record or report their catches made in the Convention Area consistent with WCPFC measures, or make false reports, or
- Take and land undersized fish in a way that undermines WCPFC conservation measures, or
- Fish in a closed area or during a closed season in a way that undermines WCPFC conservation measures, or
- Use prohibited fishing gear in a way that undermines WCPFC conservation measures, or
- Transship with, participate in joint fishing operations with, support or re-supply vessels included in the IUU Vessel List, or
- Are without nationality and harvest species covered by the WCPFC Convention in the Convention Area, or
- Engage in any other fishing activities that undermine the provisions of the WCPF Convention or any other WCPFC conservation measures, or
- Are under the control of the owner of any vessel on the WCPFC IUU Vessel List.

At the national level, BFAR enforces the tuna-related regulations listed in Table 18.

Table 18. BFAR Tuna-Related Regulations. (Source: National Tuna Management Plan 2018)

	FAO Number	Title
Registration and Licensing		
1	FAO 198-1 Series of 2018	Amended Rules and Regulations on Commercial Fishing in Philippine waters and Distant Fishing
2	BAC 253 Series of 2018	Moratorium on the Issuance of Commercial Fishing Vessel and Gear License and Other Clearances
3	FAO 254 Series of 2014 and 2018	Regulation and Implementing Guidelines on Group Handline Fishing Operation in the High Seas of the WCPFC Convention Area
4	FAO 245 Series of 2012-2018	Regulations and Implementing Guidelines on Group Tuna Purse Seine Operations in High Seas Pocket Number 1 as a Special Management Area
5	FAO 246-1 Series of 2018	Moratorium on the Issuance of Commercial Fishing Vessel License
Limitations on Fishing Operations (closed/restricted areas/seasons, prohibited fishing gears)		
6	FAO 226 Series of 2015	Regulation on the Mesh Size of Tuna Purse Seine Nets and Trading of Small Tuna
7	FAO 245 S 2012	Regulations and Implementing Guidelines on Group Tuna Purse Seine Operations in High Seas Pocket Number 1 as a Special Management Area (including VMS and Observer requirement, FADs closure for 3 months in the high seas)
8	FAO 236 S 2012	Rules and Regulations on the Operations of Purse Seine and Ring Net Vessels Using Fish Aggregating Devices (FADs) locally known as Payaos during the FAD Closure Period as Compatible Measures to WCPFC CMM
9	FAO 244 S 2012	National Tuna Fish Aggregating Device (FAD) Management Policy
10	FAO 258, S 2918	Establishment of Tuna Conservation and Management Zones (TCMZ) in Mindanao/Celebes Sea

BFAR collects data from various sources to include the following:

- NSAP-expanded data collection for tuna in collaboration with WPEA project
- Catch logsheet requirements for all vessels.
- Stowage plans for carrier vessel
- PFDA landing reports.
- Observer reports (which is expected to be more substantial in view of the 100% Observer coverage for PH vessels in the high seas and other coastal states training of 464 Observers and 90 Debriefers).

BFAR does Monitoring Control and Surveillance (MCS) and IUUF by implementing the following:

- On traceability, BAC 251 Series 2014-Traceability system for fish and fishery products.
- On catch certification, FAO 238, Series 2012 – Rules and Regulations Governing the Implementation of Council Regulation EC No. 1005/2008 on the Catch Certification Scheme
- On inspections,
    1. FAO 227 s. 2008–Rule and Regulations Governing the Export of Fish and Aquatic Products to European Union Member-Countries

2. FAO 228 s 2008 - Rules Governing the Organization and Implementation of Official Controls on Fishery and Aquatic Products Intended for Export to The EU Market for Human Consumption
3. National Plan of Control and Inspection (NPCI)

- On Enforcement
  1. SO, 486 dated July 15, 2011, and FOO 241 dated July 18, 2011 – Creating the BFAR Fishery Resources Protection and Law Enforcement Section/Quick Response Team (now FPLEG)
  2. Acquisition of multi-mission vessels (14 units Monitoring, Control and Surveillance (MCS) vessels; 2 units 50m-Multi-Mission Offshore Vessels (MMOVs); 70 units 30- footers multi-purpose vessels.
  3. Regularization of 778 Fishery Regulatory Officers (RFOs).
  4. Training of 343 Law Enforcement Officers
- On Adjudication
  1. Establishment of Adjudication Committees at the national and regional levels effective 2017
  2. Hiring of hearing officers and legal assistants
  3. Conduct of capacity-building for hearing officers
  4. Investigation of 218 cases (2017)
  5. Resolution of 184 cases (2017).
  6. Fines and penalties collected.
- On Training and awareness-raising measures
  1. National capability-building program for Fishery Law Enforcers
  2. Training for Fish Examiners
  3. Seafood Safety Training
  4. Fisheries Observers Training
  5. Bantay Dagat
  6. Operation and maintenance of MCS vessels
- Implementation of PHILO Project Phase 1 – Integrated Marine Environment Monitoring System
- Implementation of PHILO Project Phase 2 – Integrated Marine Environment Monitoring System

9.3.6. Management and Performance Evaluation

The subsidiary bodies of the WCPFC namely, the Scientific Committee and the Technical and Compliance Committee have a mechanism to review and monitor information submitted by CCMs and research done for the Commission in order to effectively manage fishery resources in the region.

At the national level, the National Tuna Management Plan 2018 includes a Monitoring and Evaluation Plan to keep track of implementation of this fishery-specific plan across the three (3) goals by establishing benchmarks or baselines as bases for targets. Quality, quantity, and relative performance indicators are identified vis-à-vis pre-determined monitoring methods or sources of data. Monitoring frequency and responsible person/office were likewise integrated in the plan.

9.3.7. Principle 3 Performance Indicator Scores and Rationales

PI 3.1.1 –Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: Is capable of delivering sustainability in the UoA(s). Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and Incorporates an appropriate dispute resolution framework		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guidepost	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organized and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				
With the Philippine Fisheries Code 1998 amended by RA 10654 in order to prevent, deter and eliminate IUU fishing, and the Local Government Code of 1991, national framework for fisheries governance is in place and is further strengthened with the issuance of BFAR FAO 263 establishing Fisheries Management Areas throughout the country. A national law, Republic Act 9374 on Handline Fishing seeks to support the development and management of the fishery. The National Tuna Management Plan of 2018 serves as the roadmap for sustainable tuna fishing considering the need for a sustainable exploitation of tuna resources and the need for transnational fishery cooperation. It also includes requirements to regulate the management of tuna in accordance with MSC Principles 1 and 2. Requirements of SG 60, SG 80 and 100 levels are met.				
b	Resolution of disputes			
	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal

			considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	**Yes**	**Yes**	**No**

Rationale

Article 31 of the WCPFC Convention provides guidance for a transparent dispute settlement mechanism whereby a panel can be formed to review decisions made by the Commission and settle disputes among member countries. However, there has not been a need to convene a panel, therefore no sanctions imposed on the regional level, thus not yet tested.

At the national level, with the amended Fisheries Code RA 10654, the Adjudication Committee shall have jurisdiction to hear and decide administrative and adjudicative actions as defined in these Rules, citizen's suit and Strategic Lawsuit Against Public Participation (SLAPP). In the exercise of its jurisdiction, the Committee shall have the power to determine and impose appropriate penalties, as well as additional accompanying administrative sanctions in case of serious violations as defined in the Fisheries Code, approve settlement offers and dispose confiscated catch, gears, equipment and other paraphernalia, the issuance of subpoenas, cease and desist orders, and summary ejectment orders. It may perform such other powers and functions inherent to or necessary in the exercise of its jurisdiction.

Further, there is a provision for legal disputes in court through the Republic Act 9285 – Alternative Dispute Resolution Act (2004). Section 2, Declaration of Policy, which has a process used to resolve disputes, other than the adjudication of a presiding judge of a court or an officer of a government agency, in which a neutral third party participates to assist in the resolution of issues, which include arbitration, mediation, conciliation, early neutral evaluation, mini-trial or any combination thereof. Also, at the municipal level, the use of FARMC and LGU legislative processes are the mechanisms used by fishers for resolving disputes.

With the mechanisms in place, however not yet tested at the regional level, the requirements of SG 60 and SG 80 are met but not SG 100.

c	Respect for rights			
	Guidepost	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

Item d of Section 2 of Chapter 1 on the Declaration of Policy and Definitions of RA 10654 clearly expressed the need to protects the rights of fisherfolk specially of the local communities with the

preferential use of marine resources within municipal waters based on, but not limited to, the Maximum Sustainable Yield (MSY) or Total Allowable Catch (TAC) on the basis of fisheries resources and ecological conditions and shall be consistent with commitments under international treaties and agreements.

Article 5 of the WCPFC Convention Item (h), the interests of artisanal and subsistence fishers should be taken into account in the process of conserving and managing highly migratory fish stocks. Article 30 Item 2 (b) further reiterated that in giving effect to the duty of member to cooperate in establishing measures, they should avoid adverse impacts on and ensure access to fisheries by subsistence, small-scale and artisanal fishers and fish workers, as well as indigenous people in developing States Parties, particularly small island developing States Parties, and territories and possessions.

With national and regional mechanisms in place to formally commit to the legal rights of fishers consistent with the objectives of MSC Principles 1 and 2, the requirements of SG 60, SG 80 and SG100 are met.

References
Republic Act No. 8550 Fisheries Code of 1998 as amended by RA 10654 or "An Act to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing," https://www.bfar.da.gov.ph/wp-content/uploads/2021/04/ra10654.pdf Republic Act No. 9285 on Alternative Dispute Resolution Act (2004), https://lawphil.net/statutes/repacts/ra2004/ra_9285_2004.html National Tuna Management Plan 2018, https://www.bfar.da.gov.ph/wp-content/uploads/2021/05/National-Tuna-Management-Plan.pdf Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention), https://www.wcpfc.int/convention-text

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

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guidepost	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

With the establishment of the Commission per Article 9 of WCPFC Convention Text, the structure of Commission is outlined, and its functions enumerated in Article 10. The composition and functions of the Secretariat and of the subsidiary bodies such as the Scientific Committee and Technical and Compliance Committee are expressed in Article 11-16. The obligations and duties of member states are provided in Articles 23-24.

At the national level, the roles and responsibilities of the BFAR and the LGUs are clearly defined in the Fisheries Code. In the Rule 3.1 of Section 3, BFAR shall have the responsibility and jurisdiction in the management, conservation, development, protection, utilization and disposition of all fisheries and aquatic resources of the country and all Philippine flagged fishing vessels operating in areas governed by a RFMO, in the high seas or in waters of other coastal states. In municipal waters, BFAR may coordinate with and assist the LGUs, FARMCs, IFARMCs and other government agencies concerned.

The roles, responsibilities and composition of the national, municipal, city and integrated FARMCs are defined in Article 2 of the Fisheries Code. The roles, responsibilities and composition of the Fisheries Management Board of FMAs are likewise clearly defined in FAO 263 entitled, “Establishment of Fisheries Management Areas for the Conservation and Management of Fisheries in Philippine Waters.”

DA Special Order 1117 on Reconstituting the National Tuna Industry Council Amending Special Order No. 659, Series of 2000, defines its composition, and functions of this multi-stakeholder council. The NTIC is yet to be convened.

On the basis of the above, the requirements of SG 60, SG 80 and SG100 levels are met.

b	Consultation processes

	Guidepost	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	**Yes**	**Yes**	**No**

Rationale

At the tRFMO level, there is an established mechanism of consultation with members and cooperating non-member countries through the subsidiary bodies and working groups.

At the national level, in terms of policy formulation, formal consultation process per Rule 65.2 (b) of the Fisheries Code should be observed whereby it is required that consultations be conducted in all affected regions as may be practicable taking into consideration the safety and accessibility of the venue to the stakeholders. Further in item (c)a 15-day prior notice in newspaper of general circulation is required.

Consultations are also done via councils such as the C/MFARMCs, FMA Boards, NTIC. Participation of the stakeholders is highly encouraged in these councils. Therefore SG 60 and SG 80 level requirements are met but not SG 100 since further proof that inputs of stakeholders are taken into consideration needs to be provided. Proper documentation and information accessibility needs to be addressed.

c	Participation			
	Guidepost		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved and facilitates their effective engagement.
	Met?		**Yes**	**Yes**

Rationale

In order to ensure and maximize participation of stakeholders, the safety and accessibility of the venue to the stakeholders during consultations is ensured in accordance with Rule 65.2 (b) of the Fisheries Code and that a 15-day prior notice in newspaper of general circulation is given per Rule 65.2 (c).

Consultations are also done via councils such as the C/MFARMCs, FMA Boards, NTIC. Tuna handline fishers along with other stakeholders are represented in the Fisheries and Aquatic Resource Management Council in the city/municipal level as well as national level, National Tuna Industry Council and Fisheries Management Area Management Boards. They are given opportunity to provide inputs in the crafting of ordinances and fisheries administrative orders. Participation of the stakeholders is required and active participation is highly encouraged in these councils.

Participation of industry stakeholders as part of the Philippine delegation is highly encouraged during RFMO meetings.

Therefore SG 80 and SG 100 level requirements.	
References	
Republic Act No. 10654, An Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing Amending Republic Act No. 8550 The Philippine Fisheries Code, https://www.bfar.da.gov.ph/wp-content/uploads/2021/04/ra10654.pdf Department of Agriculture Special Order 1117 of 2018 WCPFC Convention Text, https://www.wcpfc.int/convention-text	
Draft scoring range	**>=80**
Information gap indicator	**Information sufficient to score PI**

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision- making, consistent with MSC Fisheries Standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy.
	Met?	**Yes**	**Yes**	**No**

Rationale

At the RFMO level, objectives are set through its adopted Conservation and Management Measures which went through rigorous deliberations in the different subsidiary bodies. There are fisheries whose long-term objectives still need to be set.

At the national level, the Republic Act No. 8550 of the Fisheries Code of 1998, Section 2. Declaration Policy lists down the long-term objectives for the conservation, protection and sustainable management of the Philippines fisheries resources which are consistent with MCS Standard and precautionary approach. These should be the basis of BFAR Fisheries and Administrative Orders issuances. The Comprehensive National Fisheries Industry Development Plan also provides for fisheries objectives.

On the basis of the above, SG 60 and SG 80 are met. With long-term objectives for other fisheries still to be adopted at the regional level, SG100 is not met.

References

Republic Act No. 10654, An Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing Amending Republic Act No. 8550 The Philippine Fisheries Code, https://www.bfar.da.gov.ph/wp-content/uploads/2021/04/ra10654.pdf

Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention), https://www.wcpfc.int/convention-text

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

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long- term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	**Yes**	**No**	**No**

Rationale

WCPFC adopts fishery-specific objectives such as CMM 2021-01, the Tropical Tuna Measure for bigeye, yellowfin and skipjack tunas. There are also other CMMs that cover other straddling fish stocks, and other endangered threated and protected species. However, not all are provided with clear and measurable objectives.
At the national level, Philippines adopted the National Tuna Management Plan in 2018 with the following main objectives:

- Ensure that tuna species are maintained at sustainable levels by taking into account the best scientific evidence available and relevant environmental and socio-economic factors.
- Ensure effective data collection and analysis that would support management decisions for the rational use and conservation of tuna fisheries.
- Promote socio economic development of the tuna fishery not only by encouraging responsible fishing practices but also by securing the trade of and market for tuna products and upholding just share of fish workers in utilizing tuna resources.
- Exercise effective jurisdiction over Philippine flagged vessels fishing for tuna resources in areas under the jurisdiction of other States, and on high seas areas managed by regional fisheries management organizations.
- Prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing for tuna stocks by adopting monitoring, control and surveillance measures, and,
- Support the use of environmentally sound technology and relevant research on tuna fisheries.

Based on the above SG 60 are met but not SG 80 requirements.

References

National Tuna Management Plan 2018, https://www.bfar.da.gov.ph/wp-content/uploads/2021/05/National-Tuna-Management-Plan.pdf

WCPFC CMM 2021-01 Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean, https://cmm.wcpfc.int/measure/cmm-2021-01

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

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	**Yes**	**Yes**	
Rationale				
At the RFMO level, the decision-making process is well established and documented. Article 20 provides that decision-making at the Commission is by consensus and if consensus cannot be reached, voting grounds for appealing decisions, conciliation and review are in place. The C/MFARCs, NFARMC, FMA Boards, and the National Tuna Industry Council have decision making mechanisms resulting from strategies and measures. BFAR plays a key role in all of these councils being a regulatory body. At the national and regional levels SG 60 and SG 80 are met.				
b	Responsiveness of decision-making processes			
	Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	**Yes**	**No**	**No**
Rationale				

While there is decision making mechanism in place to address serious and important issues, the timeliness and responsiveness of decisions cannot be absolutely attained at this time.

Based on the above, only SG60 is met as at the national level.

c	Use of precautionary approach			
	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		**Yes**	

Rationale

Article 5 (c) of WCPFC Convention Article requires the Commission to apply the precautionary approach in decision-making and Article 6 requires the application of the precautionary approach and use of a Scientific Committee to ensure that the Commission obtains the best scientific information available for its consideration and decision-making.

The amended Fisheries Code and the National Tuna Management Plan are consistent with the Ecosystem Approach to Fisheries Management (EAFM) mechanism which applies precautionary measures to ensure the sustainability of fisheries resources and are based on the best scientific information available.

On the basis of the above, at the national and regional levels SG80 is met.

d	Accountability and transparency of management system and decision-making process			
	Guidepost	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	**Yes**	**No**	**No**

Rationale

There is fishery information that can be requested from BFAR. However, there are difficulties obtaining specific information on the handline fisheries. There are still areas for research that needs to be conducted or in some cases, findings of research done need to be shared to stakeholders. This information is needed to craft fishery-specific policies and developmental activities. Therefore, only SG60 is met.

e	Approach to disputes			
	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**Yes**	**No**

Rationale

Dispute settlement mechanism is in place at the C/MFARC level and at the national level. No judicial dispute on record at the RFMO level, thus, effectiveness cannot be tested yet.

SG 60 and SG 80 level requirements are met but not SG100.

References

National Tuna Management Plan 2018, https://www.bfar.da.gov.ph/wp-content/uploads/2021/05/National-Tuna-Management-Plan.pdf

WCPFC Convention Text, https://www.wcpfc.int/convention-text

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

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guidepost	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	**Yes**	**No**	**No**

Rationale

Tuna fishery in the Philippines, is the most monitored and controlled fishery. It is the first fishery that deployed Observers on board and installed vessel monitoring systems in its fleets. However, the tuna handline sector is lagging behind. The handline sector has just started the installation of the VMS and is experiencing extreme difficulty on deploying observer due to the small-scale operation and cost burden for handline fishers.

BFAR collects data from various sources to include the following:

- NSAP-expanded data collection for tuna in collaboration with WPEA project
- Catch logsheet requirements for all vessels.
- Stowage plans for carrier vessel
- PFDA landing reports.
- Observer reports (which is expected to be more substantial in view of the 100% Observer coverage for PH vessels in the high seas and other coastal states training of 464 Observers and 90 Debriefers).

BFAR implements MCS related regulations and activities as follows:

- On traceability, BAC 251 Series 2014-Traceability system for fish and fishery products.
- On catch certification, FAO 238, Series 2012 – Rules and Regulations Governing the Implementation of Council Regulation EC No. 1005/2008 on the Catch Certification Scheme
- On inspections,
    1. FAO 227 s. 2008–Rule and Regulations Governing the Export of Fish and Aquatic Products to European Union Member-Countries
    2. FAO 228 s 2008 - Rules Governing the Organization and Implementation of Official Controls on Fishery and Aquatic Products Intended for Export to The EU Market for Human Consumption
    3. National Plan of Control and Inspection (NPCI)
- On Enforcement
    1. SO, 486 dated July 15, 2011, and FOO 241 dated July 18, 2011 – Creating the BFAR Fishery Resources Protection and Law Enforcement Section/Quick Response Team (now FPLEG)

2. Acquisition of multi-mission vessels (14 units Monitoring, Control and Surveillance (MCS) vessels; 2 units 50m-Multi-Mission Offshore Vessels (MMOVs); 70 units 30-footers multi-purpose vessels.
3. Regularization of 778 Fishery Regulatory Officers (RFOs).
4. Training of 343 Law Enforcement Officers

- On Adjudication
  1. Establishment of Adjudication Committees at the national and regional levels effective 2017
  2. Hiring of hearing officers and legal assistants
  3. Conduct of capacity-building for hearing officers
  4. Investigation of 218 cases (2017)
  5. Resolution of 184 cases (2017).
  6. Fines and penalties collected.
- On Training and awareness-raising measures
  1. National capability-building program for Fishery Law Enforcers
  2. Training for Fish Examiners
  3. Seafood Safety Training
  4. Fisheries Observers Training
  5. Bantay Dagat
  6. Operation and maintenance of MCS vessels
- Implementation of PHILO Project Phase 1 – Integrated Marine Environment Monitoring System
- Implementation of PHILO Project Phase 2 – Integrated Marine Environment Monitoring System

SG 60 level requirements are met.

b	Sanctions			
	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	**Yes**	**No**	**No**

Rationale

The Republic Act No. 10654 Chapter VI Prohibitions and Penalties outlines the violations and penalties that are relevant to the tuna handline fishery. The high penalties become a deterrent to commit violations.

The Adjudication Committee reported to have processed 30 full blown cases in 2018 (27 administrative cases and 3 adjunctive cases) and was able to impose Php 242 Million in penalties. In 2019, they posted an over 100% increase with 62 cases (58 administrative cases and 4 adjunctive cases) and imposed Php 58 Million in penalties.

With increased number of cases, effectiveness of the sanction as a deterrence can still be questioned.

Based on the above, only SG 60 requirements are met.

c	Compliance			
	Guidepost	Fishers are generally thought to comply with the management system for the fishery under	Some evidence exists to demonstrate fishers comply with the management system under assessment,	There is a high degree of confidence that fishers comply with the management

		assessment, including, when required, providing information of importance to the effective management of the fishery.	including, when required, providing information of importance to the effective management of the fishery.	
	Met?	**No**	**No**	**No**

Rationale
The difficulty and inability to provide catch data by the handline sector and challenges of installation of VMS as required are indicative of level of compliance. The recent SFFAII-led interim review of the National Tuna Management Plan resulted to low level of fully implemented programs, projects and activities for Goal 3 on strengthened governance/management of tuna fishers at 37%, and 28% partially implemented, thus 36% of the programs, projects and activities are not implemented. The existence of unlicensed handline fishing boats is indicative of a problem of compliance. Based on the above, SG60 is not met.

d	Systematic non-compliance			
	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		**No**	

Rationale
The very low compliance on data provision, catch reporting and VMS installation and existence of unlicensed or unregistered handline boats are indicative of systematic non-compliance in the fishery. These result to a high level of uncertainty about its catch composition catch and effort and interaction with ETPs. With these, SG 80 is not met.

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Draft scoring range	**<60**
Information gap indicator	**Information sufficient to score PI**

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guidepost	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	**Yes**	**Yes**	**No**
Rationale				
At the national level, the National Tuna Management Plan 2018 has a monitoring and evaluation plan with applicable targets, indicators, and monitoring methods. However, it is not fully implemented. At the regional level, WCPFC Secretariat reports on members' and cooperating non-members' compliance with the reporting provisions of the Commission. Through the Technical and Compliance Committee compliance to CMMs of each member and cooperating non-member are assessed. On the basis of the above SG 80 is met.				
b	Internal and/or external review			
	Guidepost	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	**Yes**	**No**	**No**
Rationale				
At the RFMO level, the review of compliance is done regularly, however does not have regular external review. National Tuna Management Plan is being reviewed and revised accordingly but not subjected to external review. With national and regional management systems have regular internal reviews but without regular external reviews, only SG60 is met.				
References				

National Tuna Management Plan 2018, , https://www.bfar.da.gov.ph/wp-content/uploads/2021/05/National-Tuna-Management-Plan.pdf Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention), https://www.wcpfc.int/convention-text	
Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI**

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11 Annexes

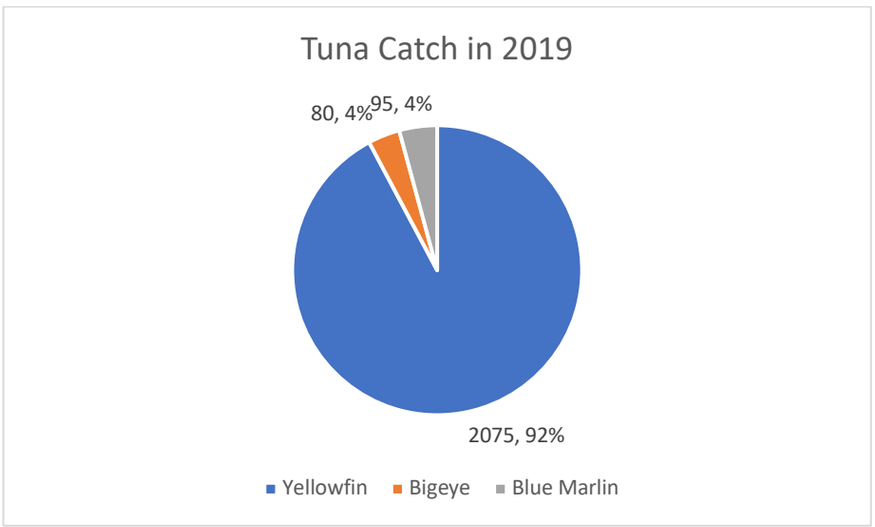
Annex 1
Summary of Performance Indica150tor Level Scores

Principle	Component	Weight	Performance Indicator		Weight	PI Score	MSC PI Score
1-UoA 1	Outcome	0.333	1.1.1	Stock Status	1.000	90.00	>=80
	Management	0.667	1.2.1	Harvest Strategy	0.250	66.67	60-79
			1.2.2	Harvest Control Rules and Tools	0.250	60.00	60-79
			1.2.3	Information and Monitoring	0.250	80.00	>=80
			1.2.4	Assessment of Stock Status	0.250	92.00	>=80
1-UoA 2	Outcome	0.333	1.1.1	Stock Status	1.000	80.00	>=80
	Management	0.667	1.2.1	Harvest Strategy	0.250	62.50	60-79
			1.2.2	Harvest Control Rules and Tools	0.250	60.00	60-79
			1.2.3	Information and Monitoring	0.250	80.00	>=80
			1.2.4	Assessment of Stock Status	0.250	88.00	>=80
2	Primary Species	0.2	2.1.1	Primary Species Outcome	0.333	0.30	<60
			2.1.2	Management Strategy	0.333	0.30	<60
			2.1.3	Information and Monitoring	0.333	30.00	<60
	Secondary Species	0.2	2.2.1	Secondary Species Outcome	0.333	30.00	<60
			2.2.2	Management Strategy	0.333	30.00	<60
			2.2.3	Information and Monitoring	0.333	30.00	<60
	ETP Species	0.2	2.3.1	ETP Species Outcome	0.333	30.00	<60
			2.3.2	Management Strategy	0.333	30.00	<60
			2.3.3	ETP Information	0.333	30.00	<60
	Habitats	0.2	2.4.1	Habitats Outcome	0.333	30.00	<60
			2.4.2	Habitats Management Strategy	0.333	50.00	<60
			2.4.3	Habitats Information	0.333	30.00	<60
	Ecosystem	0.2	2.5.1	Ecosystem Outcome	0.333	60.00	60-79
			2.5.2	Ecosystem Management Strategy	0.333	60.00	60-79
			2.5.3	Ecosystem Information	0.333	60.00	60-79
3	Governance and Policy	0.5	3.1.1	Legal and/or Customary Framework	0.333	100.00	≥80
			3.1.2	Consultation, Roles and Responsibilities	0.333	93.33	≥80
			3.1.3	Long-term Objectives	0.333	80.00	≥80
	Fishery Specific Management System	0.5	3.2.1	Fishery Specific Objectives	0.250	60.00	60-79
			3.2.2	Decision Making Processes	0.250	72.00	60-79
			3.2.3	Compliance and Enforcement	0.250	52.50	<60
			3.2.4	Monitoring and Management Performance Evaluation	0.250	70.00	60-79

Annex 2

Tuna Explorer Inc. Tuna Catch in Terms of Number of Tunas by Species in 2019

Vessel	Yellowfin	Bigeye	Blue Marlin
F/B Tri Rezeki 11	208	0	18
F/B Makmur 08	658	18	28
F/B Makmur 09	0	0	0
F/B Makmur 12	153	50	25
F/B MG 901	1,056	12	24
TOTAL	2,075	80	95



Tuna Explorer Inc. Tuna Catch in Terms of Number of Tunas by Species in 2020

Vessel	Yellowfin	Bigeye	Blue Marlin
F/B Tri Rezeki 11	335	35	7
F/B Makmur 08	247	6	5
F/B Makmur 09	507	21	0
F/B Makmur 12	2,325	102	88
F/B MG 901	740	8	14
TOTAL	4,154	172	114