Eastern Pacific Ocean tropical tuna – purse seine (TUNACONS) fishery

Year 1 Surveillance Report

MSC-F-31557

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Fishery client	Tuna Conservation Group (TUNACONS)
Assessment type	First Surveillance Audit
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Glossary

AIDCP	The Agreement on the International Dolphin Conservation Program
ARAP	The Aquatic Resources Authority of Panama (Autoridad de los Recursos Acuáticos de Panamá)
BET	Bigeye tuna
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPCs	Members and cooperating non-Members of IATTC
CPDF	Catch per day fished
CPUE	Catch per unit effort
dFAD	Drifting Fishery Aggregation Device
EEZ	Exclusive Economic Zone
EEZ	Exclusive Economic Zone
EPO	Eastern Pacific Ocean
ETP	Endangered, Threatened or Protected species
FADs	Fishing Aggregation Device
FAO	Food and Agriculture Organization of the United Nations
FAO	Food and Agriculture Organization
Fcur	the average fishing mortality for the three most recent years
FLIMIT	Fishing Mortality Limit Referente point
FMSY	the fishing mortality that will produce the maximum sustainable yield
HCR	Harvest Control Rules
IATTC	Inter-American Tropical Tuna Commission
IUU	address illegal, unreported and unregulated
Kg	Kilogram
Lb.	Pound, equivalent to roughly 2.2 kg
LL	Longline
LL-C	Central Longline fishery
LL-S	Southern Longline fishery
LOA	Length Over-All
M	Million (lbs.)
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSY	Maximum Sustainability Yield
nm	nautical mile
NOA	Unassociated fishery
NOAA	The National Oceanic and Atmospheric Administration
OBJ	Floating-object fishery
OFL	Over-Fishing Level
PI	Performance Indicator
SAR	Stock Assessment Reports

SCS	SCS Global Services
SI	Scoring Issue
SK	Skipjack tuna
SLIMIT	Sustainable yield limit reference point
Smsy	maximum sustainable yield
SRP	Under Secretariat for Fishery Resources in Ecuador
SSB	Spawning Stock Biomass
t and mt	metric ton
TAC	Total Allowable Catch
UNFSA	UN Fish Stocks Agreement
WCPFC	Western and Central Pacific Fisheries Commission
WWF	World Wildlife Fund
YFT	Yellowfin tuna

1   Executive Summary & Conclusion

This report summarizes the findings from the first surveillance audit of the Eastern Pacific Ocean tropical tuna – purse seine (TUNACONS) fishery. The fishery was first certified to the MSC requirements in 2022 using the default assessment tree (MSC Fisheries Standard and Guidance v2.01). Following the MSC guidelines for implementation timeframes, the team conducted a surveillance audit in accordance with the new process requirements in the MSC Fisheries Certification Process (FCP) v2.3.

The 2024 first annual surveillance audit focused on any changes since the initial audit and monitoring continued compliance with the MSC Principles and Criteria. The fishery originally received eleven conditions in the 2022 full assessment. For the TUNACONS free school set UoA, one PIs (and 2.3.3) received score under SG 80, while in the TUNACAONS FAD Set UoA, five PIs (2.1.1, 2.3.3, 2.4.1, 2.4.2, 2.4.3) received scores under SG 80. The basis for the conditions is the lack of sufficient management strategies and/or information concerning FAD interactions with habitats. For the US California Coastal small purse seine UoA, 3 PIs (2.1.1, 2.2.2 and 2.3.3) received scores under SG 80, these are related to bluefin tuna status, shark finning and information on ETP species. In Principle 3, Panama has one of the PIs (3.2.3) received scores under SG80, related to compliance and enforcement. Ecuador has one PI (3.2.3) that received a score under SG80, related to compliance and enforcement.

A scope extension was successfully published in 2023 that modified the UoA by moving skipjack tuna to Principle 1 from Principle 2. No new conditions were opened during this assessment. As a result of harmonization discussions, one new condition (2-0) was issued under 1.2.2 Si b for skipjack tuna in the first surveillance audit.

At the first surveillance audit nine conditions were found to be on target, one condition was closed (Condition 2-1) for PI 2.1.1 Sia for EPO Bigeye tuna, and one condition was found to be ahead of target (3-1).

It is SCS's view that the Eastern Pacific Ocean tropical tuna – purse seine (TUNACONS) fishery continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification.' SCS recommends the continued use of the MSC certificate through the end of the certificate cycle when conditions are expected to close.

2 Report details

2.1 Surveillance Information

Table 1 . Summary of Surveillance Information

1	Fishery name
	Eastern Pacific Ocean tropical tuna – purse seine (TUNACONS) fishery
2	**Unit(s) of Assessment (UoA)**

Table 2. Unit(s) of Assessment (UoA) and Unit(s) of Certification (UoC): TUNACONs free school and FAD fleet

UoA 1, 2, 8 & 9 : Vessels flagged to Ecuador	Description
Species	Yellowfin Tuna *Thunnus albacares* Skipjack *Katsuwonus pelamis*
Stock	Eastern Pacific Ocean stock
Geographical area	Vessels operating in the Inter-American Tropical Tuna Commission Convention area and Ecuador's EEZ
Harvest method / gear	UoA1 &8: Purse-seine gear types using free school UoA2 &9: Purse-seine gear types using FAD sets
Client group	Vessels identified by TUNACONs members, including Eurofish, NIRSA, Servigrup, Tri Marine, and Jadran.
Other eligible fishers	There are no other eligible fishers.
Flag states	Vessels are flagged to: Ecuador

UoA 3, 4, 10&11: Vessels flagged to Panama	Description
Species	Yellowfin Tuna *Thunnus albacares* Skipjack *Katsuwonus pelamis*
Stock	Eastern Pacific Ocean stock
Geographical area	Vessels operating in the Inter-American Tropical Tuna Commission Convention area and Panama's EEZ
Harvest method / gear	UoA3&10: Purse-seine gear types using free school UoA4&11: Purse-seine gear types using FAD sets
Client group	Vessels identified by TUNACONs members, including Eurofish, NIRSA, Servigrup, Tri Marine, and Jadran.

Other eligible fishers	There are no other eligible fishers.
Flag states	Vessels are flagged to: Panama

UoA 5, 6, 12 & 13: Vessels flagged to US	Description
Species	Yellowfin Tuna *Thunnus albacares* Skipjack *Katsuwonus pelamis*
Stock	Eastern Pacific Ocean stock
Geographical area	Vessels operating in the Inter-American Tropical Tuna Commission Convention area and US's EEZ
Harvest method / gear	UoA5&12: Purse-seine gear types using free school UoA6&13: Purse-seine gear types using FAD sets
Client group	Vessels identified by TUNACONs members, including Eurofish, NIRSA, Servigrup, Tri Marine, and Jadran.
Other eligible fishers	There are no other eligible fishers.
Flag states	Vessels are flagged to: United States

Table 3. Unit(s) of Assessment (UoA) and Unit(s) of Certification (UoC): US California Coastal based small-purse seine fleet

UoA 7 & 14	Description
Species	Yellowfin Tuna *Thunnus albacares* Skipjack *Katsuwonus pelamis*
Stock	Eastern Pacific Ocean stock
Geographical area	Vessels operating in the US EEZ.
Harvest method / gear	Purse-seine gear types using free school
Client group	Tri Marine
Other eligible fishers	There are no other eligible fishers.
Flag states	Vessels are flagged to the United States.

3	Date certified		Date of expiry
	7 July 2022		6 July 2027

4	Audit type and number
	Year 1 Surveillance

5	Surveillance level
	Level 6

6	Surveillance team leader

Ms. Gabriela Anhalzer, Program Manager at SCS Global Services, Team Lead and responsible for Principle 2

Ms. Gabriela Anhalzer received a Masters degree in coastal environmental management from Duke University. Ms. Anhalzer has several years of experience in marine conservation and fisheries, she has worked as an independent consultant conducting evaluations of fishery improvement projects and as a fisheries policy and stakeholder specialist. She has also worked as an associated researcher in Latin America for sea turtle population studies, sea bird census, and supporting stakeholder engagement in participatory management of marine protected areas. Ms. Anhalzer has provided technical support for numerous MSC assessment and possess a comprehensive understanding of MSC fisheries standard and stages; meeting MSC's team leader qualifications and competency criteria. Ms. Anhalzer has received ISO 9001 auditor training, has completed the MSC training and has affirmed she has no conflict of interest.

The proposed team leader meets the MSC Team leader qualifications criteria (FCP v2.3 7.29.14.1-4) in that they:

✓ Have completed training meeting requirements in Table 1 of GCRV2.6, as evidenced by the certificate of passing auditor training for the ISO course 19011.

✓ Possess a relevant degree and/or equivalent experience in the fisheries sector related to tasks under responsibility of a team leader (M.S. Environmental Management, Duke University).

✓ Have completed the latest MSC training modules applicable to this assessment (V2.2 Team Leader MSC modules) within the past five years (2019).

✓ Have undertaken 2 MSC fishery assessments or surveillance site visits in the last 5 years, including: (Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery, the small pelagics fishery in Sonora, Gulf of California, US Atlantic sea scallop fishery, US Atlantic spiny dogfish fishery, PNG Fishing Industry Association's purse seine skipjack, yellowfin and bigeye tuna fishery.

✓ Have demonstrated experience in applying different types of interviewing and facilitation techniques, as verified by her previous audits with SCS.

✓ Are competent in the MSC Standard and current Certification Requirements, auditing techniques, and communication and stakeholder facilitation techniques, as verified by their completion of ISO 19011 auditor training.

Have affirmed they hold no conflict of interest.

7	Proposed team members

All Team Members meet the following Team Member requirements:

Dr. Gerard DiNardo, Senior Technical Specialist at SCS Global Services, Responsible for P1:

Dr. Gerard DiNardo has over 25 years of experience as a research fishery scientist and senior manager for NOAA Fisheries in the United States, as well as extensive knowledge, understanding, and involvement in fishery issues and stock assessments including extensive work on lobster, oysters, and other invertebrates. Ensuring sustainable development and management of fisheries, including the

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

Dr. DiNardo experience satisfies the MSC requirements for a Team Member as described in PC1.3 (Annex PC; FCP v2.3):

- ✔ With relevant degree (Ph.D. from the University of Maryland), and over 5 years of research experience in a marine conservation biology, fisheries, natural resources, or environmental management position as verified by his CV.

- ✔ Having passed the MSC compulsory training modules for Team Members within the last 5 years (2019).

- ✔ Affirms they have no conflict of interest in conducting this assessment.

Dr. Michael Harte, Professor at Oregon State University, Responsible for Principle 3:

Dr Michael Harte is a Professor in the College of Earth, Ocean and Atmospheric Sciences at Oregon State University in the USA, having trained in physical geography and economics in New Zealand and Canada. He is recognized internationally as a fisheries and marine policy adviser, researcher, educator and program leader. He has held senior positions in the private, public, academic and NGO sectors in Australia, the US, the Falkland Islands, Canada and New Zealand. Dr Harte has extensive policy and economic analysis experience working with commercial and small-scale fisheries, ecosystem-based fisheries management, bio-economic analysis of fisheries, climate impacts on fisheries, eco-labelling, cost recovery and resource rents in fisheries, and the development of policies and regulations associated with the monitoring, control and surveillance of fisheries, as well as work on seafood markets and traceability. His work spans both academic and practical fishery management domains.

- ✔ With relevant degree (PhD in Geography from University of Victoria), and over 5 years of research experience in management or research experience in a marine conservation biology, fisheries, and natural resources as verified by his CV.

- ✔ Has passed the MSC compulsory training modules for Team Members (FCP v2.2 within the last 5 years (September 2020).

- ✔ Affirms they have no conflict of interest in conducting this assessment.

The team collectively meets at least three of the MSC Table PC2 (FCP v2.3) team qualification and competency criteria:

- ✔ Dr. Gerard DiNardo meets the qualifications for fish stock assessment with 3 years' or more experience of applying relevant stock assessment techniques being used by the fishery under assessment. As a stock assessment scientist and leader of the Stock Assessment Group at the NOAA Fisheries Pacific Islands Fishery Science Center (2006-2015), Dr. DiNardo used production models to assess the status of North Pacific swordfish in 2014 and 2009, blue marlin in 2013, striped marlin in 2005. (http://isc.fra.go.jp/index.html). He was also an author on numerous analyses used as input to the assessments (Wang et al., 2007; Su et al., 2009, Piner et al., 2011 – this can be found on the ISC website).

- ✔ Dr. Gerard DiNardo meets the qualifications for 'Fish stock biology/ecology' with 3 years' or more experience working with the biology and population dynamics of the target or species with similar

biology. From 2010-2017, Gerard DiNardo chaired the ISC, and a major aspect of his duties was to ensure that all documents published by the ISC were considered best available science, particularly published stock assessments. During his tenor in this role novel blue and shortfin mako shark assessments were completed employing a production modeling platform.

✓ Ms. Gabriela Anhalzer meets the qualifications for 'Fishing impacts on aquatic ecosystems' with 3 years' or more experience in research into, policy analysis for, or management of, the impact of fisheries on aquatic ecosystems including at least two of the following topics: i. Bycatch. ii. Endangered, threatened, or protected (ETP) species. iii. Habitats. iv. Ecosystem interactions. As evidenced by her CV, Gabriela has over 8 years of professional experience working with SCS Global Services where she is responsible for conducting/managing MSC fishery audits that hold fishing vessels and seafood companies accountable for their environmental impact via reporting bycatch, habitat and ecosystem interactions and threat to endangered species.

✓ Dr. Harte meets the qualifications for 'Fishery management and operations 'with 3 years' or more experience as a practising fishery manager and/or fishery/policy analyst/consultant. As evidenced by Prof. Harte's efforts on the Science and Statistical Committee of the US Pacific Fisheries Management Council since 2016. He serves on the Social and Economics, Highly Migratory Species, Ecosystem, am Salmon subcommittee where he reviews a wide range of technical analysis that is provided to the US Pacific Fisheries Management Council. He has provided Fisheries Advise since 1998 working for Industry, Govt and academia.

✓ Ms. Gabriela Anhalzer has current knowledge of country [Ecuador], language [Spanish] and local fishery context. As evidenced by her a citizen of Ecuador and Spanish being her native language.

✓ Understanding of the CoC Standard and CoC Certification Requirements. As evidenced by Team Member Ms. Gabriela Anhalzer completing the MSC's Traceability training module in February 2019.

8	Audit time and location
	SCS invites participants to attend the site visit tentatively scheduled for January 8th, 2024 in Manta, Ecuador. All members of the team are available to meet with stakeholders in person or remotely. If the site visit date changes, registered stakeholders will be informed.
9	Assessment and review activities
	The surveillance audit will be conducted in accordance with MSC FCP v2.3, 7.29.15 & 7.29.16 and will include actively seeking the views of the client on:

i. Any changes to the information provided in the Scope Declaration as per 7.4.1.1 (MSC FCP v2.3).

ii. Changes to the UoA and its management.

iii. Performance in relation to any relevant conditions of certification.

iv. Any developments or changes within the UoA that affect traceability and the ability to segregate MSC from non-MSC products.

v. Any other significant changes in the UoA.

In addition, the CAB will hold interviews and actively seek the views of stakeholders and surveillance audit participants to ensure that the team is aware of any stakeholder concerns. Should stakeholders not wish to be interviewed, the team will inform them that they may submit written information to the team using the 'MSC Template for Stakeholder Input into Surveillance Audits'.

2.2 Version details

Table 4. Fisheries program documents versions

Document/Assessment Tree	Version number/Type
MSC Fisheries Certification Process	**Version 2.3**
MSC Fisheries Standard	**Version 2.01**
Assessment tree	**Default**
MSC General Certification Requirements	**Version 2.6**
MSC Surveillance Reporting Template	**Version 2.2**

2.3 Update on the fishery

2.3.1 Changes to Management Systems

Changes to the regional management managed by the IATTC are described in section 2.3.2.

Panama has made many updates to its legislation and regulation in support of their response to the EU "yellow card" received in 2019 and the implementation of the new fisheries law passed in 2021. Key changes include:

Table 5. Update to Panama's legislation and regulations.

Administrative Resolution	Description	Promulgation in Official Gazette
ADM/ARAP Resolution No.023 of May 02, 2023	Creates an Institutional Commission to evaluate and make recommendations on serious cases under investigation in the Department of Inspection and Investigation and on possible sanctions to be imposed by the General Directorate of Inspection, Surveillance and Control Authority.	G.O. No.29782 of May 16, 2023
Resolution ADM/ARAP No.024 of May 02, 2023	Establishes procedures for sealing of holds of fishing vessels and activities related to fishing of national flag, international service and foreign flag.	G.O. No.29782 of May 16, 2023
Resolution ADM/ARAP No.033 of June 20, 2023	Establisher the requirements for carrying out landing operations for fishing vessels and fishing activities under the national flag of international service and dictates other provisions.	G.O. No.29812 of June 27, 2023
Resolution ADM/ARAP No.034 of June 21, 2023	Establishes a List of Authorized Ports abroad, to carry out landing operations, for fishing vessels and fishing activities of national flag of international service.	G.O. No.29812 of June 27, 2023

Resolution ADM/ARAP No.035 of June 23, 2023	Measures related to the Regional Registry, fleet capacity, capacity loan and chartering, hold sealing and financial contribution to the annual budget of the IATTC.	G.O. No.29826 of July 17, 2023
Resolution ADM/ARAP No.036 of July 04, 2023	Establishes measures and allocation criteria to implement ICCAT conservation measures for a multi-year conservation and management programme for tropical tuna.	G.O. No.29831 of July 24, 2023
ADM/ARAP Resolution No.040 of July 28, 2023	Provisions to carry out inspections on board the Panamanian fishing fleet	G.O. No.29839 of August 03, 2023
Resolution No. ADM/ARAP 048-2023 of August 30, 2023	Mandates use of e-LAND as the official electronic platform for the registration of landings by Panamanian flagged fishing vessel as well as foreign flag in authorized national ports.	G.O. No. 29864 of September 08, 2023
ADM/ARAP Resolution No. 050 of September 01, 2023	Mandates use of the e-Catch platform for the presentation of the requirements and validation of Catch Certificates, in compliance with regulation 1005/2008 of the European Union.	G.O. No. 29867 of September 13, 2023.
ADM/ARAP Resolution No. 051 of September 1, 2023	Establishes requirements for transhipments, for fishing and fishing related fishing activities for vessels flagged to Panama.	G.O No. 29871 of September 19, 2023.
ADM/ARAP Resolution No. 052 of September 04, 2023	Establishes requirements for the application of the Letter of No Objection of the Aquatic Resources Authority of Panama, for the process of flagging, renewal, change of service or change of owner, before the Maritime Authority of Panama, for fishing vessels and fishing-related activities.	G.O. No. 29868 September 4, 2023.
Technical Circular No. 075-2024	Establishes a prohibition of port activities and transhipments in ports of countries designated with a Red Card by the European Union, for fishing vessels and fishing-related vessels flagged to Panama.	Published on January 15, 2024.

Like Panama, Ecuador has passed regulations associated with Ecuador's Organic Law for the Development of Aquaculture and Fisheries (April 2020) and in support of their response to an EU "yellow card" also received in 2019. A significant addition is Agreement No. MPCEIP-SRP-2023-0142-A that establishes a National Control Plan – Risk Management System in Fisheries. No comprehensive listing of regulations was provided at the surveillance audit. However, a current list of fisheries regulations is available here: https://srp.produccion.gob.ec/repositorio-de-normativas-pesqueras/.

2.3.2   Changes or Additions/Deletions to Regulations

New and updated Resolutions adopted by IATTC since publication of the PCR (2022) pertaining to skipjack and yellowfin tuna are listed in Table 6. Included are measures to monitor transshipments (C-22-03), specifying requirements for the design of non-entangling FADs (C-23-05), and clarification of

harvest control rule elements such as reference points, rebuilding requirements, and harmonization between RFMOs (C-23-06).

No other changes or additions/deletions to regulations for the skipjack and yellowfin tuna fishery have occurred.

Table 6. IATTC Resolutions adopted in 2022-2023 applying to the TUNACONS UoAs.

Resolution	Document	Group	Active
C-22-03	AMENDMENT TO RESOLUTION C-12-07 ON ESTABLISHING A PROGRAM FOR TRANSSHIPMENTS BY LARGE-SCALE FISHING VESSELS	TROPICAL TUNA	Yes
C-23-05	AMENDMENT TO RESOLUTION C-19-01 ON THE COLLECTION AND ANALYSES OF DATA ON FISHAGGREGATING DEVICES	GEN	Yes
C-23-06	AMENDMENT TO RESOLUTION C-16-02 ON HARVEST CONTROL RULES FOR TROPICAL TUNAS (YELLOWFIN, BIGEYE, AND SKIPJACK)	TROPICAL TUNA	Yes

2.3.3   Personnel Changes in Science, Management, or Industry and Their Impact on the Management of the UoA

There are no personnel changes in Science, Management, or Industry which Impact the Management of the UoA.

2.3.4   Potential Changes to Scientific Information, Including Stock Assessments

2.3.4.1   Skipjack Tuna

Scientific Information

A new interim stock assessment of skipjack tuna in the eastern Pacific Ocean was conducted by IATTC staff in 2022 using an integrated statistical age-structured catch-at-length model formulated using Stock Synthesis (Methot and Wetzel, 2013; version 3.30.19.00). This is the first assessment of the species based on an integrated age-structured model and first "traditional" assessment undertaken by the IATTC scientific staff since 2005. The interim stock assessment was externally reviewed, biological reference points (limit and target) re-evaluated, and status of the stock estimated relative to the re-evaluated reference points within the context of the current harvest control rule (defined in Resolution C-16-02) in November 2022 during IATTC's 1st Review of the Stock Assessment of Skipjack Tuna in the Eastern Pacific Ocean by a panel of experts (Bence et al., 2022; Maunder 2022).

The interim assessment spans the period 2006 to 2021, which avoids the period where the floating object fishery expanded after the mid-1990s, covers a period where the purse-seine data collection methods were more consistent, avoids the potential influence of the 1998 El Niño on catchability and selectivity, and eliminates a period of the early 2000's where the longline abundance index was highly variable. The assessment assumes a single homogeneous stock, despite indications of SKJ spatial structuring within the EPO, and potential data sources for the assessment model include relative abundance indices from (1) a

longline index, (2) catch-per-set indices for purse-seine sets, by set type (floating objects, free swimming schools), and (3) a recently developed index based on echosounder buoy data. The purse seine indices were determined unreliable and not included in the final assessment.

A reference model was developed based on the most plausible assumptions and sensitivity analyses conducted by changing the assumptions of the reference model. As there is also uncertainty regarding the reliability of several data sources, sensitivity analyses were conducted to determine if the management advice is robust to the use of the different data sources. In total, 21 sensitivity runs were conducted to determine whether management advice is robust to the uncertainty.

Note, MSY-based quantities cannot be estimated because the trade-off between growth and natural mortality in combination with the assumption that recruitment is independent of stock size, inferring that the optimal fishing mortality should be infinite. For this reason, a conservative proxy target reference point (TRP) of 30% of the unexploited biomass (0.3S0) was chosen (Maunder et al., 2022) based on the range estimated under different assumptions for bigeye (Xu et al., 2020) and yellowfin tuna (Minte-Vera et al., 2020) in the EPO. Based on follow up analyses conducted during the November 2022 skipjack stock assessment review the panel concluded that the adopted target reference point, 0.3S0, is in fact a conservative proxy for MSY biomass, assuming that h=0.75 represents a plausible lower bound on steepness. While there was no indication by the panel that h=0.75 is not a plausible lower bound it was suggested that the benchmark assessment in 2024 show that h<0.75 is implausible. Based on this information the Assessment Team considers the adopted TRP, 0.3S0, to represent MSY. Following guidance in GSA2.2.3.1 "in the case where BMSY is analytically determined to be lower than 40%B0 (as in some highly productive stocks), and there is no analytical determination of the PRI, the default PRI should be 20%B0 unless BMSY<27%B0, in which case the default PRI should be 75%BMSY". Noting skipjack MSY = 30%B0, the Assessment Team considers PRI = 20%B0.

The reference model estimates that the spawning biomass is currently above the TRP proxy of 30% of the unexploited spawning biomass under either the static (SBR) or the dynamic (SBR_d) spawning bio-mass ratio for most of the sensitivity runs (18 out of 21 runs); three of the sensitivity analyses estimate that the stock is below the proxy TRP (Table X-1). While the probability of spawning biomass falling below the LRP (SLIMIT) or PRI was not estimated in the interim assessment the time series and associated 95% confidence intervals of spawning biomass relative to SLIMIT indicates the likelihood of S breaching SLIMT is likely zero (Figure 1).

While the probability of spawning biomass falling below the proxy MSY target reference point and associated confidence interval was not estimated in the interim assessment report output from the reference model and sensitivity analyses indicate current biomass is likely above the TRP (30% S0) and the fishing mortality below the target fishing mortality (Figure 1 and Figure 2).

While the IATTC considered the interim assessment to represent best available science the stock assessment was externally reviewed by an expert panel, and biological reference points re-evaluated at the 1st Review of the Stock Assessment of Skipjack Tuna in the Eastern Pacific Ocean convened in November 2022 (Bence et al., 2022). Additionally, stock status was estimated relative to the re-evaluated

reference points within the context of the current harvest control rule, Resolution C-16-02, and probabilities of breaching both the LRP and TRP provided (Maunder 2022).

The review panel determined that the interim biomass limit reference point adopted in 2014 for tropical tunas (Resolution C-16-02) and equal to 0.077 of the equilibrium unfished spawning biomass (S0 or B0) represents an adequate LRP for tropical tuna in the EPO. The fishing mortality (F) limit reference point is thus the value of F that, under equilibrium conditions, maintains the spawning biomass at the biomass limit reference point. The panel also reviewed the proxy target biomass reference point for skipjack, SMSY/S0 = 0.3, outlined in the interim assessment (Maunder et al., 2022). This reference point is based on the assessments of yellowfin and bigeye tuna and the same productivity-susceptibility argument that has been used previously to manage skipjack tuna (i.e., skipjack is more productive than the other two species and has similar susceptibility). The panel determined that the target biomass reference point, 0.3S0, represents a conservative proxy estimate of MSY for tropical tuna in the EPO. The reference point advocated by the Marine Stewardship Council (MSC) for stocks that do not have explicitly calculated reference points, SPR = 0.4, was also evaluated (MSC Ver. 2.1), where SPR is equivalent to S/S0 when steepness = 1. Note that subsequent scoring against the MSC standard assumes the IATTC adopted TRP represents a conservative estimate of MSY as determined by the review panel.

The estimated probability of being below the IATTC limit reference point was zero for all models (Table X-2). While not explicitly estimated in Maunder (2022) the time series and associated 90% confidence intervals of spawning biomass relative to PRI (20%S0) indicates the likelihood of S breaching PRI is likely zero (Figure 3) .

All except 3 models have a 95% or higher chance of being above the S/S0 = 0.30 target reference point. The eastern stock model (Model l) has a 91% chance, and the models that avoid dome shape selectivity for at least one unassociated fishery (Model j and o) have little or no chance (Table 7). There is more of a range of probabilities of being above the S/S0 = 0.40 target reference point (Table 8).

Stock projections into the future for 10 years was conducted using the current fishing mortality (the average age-specific fishing mortality over 2019-2021). Treating the 10-year future projection as part of the estimation period allows for the uncertainty in future recruitments and parameter estimation uncertainty to be incorporated in the projections. The S/S0 projections for the reference model are plotted in Figure X-3 and the probability of being above the S/S0 = 0.3 and S/S0 = 0.4 target reference points in 2032 is 0.98 and 0.90, respectively (Maunder et al., 2022; Maunder 2022).

Note that during the external review of the skipjack stock assessment the review panel requested a suite of sensitivities runs to be conducted by IATTC staff to assess the level uncertainty and potential bias with aspects of input data (catch, length composition, relative abundance series, etc.), model structure (weighting, selectivity, etc.), fishing practices (factors affecting catchability, FAD densities and distribution, etc.), and biological parameters (mortality) (Bence, November 9, 2022, Staff Responses to Panel Requests [PowerPoint slides], 1st External Review of IATTC staff's stock assessment of skipjack tuna in the eastern Pacific Ocean (www.iattc.org/en-US/Event/DetailMeeting/Meeting-WSSKJ-01)). Based on the outcomes from the sensitivity runs the review panel noted no strong concerns and endorsed the stock assessment.

Management and Harvest Control Rule

The IATTC HCR for tropical tunas as defined in IATTC Resolution C-16-02 requires action be taken if the probability of the spawning biomass being below the limit reference point is greater than 10% [i.e. $P(Scur < 0.077) > 0.1$]. The HCR also requires action to be taken if the probability of the current fishing mortality is above the limit reference point is greater than 10% [i.e. $P(Fcur > FS/S0=0.077) > 0.1$]. The scientific recommendations for management action, as defined by the HCR, are based on the stock of the three tropical tunas (yellowfin, bigeye, and skipjack) that requires the strictest management.

Table 7. Estimates of spawning biomass, spawning biomass ratio (SBR), dynamic spawning biomass ratio (dSBR), average recruitment over the model time period (except the 4th quarter of 2021) as a ratio of the estimated virgin recruitment for all of the models, average exploitation rate in 2020 as a ratio of the status quo, average exploitation rate in 2021 as a ratio of the status quo, and current fishing mortality as a ratio of the fishing mortality corresponding to Btarget = 0.3B0. Rave/R0 is a check to make sure the SBR based on B0 is not biased due to the bias correction for recruitment residuals (this will affect the plots of SBR that are plotted with confidence intervals). The dSBR is adjusted by the ratio Rave/R0. The red highlighting and text indicates where SBR or dSBR are below the proxy target reference point (0.3) and when the status quo fishing mortality (average of 2017-2019) has been exceede

Model code	Model	SB	SBR	dSBR	Rav/R0	F2020/Fsq	F2021/Fsq	Fcur/ Fbtarget
	Reference model	26871	0.53	0.59	0.98	0.80	1.01	0.25
a	Linf = 73 cm	28475	0.54	0.60	0.99	0.81	1.02	0.24
b	Linf = 83 cm	24899	0.51	0.57	0.98	0.79	1.00	0.27
c	Lcv = 0.05	27560	0.53	0.60	0.97	0.80	1.02	0.25
d	Lcv = 0.07	26086	0.52	0.58	0.99	0.79	1.01	0.26
e	Bias corrected catch for 2020-2021	27861	0.53	0.60	0.98	0.76	1.03	0.25
f	No echosounder index	70976	1.05	0.79	1.04	0.59	0.55	0.14
g	No longline index	23746	0.41	0.56	0.99	0.92	1.06	0.31
h	OBJ catch-per-set index	25339	0.54	0.58	0.98	0.81	0.95	0.28
i	NOA catch-per-set index	22421	0.54	0.55	0.98	0.76	0.90	0.30
j	NOA asymptotic selectivity	3688	0.17	0.18	0.98	0.93	1.00	1.16
k	OBJ asymptotic selectivity	14786	0.42	0.44	0.96	0.77	0.88	0.44
l	East of -120	7960	0.36	0.36	1.01	0.93	0.97	0.59
m1	Higher M for adults	55346	0.72	0.84	0.99	0.72	1.01	0.04
m2	No LL higher M for adults	20029	0.45	0.64	1.00	0.88	1.09	0.11
m3 no M	No LL not Dome	21993	0.40	0.54	0.99	0.92	1.07	0.36
m3 M	No LL not Dome higher M for adults	1772	0.12	0.14	0.97	1.05	1.59	0.40
n	Constant slectivity after 78 cm	26674	0.53	0.59	0.98	0.80	1.01	0.26
o1	Linf = 70cm	28334	0.54	0.59	0.99	0.81	1.02	0.24
o2	No longline Linf = 70cm	21296	0.40	0.52	0.99	0.92	1.06	0.33
o3	No longline Linf = 70cm not dome	19489	0.39	0.50	0.99	0.92	1.07	0.36
o4	as h3 with F5 cons select after 70cm	6572	0.22	0.26	0.97	0.95	1.10	0.73

d (from Maunder et al., 2022).

Table 8. Probability of the biomass being above the biomass reference points (from Maunder 2022).

Model	S/S_0	SE	CV	Recruitment adjusted S/S_0	SE	Limit 0.077	Target 0.3	Target 0.4
Reference	0.52	0.08	0.16	0.53	0.08	1.00	1.00	0.94
a	0.53	0.09	0.16	0.54	0.09	1.00	1.00	0.95
b	0.50	0.08	0.17	0.51	0.09	1.00	0.99	0.90
c	0.52	0.08	0.16	0.53	0.08	1.00	1.00	0.94
d	0.52	0.09	0.16	0.52	0.09	1.00	0.99	0.92
e	0.53	0.08	0.16	0.53	0.08	1.00	1.00	0.94
f	1.09	0.20	0.19	1.05	0.20	1.00	1.00	1.00
g	0.40	0.07	0.16	0.41	0.07	1.00	0.95	0.56
h	0.52	0.07	0.14	0.54	0.07	1.00	1.00	0.97
i	0.53	0.07	0.14	0.54	0.08	1.00	1.00	0.97
j	0.17	0.03	0.17	0.17	0.03	1.00	0.00	0.00
k	0.41		0.16	0.42	0.07	1.00	0.96	0.62
l	0.36	0.04	0.12	0.36	0.04	1.00	0.91	0.18
m	0.72	0.13	0.19	0.72	0.13	1.00	1.00	0.99
n	0.52	0.08	0.16	0.53	0.09	1.00	1.00	0.94
o	0.22	0.04	0.18	0.22	0.04	1.00	0.02	0.00
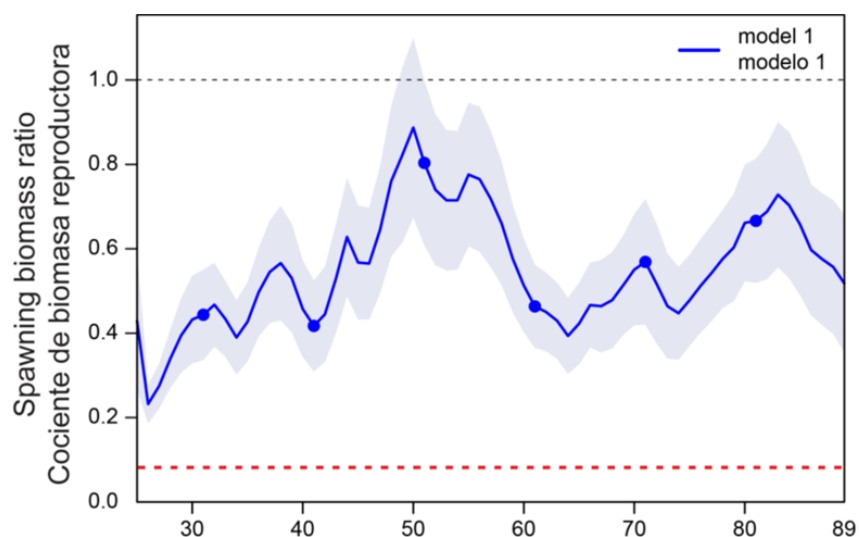
Figure 1. Spawning biomass ratio (SBR) for skipjack tuna in the EPO, 2006-2021 estimated by the reference model. The solid lines represent the maximum likelihood estimates and the shaded area the approximate 95% confidence intervals around those estimates. The red dashed horizontal line (at 0.077) identifies the SBR at SLIMIT. The TRP is equal to a spawning biomass ratio of 0.3 along the Y-axis. Quarter 1 of 2006 is elapsed quarter 25 and the 4th quarter of 2021 is elapsed quarter 88. (from Maunder et al, 2022).
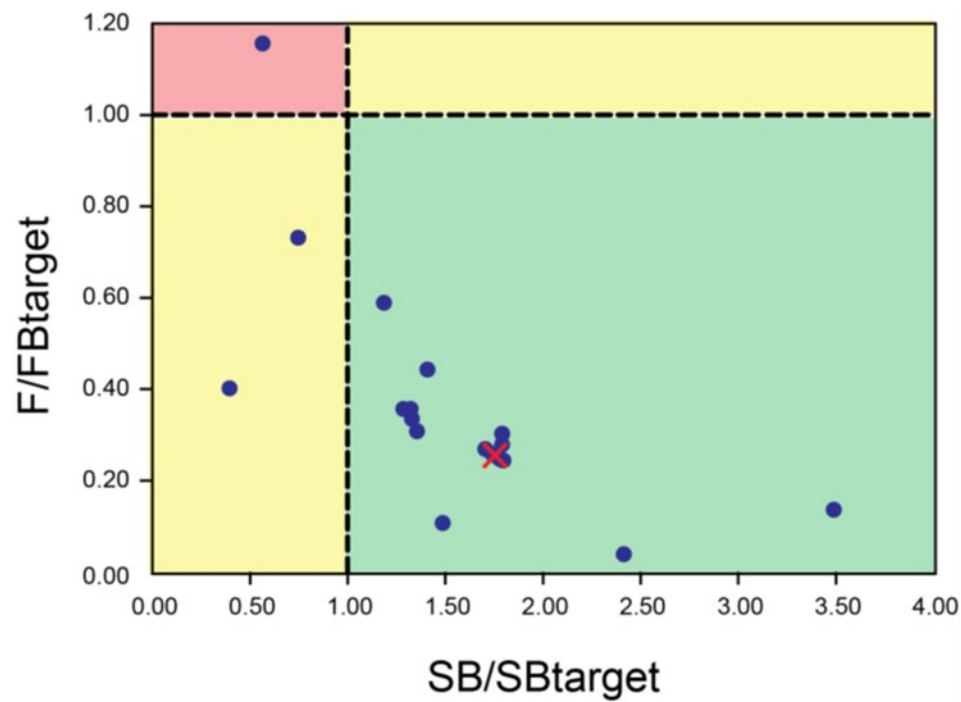
Figure 2. Kobe plot showing the stock status estimates from all the models. The red X indicates the median value. (from Maunder et al., 2022).
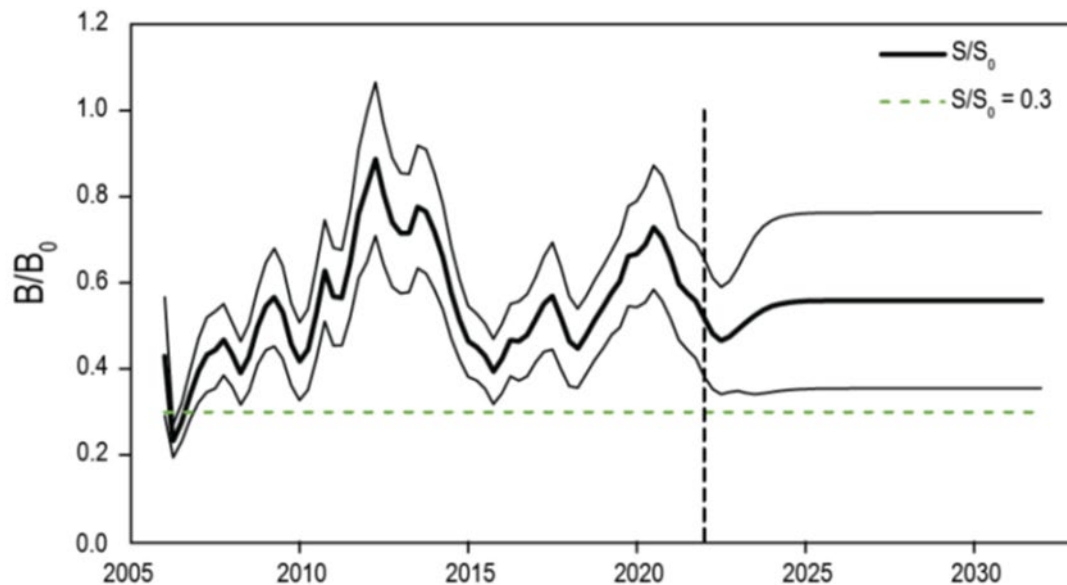
Figure 3. Estimated and projected S/S0 (unadjusted) for the reference Model with 90% confidence intervals compared to the proxy target biomass reference point (S/S0 = 0.3). Note PRI is equal to 0.2 along the Y-axis. The vertical dashed line is the start of 2022 (from Maunder 2022).

2.3.4.2 Bigeye Tuna

Status of stocks

Previously, a 'best assessment' approach was used for the evaluation of stock status using a single 'base-case' model that represented the most plausible assumptions and data about the biology and fisheries (IATTC-SAC 2020). In 2018, the updated base-case assessment approach proved to be very sensitive to the inclusion of new data from the longline fishery and the IATTC staff concluded that the results of the stock assessment were unreliable to provide management advice to the Commission (IATTC 2018). A workplan was adopted to improve assessments of EPO tropical tunas (IATTC-SAC 2020), including bigeye, and in 2020 a bigeye benchmark assessment was completed. The 2020 assessment used a risk assessment approach to incorporate uncertainties identified in previous assessments including a regime shift in recruitment, the misfit to the composition data for the longline fishery that is assumed to have asymptotic selectivity, and the steepness of the stock-recruitment relationship (Xu et al. 2020). The risk assessment approach replaced the use of a best assessment model to derive decisions, which also allowed for the explicit evaluation of probability statements specified in the IATTC harvest control rule for tropical tunas established in Resolution C-16-02. The benchmark assessment developed 14 reference models within a hierarchical, each representing alternative states of nature, with four different values of steepness (0.7, 0.8, 0.9, 1.0).

Current status relative to a reference point was calculated as a weighted average of the point estimates of the ratio from each of the alternative stock assessment models, with weights equal to the relative model probabilities (equal to the expected value under the normal distribution assumption made for each model). The probability of exceeding a reference point was calculated using the cumulative distribution functions (CDFs) for the ratios of F_{cur} and S_{cur} relative to the reference points for each of the alternative models, which are then combined using the model probabilities.

The results of the 2020 risk assessment indicated a 50% combined probability across the weighed models, that F_{MSY} has been exceeded and a 53% probability that S_{cur} is below S_{MSY}, which translates to the stock abundance being fluctuating around a level consistent with MSY, and fishing mortality equally fluctuating around a level consistent with MSY. The probabilities that the F and S limit reference points have been exceeded were (P(F_{cur}>F_{LIMIT}) = 5%; P(S_{cur}<S_{LIMIT}) = 6%) (Aires-da-Silva et al. 2020).

The results of the 2020 benchmark assessment produced bimodal statistical distribution patterns in management reference quantities (Figure 4 and Figure 5). This divided the reference models into two distinct states, one 'pessimistic' and the other 'optimistic', particularly in quantities related to MSY. An optimistic model opened the opportunity to greatly increase fishing mortality, whereas a pessimistic model would mean that fishing mortality had to be reduced to achieve the level established by the target reference point. As the two scenarios were equally plausible, it was difficult to provide effective management advice. Additionally, the outcomes of the 2020 assessment are subject to large uncertainty, as indicated by the wide confidence intervals around the most recent estimate in the Kobe plot (Figure 6),
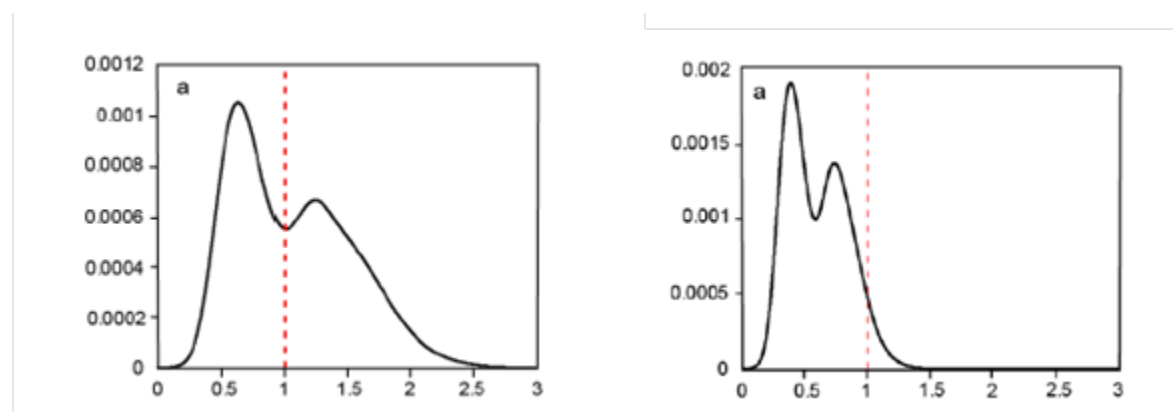
Figure 4. Bigeye probability density functions for Fcur/FMSY (left) and Fcur/Flimit (right) (Aires-da-Silva et al., 2020).
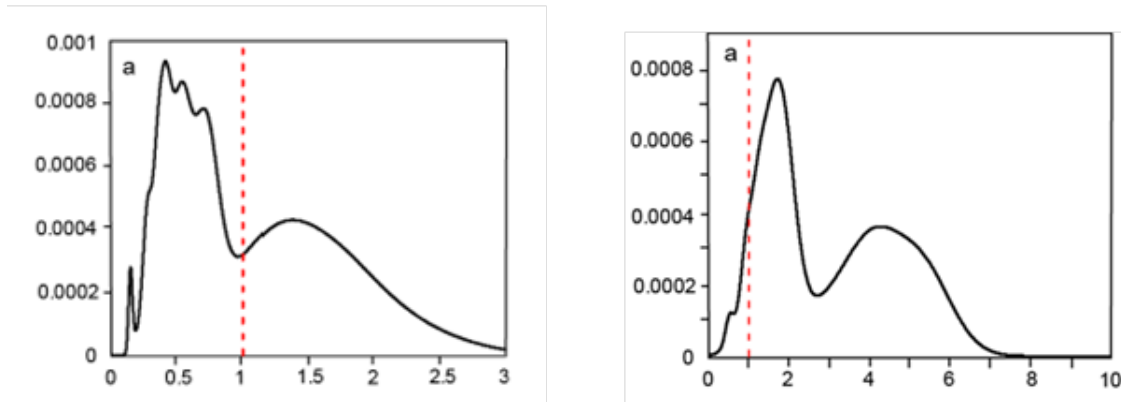
Figure 5. Bigeye probability density functions for Scur/SMSY (left) and Scur/Slimit (right) (Aires-da-Silva et al., 2020).

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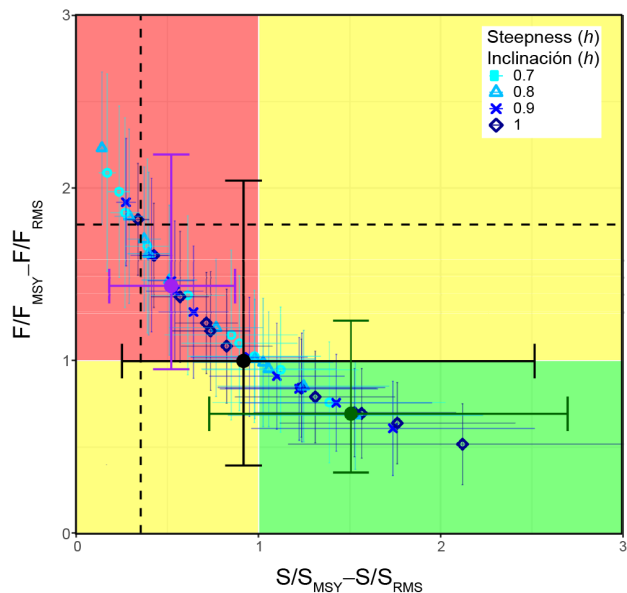
Figure 6. Kobe plot showing the latest estimates of spawning stock size (S) and fishing mortality (F) of bigeye tunarelative to MSY reference points. The colored panels are separated by the target reference points (SMSY and FMSY) and limit reference points (dashed lines). The center point for each model indicates the current stock status, based on the average fishing mortality (F) over the last three years. The solid black circle represents all models combined. The purple and green solid circles represent, respectively, the stock status for the 'pessimistic' and 'optimistic' states related to the bimodal pattern in the risk analysis. The lines around each estimate represent its approximate 95% confidence interval (from Aires-da-Silva et al., 2020).

The bimodality in the joint distribution of terminal year depletion observed in the 2020 stock assessment impacted subsequent decisions on BET stock status in the EPO. Progress to address this issue has been steady and incremental since 2020, and in exploratory analyses completed by IATTC scientific staff the bimodality in the joint distribution of terminal year depletion has been significantly reduced through

development of a new "base" reference assessment model considered superior to the "base" reference assessment model used in the 2020 benchmark assessment (Xu et al., 2023). Modifications in the new assessment model fall into three categories: fishery definitions, survey fleet characteristics, and fishery fleet characteristics and a variety of model diagnostics tracked the improvements including:

- Improved fit to length composition data;
- Improved fit to the index of abundance;
- Included an additional source (Korean) of data in the calculation of longline length compositions;
- Estimated more realistic initial conditions;
- Reduced conflict between the information from the index of abundance and from length compositions about the scale of population abundance;
- Reduced magnitude of the regime shift in recruitment (from 2.4 to 1.5); and
- Showed very similar scales and trends of absolute abundance estimated by the new base model and its age-structured production model.

The improvements in the assessment model show potential in significantly reducing or even resolving the bimodal pattern in model-combined joint distributions of management quantities (Figure 7).) Specifically, these improvements result in more optimistic estimates of terminal year depletion for the pessimistic group of assessment models, and more pessimistic estimates of terminal year depletion for the optimistic group of assessment models.

While the new base reference assessment model still includes a high level of uncertainty (Xu et al., 2023) it is being addressed with promising results towards the 2024 bigeye benchmark assessment. Additionally, testing of the harvest strategy is being conducted in an application of the management strategy evaluation (MSE) on bigeye and the research plan is expected to be extended into 2024 (see Xu et al., 2023).
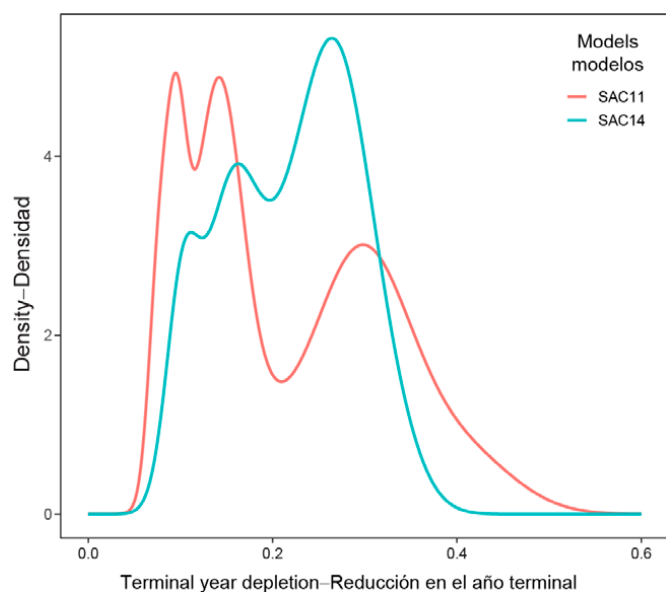
Figure 7. Comparison of model-combined joint distribution of terminal year depletion (spawning biomass ratio) between the last benchmark assessment (SAC11) and this exploratory analysis (SAC14). The reference models used to compute the joint distribution are equally weighted under each overarching recruitment hypothesis (from Xu et al. (2023)).

Management and Harvest Strategy

The main conservation measure established by the IATTC for bigeye is Resolution C-21-04 that establishes a multi-annual management measure for tropical tunas in the eastern Pacific Ocean during 2022-2024. This measure calls for:

- A 72-day closure for purse seiners greater than 182 tons capacity through 2024.

- Additional days of closure for vessels exceeding a particular annual bigeye catch limit (i.e. 8 additional days in 2022 if a vessel has exceeded 1200 tons in 2017-2019, and 10-13-16-19-22 additional days in 2023-2024 if a vessel has exceeded 1200-1500-1800-2100-2400 tons, respectively, in previous year;

- Strengthen the monitoring and control system for tropical tuna species (particularly bigeye) catches through on-board observers, logbooks, port sampling and information from tuna processing facilities to control individual vessel bigeye catches;

- A seasonal closure of the purse seine fishery in an area known as "El Corralito", west of the Galapagos Islands, where catch rates of small bigeye are high;

- A full retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas;

- Bigeye catch limits for the main longline fishing nations;

- Limits on the number of active FADs that each purse seiner can have at any time, ranging from 66 FADs/vessel for the smallest ones to 400 FADs/vessel for Class 6 vessels (1,200 m³ capacity). These ranges will decrease to 64 to 340 in 2023 and 50 to 340 in 2024;

- All purse seines are also required to not deploy FADs 15 days before the selected closure period and Class 6 vessels to recover within 15 days prior to the start of the closure period a number of FADs equal to the number of FADs set upon during that same period; and

- In order to support the scientific analysis of FAD fisheries, the measure requires that CPCs or vessels report daily information on all active FADs (position and echosounder biomass data) as well as Vessel Monitoring System (VMS) data to the Secretariat.

2.3.5   Changes Affecting Traceability

There are no changes that affect traceability in this fishery.

2.3.6   Changes Affecting Harmonisation of Overlapping Fisheries

Changes impacting harmonization are outlined in Section 4.4 Harmonised Fishery Assessments.

2.3.7   Changes in Scope (as per Section 7.4, 7.5.2, or 7.5.3 of MSC FCP v2.3)

There were no scope changes reported for this fishery.

2.3.8   Total Allowable Catch (TAC) and catch data

The target species is not managed by TAC, total YFT catch data in the EPO and catch by the UoC are reported below in Table 9.

Table 6: Allowable Catch (TAC) and catch data EPO YFT

TAC / Catch Data	Year	Amount
Total catch of the target stock in the EPO	2022	292,158 mt
Total catch of the target stock in the EPO	2021	263,201 mt
Total catch by UoC (most recent year)	2022	20,006 mt
Total catch by UoC (second most recent year)	2021	17575mt

The target species is not managed by TAC, total YFT catch data in the EPO and catch by the UoC are reported below in Table 10.

Table 9: Allowable Catch (TAC) and catch data EPO SKJ

TAC / Catch Data	Year	Amount
Total catch of the target stock in the EPO	2022	292,158 mt
Total catch of the target stock in the EPO	2021	263,201 mt
Total catch by UoC (most recent year)	2022	80,116 mt
Total catch by UoC (second most recent year)	2021	87,603mt

2.4   Changes which impact traceability systems

Table 10: Changes affecting traceability and segregation

Are there any developments or changes within the fishery that affect traceability and the ability to segregate MSC from non-MSC products?
No.

3 Surveillance/Expedited Audit Results

3.1 Summary overview

3.1.1 Summary of conditions update

Table 11. Summary of conditions

Condition number	Condition	Performance Indicator (PI)	Status	PI original score	PI revised score
1-0	Tunacons UoA: By the fifth (2028) surveillance the client shall demonstrate that the HCRs for skipjack are likely to be robust to the main uncertainties.	1.2.2 Si b	New Condition Opened Year 1 Surveillance	TUNACONS UoA: 75	Not revised, New Condition
2-1	Tunacons UoAs: By year 4th surveillance bigeye is highly likely to be above the PRI. OR If Bigeye is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	2.1.1 SIa	Closed on Year 1 Surveillance	TUNACONS FAD set UoA: 70	80
2-2	US Small PS UoA: By year 4th surveillance Pacific bluefin tuna is highly likely to be above the PRI. OR If Pacific bluefin tuna is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	2.1.1 SI a	On target	US Small PS UoA: 60	Not revised
2-3	US Small PS UoA: By the 4th annual surveillance audit, provide evidence that it is	PI 2.2.2 SI d	On target	US Small PS UoA: 75	Not revised

	highly likely that shark finning is not taking place				
2-4	Tunacons UoA: By the fourth surveillance, provide evidence that information is adequate to measure trends and support a strategy to manage impacts on mobulas and sea turtles	PI 2.3.3 (b)	On target	Tunacons Free sets: 75 Tunacons FAD sets: 75	Not revised
2-5	US Small PS UoA: By the fourth surveillance, provide evidence to demonstrate that some quantitative information is adequate to assess the US Small PS UoA related mortality and impact on ETP species.	PI 2.3.3 (a)	On target	US Small PS UoA: 70	Not revised
2-6	Tunacons FAD UoA: By the fourth surveillance audit provide evidence that FAD sets by the UoA are highly unlikely to reduce the structure and function of the VME habitats (coral reefs and protected areas) to a point where there would be serious or irreversible harm.	2.4.1 (b)	On target	TUNACONS UoA: FADs - 75	Not revised
2-7	Tunacons FAD UoA: By the fourth year surveillance audit, provide evidence that 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.	PI 2.4.2 (a) and (b)	On target	TUNACONS UoA: FADs - 75	Not revised
2-8	Tunacons UoA FADs: By the third surveillance audit, provide evidence that available 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	PI 2.4.3	On target	TUNACONS UoA: FADs = 75	Not revised

3-1	Panama: By the fourth year surveillance the client provides evidence to show that 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.	3.2.3 SI a	Ahead of target	Panama: 70	Not revised
3-2	Panama: By the fourth year surveillance the fishery client shall present evidence to demonstrate that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	3.2.3 SI b	On target	Panama: 70	Not revised
3-3	Ecuador: By the fourth year surveillance the fishery client shall present evidence to demonstrate that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	3.2.3 SI b	On target	Ecuador: 75	Not revised

3.1.2   Recommendations

The team has no recommendations at this time.

3.2 Re-scoring Performance Indicators

Updates to scoring noted in *blue text in italics*

Table 12. Based on new information on bigeye tuna in the EPO PI22.1.1 is rescored resulting in a score of SG 80.

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a		Main primary species stock status		
	Guide post	Main primary species are likely to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI. OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	**TUNACONS free school set UoA** Skipjack tuna: Yes **TUNACONS FAD set** UoA Skipjack tuna: Yes Bigeye tuna: Yes **US Small PS UoA**: Pacific bluefin tuna: Yes	**TUNACONS free school set UoA** Skipjack tuna: Yes **TUNACONS FAD set UoA** Skipjack tuna: Yes Bigeye tuna: *Yes* ~~No~~ **US Small PS UoA:** Pacific bluefin tuna: No	**TUNACONS free school set UoA** Skipjack tuna: No **TUNACONS FAD set UoA** Skipjack tuna: No Bigeye tuna: *No* ~~Not scored~~ **US Small PS UoA:** Pacific bluefin tuna: Not scored
Rationale				
TUNACONS UoA: Skipjack tuna is designated as a primary main species in both the free school and FAD fisheries. Bigeye tuna is designated as a primary main species in the FAD fishery. *Skipjack Tuna (Free school and FAD sets)*:				

There is no analytical stock assessment for skipjack tuna in the EPO due to its innate biological characteristics that include rapid and variable growth, high natural mortality, and high and very variable recruitment (Maunder 2019). Additionally, there is no age compositional data for this species. Consequently, no estimates of MSY-related reference points are available, and stock status determinations relative to exploitation levels are not estimable. The assessment team determined that although analytical stock assessments are not available for this species, there is evidence that an empirical approach using stock status indicators (SSIs) (i.e. CPUE relative biomass) allows for inferences about stock status without drawing on mathematical model-based techniques, and, as skipjack is not considered data-deficient, the use of RBF is not considered necessary at this time.

The methods used previously to compute the SSIs have been revised to mitigate possible bias introduced in the allocation of fishing effort among purse-seine set types. The new SSIs: (a) include measures of catch, effort, CPUE, and average length of the fish in the retained catch; (b) begin in 2000, the first year of species composition sampling for the purse-seine fishery and shortly after the major offshore expansion of the floating-object fishery; and (c) have reference levels set at the 10% and 90% percentiles (IATTC 2020). The situation in 2020 based on the floating-object fishery can be summarized as follows:

- *fishing mortality has increased, mainly due to the increase in the number of floating-object sets;*
- *the catch of skipjack has increased since 2005 resulting from the increase in the number of floating-object sets;*
- *catch-per-set and average length of skipjack has declined over time.*

Consistent with the previous interpretation of skipjack SSIs described in Maunder (2019), inconsistencies between some of the current SSIs persist and do not support the interpretation that fishing mortality has increased as a result of an increase in the number of floating-object sets (IATTC 2020) (Figure 14- Figure 18). In addition, IATTC staff note that catch-per-set for the floating-object fishery may not be a reliable indicator of skipjack abundance. However, IATTC scientists note that there is concern over the substantial increase in number of sets on floating objects in recent years. The low average weight may be an indicator of overexploitation, but may also be caused by recent recruitments being greater than past recruitments or expansion of the fishery into areas occupied by smaller skipjack (see Figure 14- Figure 18).

Overall, the SSIs have yet to detect any adverse impacts of the fishery and given the resilient life history characteristics of skipjack tuna, IATTC scientists have indicated there is "no concern with EPO skipjack tuna" (IATTC SAC 2020). Given available information it is highly likely that the stock is above the PRI, meeting SG80.

The lack of a recent full stock assessment means that it is not possible to determine with a high degree of certainty that the stock is above the PRI with high certainty, so SG100 is not met.

Bigeye Tuna (FAD sets)

~~IATTC Resolution C-16-02 defines target and limit reference points, in terms of biomass and fishing mortality. The SLIMIT adopted as interim by the IATTC (in the 87th meeting) is the spawning biomass that produces half of the virgin recruitment (SB=0.5R₀) given that the stock-recruitment relationship follows the Beverton-Holt function with a steepness of 0.75. This spawning biomass is equal to 0.077 of the equilibrium virgin spawning biomass (Maunder and Deriso (2014)~~

~~The limit reference point of fishing mortality (FLIMIT) is the fishing mortality threshold that should be avoided because fishing harder could endanger the sustainability of the stock. The FLIMIT adopted as interim by the IATTC (in its 87th meeting) is the fishing mortality rate that, under equilibrium conditions, maintains the spawning population level at SLIMIT.~~

Two sources of information inform the status assessment of EPO bigeye tuna – the 2020 benchmark stock assessment (Xu et al. 2020) and the stock status indicators (SSIs) that were developed to monitor the bigeye tuna stock (IATTC-SAC 11-05, 2020). The recent benchmark stock assessment status relative to a reference point was calculated as a weighted average of the point estimates of the ratio from each of the alternative stock assessment models (N=44; 12 model configurations with four steepness (h) values (0.7, 0.8, 0.9, 1.0) associated with each configuration were test, four models did not converge), with weights equal to the relative model probabilities (equal to the expected value under the normal distribution assumption made for each model). The probability of exceeding a reference point was calculated using the cumulative distribution functions (CDFs) for the ratios of F_{cur} and S_{cur} relative to the reference points for each of the alternative models, which are then combined using the model probabilities.

The combined distribution of F_{cur}/F_{LIMIT} from the 44 models tested is bimodal, due to the substantial differences in the estimates between the "short-term models" which are more pessimistic (Fcur/FMSY mostly above 1), and the "medium-term" models that do not assume the recruitment shift (R) is real, which are more optimistic (Fcur/FMSY mostly below 1). For the combined distribution, Fcur is at about 60% of FLIMIT and the probability of (Fcur > FLIMIT is 5%. The probability distribution for S_{cur}/S_{LIMIT} is also bimodal. The combined ratio of Scur/SLIMIT is estimated at approximately 3.07 and the probability of $S_{cur} < S_{LIMIT} = 6\%$.

Estimates of relative annual recruitment are not sensitive to the value of steepness. During the 1980s recruitment was generally below the long-term average, increasing to average levels through 2005, before declining to levels below average through 2015. In recent years recruitment was variable with large confidence intervals. Recruitment was variable throughout the approximate 40-year time series of recruitment, the magnitude and timing of the recruitment shifts depending on the reference model.

IATTC has established Stock Status Indicators (SSIs) for bigeye tuna to be used for historical comparisons to identify trends and can provide information that may be useful for stock management. These indicators do not provide information on the state of the stock relative to the PRI but do provide additional information for consideration. The purse-seine-based indicators include the number of sets, by set type, closure-adjusted capacity, catch by set type, catch-per-set by set type, and average length of the fish in the retained catch, by set type. Current trajectories of SSIs show an increasing trend in the number of purse seine floating object sets over time, a decrease in catch per set of bigeye in the floating object fishery since 2000, and a decline in average length of bigeye in both the unassociated (free school) and floating object fisheries (IATTC-SAC-11-05, 2020). Declines in catch were also observed in the longline fishery since 2000, as was a declining trend in bigeye CPUE over time. These results suggest an increase in fishing mortality for bigeye tuna, resulting from the observed increase in the number of floating object sets. The benchmark assessment and risk analysis indicate that is likely that Scurrent is above the PRI, meeting SG60 requirements.

The principal management measures for tropical tuna in the EPO is a purse seine temporal closure period of 72 days and Aires-da-Silva et al. (2020) examined the utility of various closure periods (0, 36, 70, 72, 88, and 100 days). However, if the pessimistic models for bigeye tuna represents the true state of nature the risk of exceeding FLIMIT under the current closure at 72 days is 10%. which is the upper threshold above which additional management would be required as specified in Res. C-16-02. Therefore, any reduction of the 72-day closure would exceed the limit under the combined pessimistic models. However, the risk analysis to determine the utility of different temporal closure periods assumed no uncertainty, which could significantly impact the outcome. Also, given there are multiple fisheries catching bigeye tuna in the EPO, several of them being MSC certified, and all subject to IATTC management measures, there does not appear to be a verifiable strategy in place across all MSC fisheries that would ensure they do not hinder recovery of bigeye tuna if the stock is below PRI. Based on this information SG 80 is not met.

SG100 is not scored as not all SG80 requirements are met (see MSC interpretation https://mscportal.force.com/interpret/s/article/Scoring-SG100-if-not-all-SG80-met-7-10-5-3-1527262010218).

IATTC Resolution C-16-02 defines target and limit reference points, in terms of biomass and fishing mortality. The S_{LIMIT} adopted as interim by the IATTC (in the 87th meeting) is the spawning biomass that produces half of the virgin recruitment ($SB=0.5R_0$) given that the stock-recruitment relationship follows the Beverton-Holt function with a steepness of 0.75. This spawning biomass is equal to 0.077 of the equilibrium virgin spawning biomass (Maunder and Deriso (2014).

The limit reference point of fishing mortality (F_{LIMIT}) is the fishing mortality threshold that should be avoided because fishing harder could endanger the sustainability of the stock. The F_{LIMIT} adopted as interim by the IATTC (in its 87th meeting) is the fishing mortality rate that, under equilibrium conditions, maintains the spawning population level at S_{LIMIT}.

The most recent benchmark stock assessment was conducted in 2020 (Xu et al., 2020). Current status relative to a reference point was calculated as a weighted average of the point estimates of the ratio from each of the alternative stock assessment models (N=44; 12 model configurations with four steepness (h) values (0.7, 0.8, 0.9, 1.0) associated with each configuration were tested, four models did not converge), with weights equal to the relative model probabilities (equal to the expected value under the normal distribution assumption made for each model). The probability of exceeding a reference point was calculated using the cumulative distribution functions (CDFs) for the ratios of F_{cur} and S_{cur} relative to the reference points for each of the alternative models, which are then combined using the model probabilities.

*The combined distribution of F_{cur}/F_{LIMIT} from the 44 models tested in the 2020 benchmark assessment was bimodal, due to the substantial differences in the estimates between the "short-term models" which are more pessimistic (F_{cur}/F_{MSY} mostly above 1), and the "medium-term" models that do not assume the recruitment shift (R) is real, which are more optimistic (F_{cur}/F_{MSY} mostly below 1). For the combined distribution, F_{cur} is at about 60% of F_{LIMIT} and the probability of ($F_{cur} > F_{LIMIT}$ is 5% (*Table 13 *and* 0Figure 8 *)). The probability distribution for S_{cur}/S_{LIMIT} was also bimodal. The combined ratio of S_{cur}/S_{LIMIT} is estimated at approximately 3.07 and the probability of $S_{cur} < S_{LIMIT} = 6\%$ (*Table 13 *and* Figure 9 *).*

Estimates of relative annual recruitment are not sensitive to the value of steepness. During the 1980s recruitment was generally below the long-term average, increasing to average levels through 2005, before declining to levels below average through 2015. In recent years recruitment was variable with large confidence intervals. Recruitment was variable throughout the approximate 40-year time series of recruitment, the magnitude and timing of the recruitment shifts depending on the reference model(Figure 10*).*

While IATTC established interim reference points for tropical tuna in the EPO, they are lower than values used in other MSC certified stocks. Using guidance provided in GSA 2.2.3.1, where an analytically determined estimate for MSY is available and no estimate of PRI available, a more precautionary approach is required and the default MSC PRI of 20% S_0 is recommend. Weighted estimates of S_{MSY}/S_0, based on 12 potential states of nature, were computed for each level of steepness (1.0, 0.9, 0.8, and 0.7). For bigeye tuna the average PRI across all states of nature and steepness combinations was 0.23 (range 0.21 - 0.25). Past assessments assumed a steepness value of 0.75. Given that the tested states of nature and steepness combinations encapsulate a wide range of uncertainties, the PRI is precautionary (well above the established LRP in the IATTC), and $S_{CURRENT}$ is above PRI. Recalling PRI=20%S_0 and considering the outputs of all combined models together (the black dot in the Kobe plot – Figure 11*, it can be inferred that the 70th %ile and 80th %ile lower confidence limits are above PRI and meeting requirements at the SG 60 and SG 80 levels. However, the 95th %ile lower confidence limit is clearly below the PRI threshold and requirements at the SG 100 level are not met.*

The bimodality in the joint distribution of terminal year depletion observed in the 2020 stock assessment impacted subsequent decisions on BET stock status in the EPO. Progress to address this issue has been steady and incremental since 2020, and in exploratory analyses completed by IATTC scientific staff the bimodality in the joint distribution of terminal year depletion has been significantly reduced through development of a new "base" reference assessment model considered superior to the "base" reference assessment model used in the 2020

benchmark assessment (Xu et al., 2023). The improvements in the assessment model show potential in significantly reducing or even resolving the bimodal pattern in model-combined joint distributions of management quantities. Specifically, these improvements result in more optimistic estimates of terminal year depletion for the pessimistic group of assessment models, and more pessimistic estimates of terminal year depletion for the optimistic group of assessment models. Noting that results show a lower uncertainty and a higher accuracy in the model outputs provides added confidence that the stock is likely above PRI. To assess the conformity of this fishery with the MSC standard, the team considered that, despite the level of uncertainty the combined results of the benchmark assessment and the exploratory analysis, provide results in probabilistic terms that, even if observed in the pessimistic scenarios, lead to the following conclusions. Given that, in the pessimistic scenario, the estimated probability of the bigeye stock to be below the limit reference point was about 10%, the fishery meets the requirements at SG80 that it is highly likely that the stock is above the PRI (with a probability equal or greater than 80%). However, the fishery does not meet the requirements at SG100 that there is a high degree of certainty that the stock is above the PRI with a probability equal or greater than 95%.
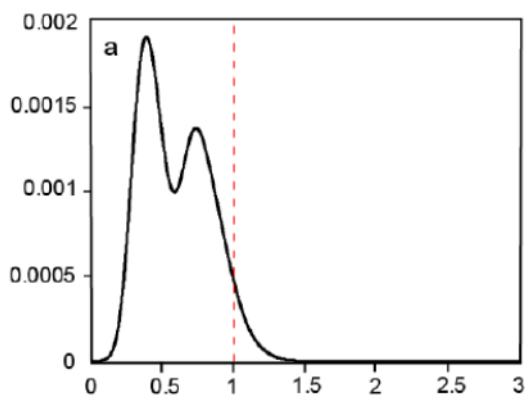
Figure 8. Bigeye probability density functions for Fcur/FLIMIT (figure from Aires-da-Sivva et al., 2020
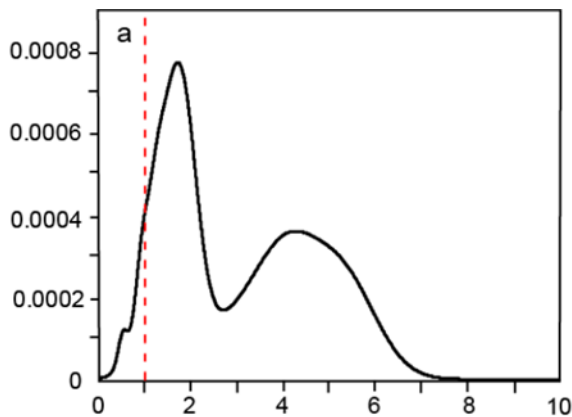
Figure 9. . Bigeye probability density functions for Scur/SLIMIT (figure from Aires-da-Silva et al., 2020).
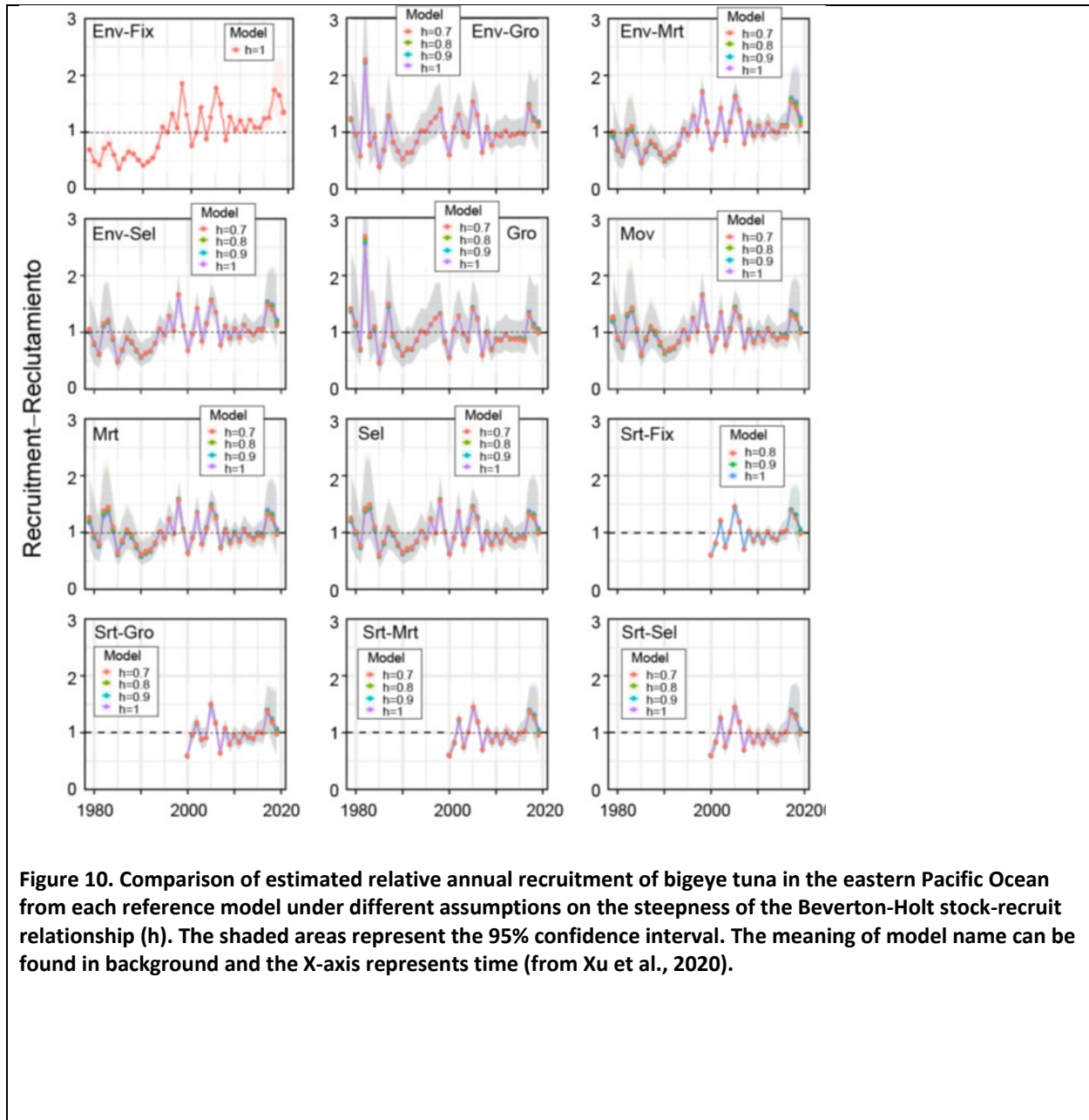
Figure 10. Comparison of estimated relative annual recruitment of bigeye tuna in the eastern Pacific Ocean from each reference model under different assumptions on the steepness of the Beverton-Holt stock-recruit relationship (h). The shaded areas represent the 95% confidence interval. The meaning of model name can be found in background and the X-axis represents time (from Xu et al., 2020).
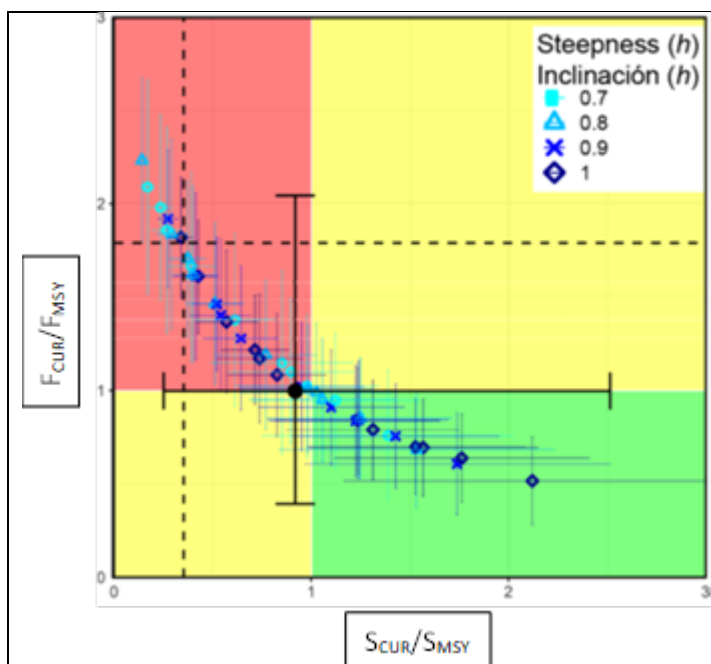
Figure 11. Kobe (phase) plot of the time series of estimates of spawning stock size (S) and fishing mortality (F) of bigeye tuna relative to their MSY reference points. The colored panels are separated by the target reference points (SMSY and FMSY). Limit reference points (dashed lines), which correspond to a 50% reduction in recruitment from its average unexploited level based on a conservative steepness value (h = 0.75) for the Beverton-Holt stock-recruitment relationship, are only indicative since they vary by model and are based on all models combined. The center point for each model indicates the current stock status, based on the average fishing mortality (F) over the last three years; The solid black circle represents all models combined, and to be consistent with the probabilistic nature of the risk analysis and the HCR, it is based on P(Scur/SLIMIT<x) = 0.5 and P(Fcur/FMSY>x) = 0.5. The lines around each estimate represent its approximate 95% confidence interval

Management quantities for bigeye tuna in the EPO. E(x) is the expected value. P=0.5: median of the distributions of P(Scur/SMSY) and P(Fcur/FMSY) (table from Aires-da-Silva et al., 2020).

Table 13. Management quantities for bigeye tuna in the EPO. E(x) is the expected value. P=0.5: median of the distributions of P(Scur/SMSY) and P(Fcur/FMSY) (table from Aires-da-Silva et al., 2020).

	Env-Fix	Env-Gro	Env-Sel	Env-Mrt	Srt-Fix	Srt-Gro	Srt-Sel	Srt-Mrt	Mov	Gro	Sel	Mrt	Combined E(x)	P=0.5
P(Model)	0.01	0.13	0.05	0.02	0.04	0.22	0.11	0.07	0.01	0.24	0.09	0.02	E(x)	P=0.5
Fishing mortality (F)														
F_{cur}/F_{MSY}	1.82	0.82	0.99	1.25	1.84	1.42	1.36	1.57	0.81	0.59	0.73	0.89	1.07	1.00
$P(F_{cur}>F_{MSY})$	1.00	0.18	0.44	0.84	1.00	0.97	0.92	0.99	0.15	0.01	0.07	0.25	0.50	
F_{cur}/F_{LIMIT}	0.96	0.47	0.58	0.69	0.97	0.78	0.77	0.84	0.47	0.34	0.43	0.50	0.60	
$P(F_{cur}>F_{LIMIT})$	0.33	0.00	0.00	0.01	0.38	0.07	0.06	0.14	0.00	0.00	0.00	0.00	0.05	
Spawning biomass (S)														
S_{cur}/S_{MSY_d}	0.34	1.32	1.02	0.69	0.32	0.56	0.59	0.45	1.31	1.85	1.53	1.16	1.09	0.92
$P(S_{cur}<S_{MSY})$	1.00	0.19	0.49	0.96	1.00	1.00	1.00	1.00	0.16	0.03	0.07	0.27	0.53	
S_{cur}/S_{LIMIT}	0.97	3.61	2.67	2.04	0.97	1.65	1.65	1.38	3.84	5.24	4.21	3.63	3.07	
$P(S_{cur}<S_{LIMIT})$	0.59	0.00	0.00	0.02	0.50	0.06	0.09	0.19	0.00	0.00	0.00	0.00	0.06	

US Small PS UoA

Pacific bluefin tuna

Pacific bluefin tuna is categorized a main primary species. No biological reference points have been established for Pacific bluefin tuna. The 2016 stock assessment concluded that spawning biomass had been reduced to 2.4% of unfished levels and based on an evaluation of stock status relative common reference points (F_{max}, $F_{0.1}$, F_{med}, $SPR_{10\%}$, $SPR_{20\%}$, $SPR_{30\%}$, and $SPR_{40\%}$) the stock was considered overfished and subject to overfishing (ISC 2016). Results from the 2020 stock assessment determined that spawning biomass had increased to 4.5% of unfished levels and fishing mortality had decreased (ISC 2020). As there are still no established biological reference points stock status was again evaluated relative to common reference points indicating the stock is likely overfished and subject to overfishing (ISC 2020). . Based on this information the assessment team considers the stock to be below the PRI.

As a result of the low spawning biomass levels voluntary domestic management measures were introduced by Japan in 2011 to reduce fishing mortality. In 2016 a Pacific bluefin tuna rebuilding plan, with both targets and catch limits, was implemented collaboratively by IATTC and WCPFC. The rebuilding plan was based on simulation modelling that used the 2016 stock assessment model to project stock outcomes under varying reductions in catch while assuming low and average recruitment to the population (ISC 2016). Based on results of the simulation modelling exercise a rebuilding plan with two spawning biomass targets was established: (1) by 2024 rebuild spawning biomass to $6.7\%SSB_{F=0}$ (the median SSB estimated for the period 1952 through 2014) with at least 60% probability and (2) rebuild spawning biomass to $20\%SSB_{F=0}$ with at least 96% probability 10 years after the achievement of the initial rebuilding target or by 2034, whichever is earlier. All simulations were initiated assuming low recruitment to the population, switching to average recruitment beginning in the year after achieving the initial rebuilding target. Based on the simulation results the goal of meeting the first rebuilding target with at least 60% probability by 2024 was achieved under all tested scenarios, assuming all CMMs are fully implemented and there is a low magnitude of discards. Based on the spawning biomass targets established by the rebuilding plan the assessment team considers PRI to be equivalent to $20\%SSB_{F=0}$, the second rebuilding target.

As part of 2020 stock assessment, population projections conducted during the 2016 stock assessment were undated and expanded to assess impacts to the rebuilding target stemming from increases in allowable catch levels. The projection analysis also examined the potential population benefits of allowing increases in allowable catch to be based on the size of fish (small ≤30 kg. and large > 30 kg.). Given the spawning locations and migration route of Pacific bluefin tuna implementation of size-based management measures is possible. Given the increase in spawning biomass indicated in the 2020 assessment the projection analyses concluded that increases in catch were possible while still meeting the established recovery plan targets. It was also determined that the population would benefit if the increase was limited to larger fish. Based on reviews of the 2020 stock assessment and associated population projections that indicated a 100% chance of meeting the rebuilding target by 2024, scientific committees of the WCPFC and IATTC endorsed a Pacific-wide increase in allowable catch. The IATTC approved a 15 percent increase in the catch limit for adults (over 30 kilograms) and no change for juveniles in 2021.

There are measures in place, as part of a rebuilding plan with targets and catch limits, which were implemented collaboratively by IATTC and WCPFC beginning in 2011 (voluntary) and becoming stricter in 2013 (IATTC Resolution C-13-02), 2016 (IATTC Resolution C-16-08), 2018 (IATTC Resolution C-18-01 and C-18-02), and 2020 (IATTC Resolution C-20-02. These resolutions provided clarification to management measures and set catch allocations based on changes in stock status. IATTC Resolutions C-21-01 adopted in 2021 amended Resolution C-18-02 and updated the long-term management framework for the conservation and management of Pacific bluefin tuna in the EPO. IATTC Resolution C-21-05, also adopted in 2021, specified measures for the

conservation and management of Pacific bluefin tuna in the EPO consistent with the approved 15% increase in allowable catch levels.

In the US, NOAA Fisheries implemented strong management measures for the EPO in 2019 consistent with IATTC Resolutions C-18-01 and C-18-02, capping the total allowable annual commercial catch of Pacific bluefin tuna at 300 t. In 2022 NOAA Fisheries published a proposed rule (87 FR 12409) regarding domestic implementation of IATTC Resolution C-21-05 which includes catch limits that would apply to U.S. commercial vessels that fish for Pacific bluefin tuna in the EPO during 2022-2024. The catch limits may differ in each year and NOAA Fisheries would impose an initial trip limit, an intermediate trip limit, and a lower trip limit on individual fishing vessels that reduce as catch thresholds are met throughout the year.

Noting that (1) measures implemented by IATTC and NOAA Fisheries are in place and updated regularly, (2) the 2020 stock assessment indicates a continual recovery and rebuilding of the stock, (3) recent projection analyses indicate that the adopted 15% increase in catch levels for the EPO will not hinder recovery and rebuilding of the stock as specified in the rebuilding plan, and (4) the catch of Pacific bluefin tuna by the UoA relative to the total Pacific-wide catch is extremely small (≈ 1.5% between 2015 and 2020), the assessment team considers the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding of Pacific bluefin tuna, thus meeting the SG60 level.

Recognizing there have been continuing improvements to the population of Pacific bluefin tuna over time (increasing spawning biomass, reductions in F) which could be interpreted as potentially meeting the SG 80 requirements, we note the first rebuilding target has not been met and that will not be known until at least the next stock assessment currently scheduled for 2022, and allowable caches have recently been increased. While the IUCN recently upgraded the "status" of Pacific bluefin tuna from Vulnerable to Near Threatened based on the observed recovery of the stock, spawning biomass is still at low levels. Based on a lack of evidence indicating that the first rebuilding target has been met the assessment team invoked a precautionary approach and does not consider there yet to be clear evidence of a recovery; SG 80 is not met.

SG100 is not scored as not all SG80 requirements are met (see MSC interpretation https://mscportal.force.com/interpret/s/article/Scoring-SG100-if-not-all-SG80-met-7-10-5-3-1527262010218).

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?			**TUNACONS free school set UoA:** Bigeye tuna: No **TUNACONS FAD set UoA:** NA

				US Small PS UoA: No

Rationale

TUNACONSs Free school set UoA:

Bigeye Tuna

Bigeye tuna is the only designated minor primary species categorized in the TUNACONS fishery and it is associated with the free school fishery.

The rationale above in SIa applies here.

TUNACONS FAD set UoA :

As there are no primary minor species for this UoA. As stated in MSC Interpretation Log (P2-species-outcome-PIs-scoring-when-no-main-or-no-minor-or-both-PI-2-1-1-1527262009344), scoring issue (b) does not apply when there are no minor species. Using this guidance, a score of NA has been applied.

US Small PS UoA

Based on provided logbook data for this UoA no species have been classified as primary minor species. The assessment team employed qualitative methods during the site visit to confirm that there are no primary minor species. Nonetheless, given the limited information available the team took a more precautionary approach, as per G7.10.2.e, the SG100 is not met.

References

ISC Pacific Tuna Working Group 2018, ISC 2019, ISC 2020, Maunder 2019

Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	TUNACONS free school set UoA: ≥ 80 TUNACONS FAD set UoA: 60-79 US Small PS UoA: 60-79
Information gap indicator	No additional information is required

Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	TUNACONS FAD set UoA: 70 TUNACONS free school set UoA: 80 US Small PS UoA: 60
Condition number (if relevant)	2-1 and 2-2

Table 14. Based on new information on skipjack tuna in the EPO PI1.2.2 is rescored resulting in a score of SG 75

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

The Commission has consistently recommended the use of an HCR. IATTC Resolution C-16-02 outlines the HCR for tropical tunas in the IATTC Commission Area as:

- If the probability that F>Flim is >10%, management measures shall be established such that there is at least a 50% probability that F will reduce to FMSY or below, and with a probability of <10% of F>Flim.
- If the probability that SB<Sblim is >10%, management measures shall be established such that there is at least a 50% probability that SB will recover to SBMSY or above, and with a probability of <10% that SB will decline to <Sblim within two generations or 5 years, whichever is greater.
- Purse seine closures can be established for multiple years and shall attempt to prevent the fishing mortality rate (F) from exceeding the best estimate of the rate corresponding to the maximum sustainable yield (FMSY) for the species that requires the strictest management.

These measures are expected to keep the biomass above the LRPs, and above the PRI. Thus, requirements for SG 60 are met.

At the SG 80 level, harvest control rules also need to be "well defined". PSA analyses carried out by IATTC (IATTC, 2019) show that skipjack has substantially higher productivity than bigeye or yellowfin but similar susceptibility. The biomass and fishing mortality of skipjack tuna corresponding to MSY are therefore, respectively, negatively and positively correlated with either yellowfin or bigeye productivity. As skipjack and bigeye or yellowfin have about the same susceptibility, and susceptibility is related to fishing mortality, the status of skipjack can be inferred from the status of bigeye or yellowfin. Given that bigeye and yellowfin tuna are actively monitored, any implemented measures to avoid violating their PRIs (bigeye and yellow tuna) would ensure that the skipjack tuna PRI is avoided. Also, as noted by the skipjack stock assessment review panel the established TRP for tropical tuna in the EPO (30%S_0) is a conservative proxy estimate for MSY (Bence et al., 2022).

IATTC Resolution C-16-02 provides a well-defined HCR for tropical tunas (including skipjack tuna) that is in place and ensures the exploitation rate of skipjack is reduced if the stock of bigeye or yellowfin tuna falls below S$_{MSY}$

or exceeds F$_{MSY}$. This reduces the exploitation rate of all tropical species caught in the EPO as the PRI (of either bigeye and/or yellowfin) is approached and is expected to keep the skipjack stock fluctuating around or above B$_{MSY}$. Results from the 2022 interim skipjack tuna stock assessment provide evidence that the stock of skipjack tuna in the EPO has been fluctuating at levels above MSY (Maunder et al., 2022; Maunder, 2022). On this basis SG80 is met.

While the recent IATTC yellowfin and bigeye benchmark assessments provide stock status determinations, the risk-based assessments represent a fundamental change from the previous modelling approaches and not all uncertainties are accounted for. Spatial structure in the yellowfin, bigeye, and skipjack tuna populations, has not been incorporated into current assessments despite its importance (Xu et al., 2020; Minta-Vera et al., 2020; Maunder et al., 2022; Bence et al., 2022) and potential influence on the HCR. Other uncertainties requiring further research and improvement include estimates of natural mortality and selectivity (Aires-da-Silva et al., 2020). On this basis SG100 is not met.

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

Rationale

~~IATTC Resolution C-16-02 established an HCR for tropical tunas in the EPO. The performance of the harvest strategy has partially been evaluated using a preliminary management strategy evaluation on bigeye (Maunder et al. 2015). The analysis aimed to investigate the effect of important uncertainties about the steepness in the stock recruitment relationship, asymptotic length and natural mortality. The analysis concluded that the combination of the control rule and the interim reference points under the investigated uncertainties "works effectively to manage the stock at the MSY level". Simulations support the robustness of the HCR and the current purse seine closure period of 72 days will maintain the yellowfin and bigeye tuna stocks at or above target reference points, however, there is still a lack of direct evidence, and not all uncertainties have been evaluated (Aires-da-Silva et al. 2020). On this basis, the HCRs are likely to be robust to the main uncertainties and the requirements at the SG 80 level are met.~~

~~Given the problems with the updated bigeye assessment, the HCR may have to be re-evaluated. MSE research is ongoing, and, to date, the ecological role of the stock has not been included in the assessment process. On this basis requirements at the SG 100 level are not met.~~

In scoring issue (b), MSC guidance states that "teams must assess how well the HCRs are likely to function when the unexpected happens in the future. The scoring guideposts reflect the degree of confidence there is in the HCR performance in relation to risks, caused by both known and unknown factors. Known factors include observation and process errors which are often accounted for in stock assessments. Unknown factors may include unpredictable effects from climate, environmental or anthropogenic non-fishery related factors, which could, for example, lead to periods of low recruitment or growth, high natural mortality, or migration. These and other changes to the population dynamics may not have been fully accounted for in the stock assessment or projections."

Prior to 2022 no reliable SKJ stock assessment was available because it was not known whether catch-per-day fished for purse-seine fisheries was proportional to abundance nor whether the purse-seine selectivity was dome-

shaped" (Maunder et al. 2022). Additionally, the estimation of MSY-based reference points had been problematic because the species grows fast, have high natural mortality, recruitment is assumed to be independent of spawner abundance and maximum yield per recruit occurs with fish younger than the age of entry to the fishery (Maunder et al. 2022). To deal with these concerns the IATTC used an approach supported by a productivity-susceptibility analysis (PSA) which identified SKJ as less susceptible to fishing gear compared to YFT and about the same as BET. As SKJ is a more productive species compared to the other two tropical tunas it was assumed that if conservation measures were applied to protect YFT and/or BET, the SKJ would also be protected. This concept implies that YFT, BET and skipjack are linked by identification of the stock that is in greatest need of protection, defining conservation actions for that stock and implementing the same management measures equally to all three species. Conservation measures for stocks affected by fleets fishing on FADs are applied according to Resolution C-19-01 (IATTC 2019).

This approach remained in place until Resolution C-21-04 implemented catch limits to BET on top of the current closure period of 72 days that apply for all three species of tropical tuna in the EPO. Requirements specific to the activities associated with the operations on FADs and limits on the number of active FADs that individual vessels can have at any one time was also implemented. Testing conducted in 2021 determined that the 72-day closure period was sufficient to protect BET and subsequently YFT and SKJ.

In 2022, the number of sets on floating objects reached its highest historic value since 2000 (≈18,000 sets; **Figure 12)** *a number that has exceeded the status quo level (≈ 16,000 sets) by approximately 11% (Xu 2023). During the SAC-14 meeting of the IATTC (see Document SAC-14-14), the staff expressed concern regarding the resumption of the general increasing trend in the number of floating-object sets. However, at this stage, the staff did not find sufficient scientific evidence to justify immediate recommendations for modifying the ongoing resolution. The impact of this trend on the stock status can only be determined through benchmark stock assessments. These assessments will become available for the three species in 2024, coinciding with the Commission's need to adopt a new Resolution for the next management cycle.*

Based on the recent increase in number of floating object sets, noting that the reported number is significantly higher than the 2017-2019 status quo value, represents the highest reported in the EPO, and this increase likely impacts the robustness of the HCR, the Assessment Team contends that current HCRs are not likely to be robust to the main uncertainties; ***SG80 is not met. SG100 is not scored as SG80 is not met.***
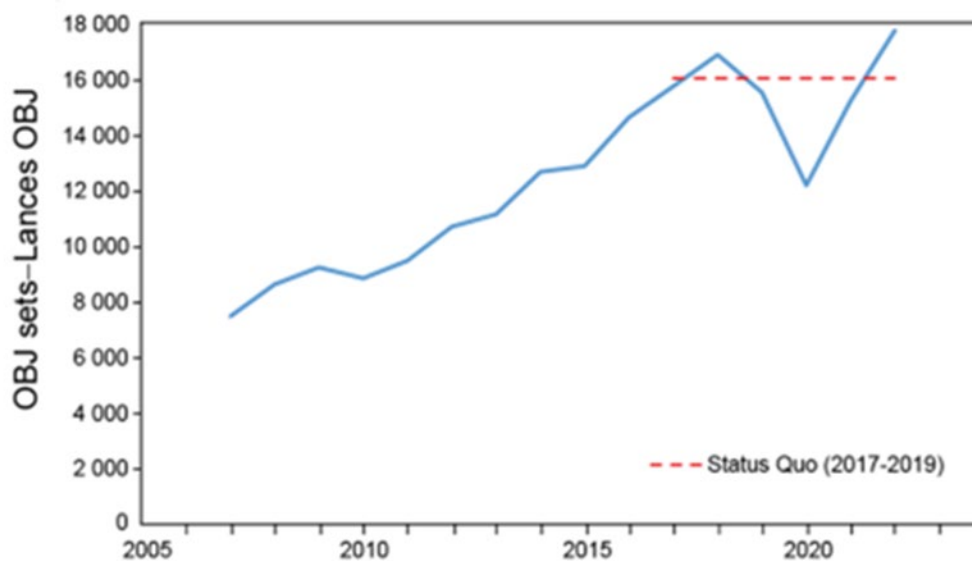
Figure 12. Number of purse seine sets in the EPO on floating objects from 2007-2022. The red dashed line indicates the status quo condition (average from 2017-2019) (from Xu 2023).

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

Rationale

The main tool supporting the HCR is the F multiplier (F_{MSY}/F_{recent}), which in turn determines the temporal closure of purse seine fisheries. These closures are adjusted to manage exploitation in reaction to status determination of stocks with respect to the agreed reference points and timeframes currently set out in Resolution C-16-02. Resolutions C-17-01 and C-17-02 describe the rational and implementation process for the closures using the F-multiplier and C-17-02 also provides a cap on FAD numbers and closure to purse-seine vessels within the area of 96º and 110ºW and between 4°N and 3°S, known as the "corralito". C-16-02 does not specify a HCR that requires specific exploitation rates against which the effectiveness of tools can be evaluated but provides a framework for providing advice on measures that will achieve outcomes. The primary evidence to judge whether tools are effective is therefore estimates of status from stock assessments.

The HCR defined in C-16-02 aims to prevent fishing mortality from exceeding the MSY level for the tropical tuna stock (bigeye, yellowfin, or skipjack tuna) that requires the strictest management based on the current estimates of fishing mortality. The duration of closures is intended to be adjusted according to the estimated F-multiplier and other factors (such as estimated increases in capacity). Although, as reflected in PI 1.1.1, there are uncertainties in the 2022 skipjack assessment, there is some evidence that appropriate exploitation levels have been maintained, hence meeting SG60.

In 2017, the closure period for 2017-2020 was extended to 72 days based on the F-multiplier adjusted for capacity increases. However, due to uncertainties in the relationship between exploitation and closure period, the duration of the closure period was not increased in 2018 as recommended by IATTC staff. The duration of the closure period was tested in 2020 as part of the benchmark assessments for yellowfin and bigeye tuna in the EPO and a procedure developed to assess the risk of a range of closure periods in meeting management objectives (from 0 to 100 days). Results indicated that the current closure period of 72 days meets the management objectives and IATTC staff recommended no additional closure days were required (Aires-da-Silva et al., 2020).

At the 95th meeting of the IATTC held in early December 2020, no agreement was reached on new management measures for 2021, putting management arrangements for 2021 in doubt. Subsequently, IATTC convened an extraordinary meeting on 22 December 2020 where it was agreed that the measures in force in 2020 (reflected in C-17-02) would be carried over for one year (to be recorded as Resolution C-20-06) and that they be reviewed for subsequent years no later than the annual meeting in 2021. At the 98th meeting of IATTC in October 2021 new management measures were adopted (reflected in C-21-04) covering the years 2022-2024. On this basis available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs and SG 80 requirements are met.

Under the newly adopted risk framework adopted for the 2020 updated yellowfin and bigeye tuna assessments, as well as the 2022 skipjack tuna assessment, there is not yet sufficient evidence to evaluate the application of the tools to the coming fishing seasons. On this basis SG 100 requirements are not met.

References	
IATTC (2019); Bence et al. (2022); Maunder (2022); Maunder et al. (2022); Xu et al. (2020); Minta-Vera et al. (2020); Aires-da-Silva et al. (2020); Xu 2023	
Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	≥ 80 *60-79*
Information gap indicator	
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	80 *75*
Condition number (if relevant)	Condition 1-0

3.3 Conditions

Table 15. Condition 2-1. Secondary Species (Bigeye) Management Strategy - All Flags Tunacons

Performance Indicator	PI 2.1.1 (a). Primary Species Outcome - Main primary species stock status (bigeye tuna)	
Score	70	
Justification	See rationale in PI 2.1.1 (a) for bigeye tuna	
Condition	Tunacons UoAs: By the fourth surveillance audit, demonstrate that EPO bigeye tuna is highly likely to be above the PRI, or if bigeye tuna is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise bigeye tuna as main, to ensure that they collectively do not hinder recovery and rebuilding.	
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023)	
	By the first surveillance audit present a plan to show what actions will be taken to either ensure that EPO bigeye tuna are highly likely to be above the PRI, or, if below the PRI, present evidence of an implemented effective recovery strategy between all MSC UoAs that categorize bigeye tuna as main.	
	Expected score: 70	

Client Action Plan	**Activities:**	1. TUNACONS will draft a plan to promote the following work to be carried out at the IATTC. This plan shall include the following elements:
		    a. As specified in the IATTC staff activities and research plan (Document IATTC-98-02a) completing an update bigeye stock assessment before the end of year 1, incorporating alternative CPUEs.
		    b. Evaluation of the weighting criteria to be used in the risk analyses.
		    c. Evaluate the responsiveness of the existing HCR to changes in F (the responsiveness of the HCR to stock status and maintenance of exploitation by the PRI is a work product under the MSE process, which TUNACONS fully supports).
		2. TUNACONS will maintain institutional arrangements for the provision of FAD data (fine scale) for the production of indices of abundance to contribute to improved stock assessments.
		3. TUNACONS will engage with other relevant MSC fisheries/stakeholders in promoting these activities.
		4. TUNACONS will promote regional cooperation through technical meetings and training processes with scientific representatives from the countries that make up the TUNACONS consortium (this is considered to be ongoing until the end of the certification period).

	Expected outcome:	Copy of the proposed plan. Copy of the collaboration agreement between TUNACONS and IATTC. Minutes of the meetings held for tasks 3 and 4.

		Lead: TUNACONS
		Other stakeholders:
		Work on technical data: IATTC
		OPAGAC/AGAC
Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024) Client provides evidence of implementing the plan as presented in Year 1 (including any revisions). Expected score: 70	

Client Action Plan	**Activities:**	1. Implement the plan designed in the first year. 2. Support update of BET assessment to be conducted no later than the second year, preferably during the first year. 3. Work towards having a new index of abundance derived from FAD data incorporated into the planned update stock assessment.
	Expected outcome:	Reports from activity 1 Reports from activity 2 Minutes of meetings held for activity 3
		As above

Milestone Year 3	Surveillance: Milestone Year 3 (expected 2025) Client should provide provisional results from the implemented plan and supporting analyses. If required, modifications to the plan should be presented, including anticipated outcomes. Expected score: 70	

Client Action Plan	**Activities:**	1. Continue implementation of plan designed in the first year; depending on the results; update the plan accordingly. 2. However, elements 3 and 4, proposed in the Activities for Year 1 surveillance (3. TUNACONS will engage with other relevant MSC fisheries/stakeholders […] 4. TUNACONS will promote regional cooperation through technical meetings and training processes […]), are considered work in progress throughout the certification period
	Expected outcome:	As above
		As above

Milestone Year 4	Surveillance: Milestone Year 4 (expected 2026) Demonstrate that EPO bigeye tuna is highly likely to be above the PRI, or if bigeye tuna is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise bigeye tuna as main, to ensure that they collectively do not hinder recovery and rebuilding. Expected score: 80	

	Activities:	1. Continue implementation of plan designed in the first year; depending on the results; update the plan accordingly. 2. Elements 3 and 4, proposed in the Activities for Year 1 surveillance (3. TUNACONS will engage with other relevant MSC fisheries/stakeholders […] 4. TUNACONS will promote regional cooperation through technical meetings and training processes […]), are considered work in progress throughout the certification period
Client Action Plan	**Expected outcome:**	Provide evidence consistent with elements 1 and 2 described under Year 1 activities that BET is highly likely to be above PRI, or that TUNACONS UoAs do not hinder recover and rebuilding of the stock.
		As above
Consultation on condition	See attached letters of support	
Progress on Condition (Year 1)	Based on progress this condition was closed, for more details please refer to the previous section with the closed rationale.	
Status	*Closed, Year 1 Surveillance*	
Additional information	*The CAB may provide any additional information for this condition here.*	

Table 16. Condition 2-2. Secondary Species Management Strategy – US Small PS UoA

Performance Indicator	**PI 2.1.1 (a). Primary Species Outcome - Main primary species stock status (Pacific bluefin tuna)**
Score	60 (US Small PS UoA)
Justification	See rationale in PI 2.1.1 (a) for Pacific bluefin tuna
Condition	US Small PS UoA: By the fourth surveillance audit, demonstrate that the main primary species, Pacific bluefin tuna, is highly likely to be above the PRI or if Pacific bluefin tuna 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.
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023) By the first surveillance audit present a plan to show what actions will be taken to present evidence of a recovery of the stock or an implemented effective recovery strategy between all MSC UoAs that categorize Pacific bluefin tuna as main to ensure that they do not collectively hinder recovery and rebuilding. Expected score: 60
Client Action Plan	**Activities:**	• During the first year of the condition, an Action Plan will be focused on implementing an effective Pacific bluefin tuna stock rebuilding strategy involving all MSC UoAs that have this species classified as main and that demonstrate that the impact of these

		Assessment Units does not collectively hinder recovery and rebuilding of the stock.
	Expected outcome:	Publication of the Action Plan (Pacific bluefin tuna)
		Lead: Tri Marine Other stakeholders: Work on technical data: NOAA Other MSC UoA in the region capturing Pacific Bluefin Tuna
Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024) Client provides evidence of implementing the plan as presented in Year 1 (including any revisions). Expected score: 60	
Client Action Plan	**Activities:**	• During the second year, the Plan proposed in the first year will be implemented.
	Expected outcome:	Minutes of meeting held
		Lead: Tri Marine Other stakeholders: Work on technical data: NOAA Other MSC UoA in the region capturing Pacific Bluefin Tuna
Milestone Year 3	Surveillance: Milestone Year 3 (expected 2025) Client should provide provisional results from the implemented plan and supporting analyses. If required, modifications to the plan should be presented, including anticipated outcomes. Expected score: 60	
Client Action Plan	**Activities:**	• Based on the implementation of the Plan and working together with NOAA, evidence will be provided that the implementation of the proposed Plan is effective or, if necessary, modifications to the plan will be carried out, including the expected results.
	Expected outcome:	Minutes of meeting held
		Lead: Tri Marine Other stakeholders: Work on technical data: NOAA Other MSC UoA in the region capturing Pacific Bluefin Tuna
Milestone Year 4	Surveillance: Milestone Year 4 (expected 2026) Provide evidence that the main primary species, Pacific bluefin tuna, is highly likely to be above the PRI or if Pacific bluefin tuna 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. Expected score: 80	

Client Action Plan	Activities:	• In the Year 4 audit, provide a report indicating consistent scientific evidence of stock rebuilding or a demonstrably effective strategy among all MSC UoAs that classify Pacific bluefin tuna as main shall be presented to ensure that collectively they do not hinder rebuilding and rebuilding.
	Expected outcome:	Minutes of meeting held
		Lead: Tri Marine
		Other stakeholders:
		Work on technical data: NOAA
		Other MSC UoA in the region capturing Pacific Bluefin Tuna
Consultation on condition	See attached letters of support	
Progress on Condition (Year 1)	Following the adoption of the harvest strategy (WCPFC, 2017) and establishment of age-specific catch limits Pacific bluefin tuna has shown signs of recovery (ISC, 2022). In the 2022 stock assessment, the ISC concluded the stock size had significantly increased, although the stock was still overfished. The base-case model results from the 2022 assessment show that: (1) spawning stock biomass (SSB) fluctuated throughout the assessment period (fishing years 1952-2020); (2) the SSB steadily declined from 1996 to 2010; (3) the SSB has increased since 2011 resulting in the 2020 SSB being back to the 1996 level; (4) total biomass after 2011 continued to increase with an increase in young fish, creating the 2nd highest biomass peak in the assessed history in 2020; (5) fishing mortality (F%SPR), which declined to a level producing about 1% of SPR in 2004-2009, returned to a level producing 30.7% of SPR in 2018-2020; and (6) SSB in 2020 was 10.2% of SSBF=0, an increase from the 5.6% of SSBF=0 estimated for 2018 in the 2020 assessment (2018 was the last year of the 2020 assessment). Based on the model diagnostics, the estimated biomass trend for the last 40 years is considered robust although SSB prior to the 1980s is uncertain due to data limitations. The SSB in 2020 was estimated to be around 65,464 t, which is a 30,000 t increase from 2018 according to the base-case model. An increase of young fish (0-2 years old) biomass was observed in 2016-2020, likely resulting from low fishing mortality on those fish and is expected to accelerate the recovery of SSB in the future even further. Historical recruitment estimates have fluctuated since 1952 without an apparent trend. A substantial decrease in estimated F is observed in ages 0-2 in 2018-2020 relative to the previous years. The IATTC has adopted resolutions to restrict the catch of bluefin tuna in the EPO (e.g. C-16-08, C-18-01, C-20-02, C-21-05). Resolution C-21-05 states that during 2021-2022, in the IATTC Convention Area, combined total commercial catches of Pacific bluefin tuna by all CPCs shall not exceed the catch limit of 7,295 metric tons. During 2023-2024, in the IATTC Convention Area, combined total commercial catches of Pacific bluefin tuna by all CPCs shall not exceed the catch limit of 7,990 metric tons. The catch limit for the entire U.S. fleet, which includes the US small purse seine UoA, will be 523 mt in 2022. The biennial limit in 2023–2024 will be 1,017 mt and not to exceed 720 mt in a single year; therefore, the 2023 catch limit will be 720 mt, and the 2024 limit will be the lesser of the amount caught in 2023 subtracted from the biennial limit or 720 mt. Over-harvest and under-harvest of the previous biennial catch limit will be accounted for in the subsequent biennial catch limit. Any over-harvest of the previous catch limit will be deducted from the subsequent catch limit, and up to 5 percent of any under-harvest of the previous catch limit will be added to the subsequent catch limit.	

| | Given the plan is implemented at the IATTC level, the assessment team considers this met the year 1 milestone requirement of evidence plan to show what actions will be taken to present evidence of a recovery of the stock or an implemented effective recovery strategy between all MSC UoAs that categorize Pacific bluefin tuna as main to ensure that they do not collectively hinder recovery and rebuilding.

Since the implementation of the 2015 rebuilding plan, the recovery of PBF has occurred at a faster rate than anticipated. The stock exceeded the initial rebuilding target five years earlier than expected and is likely (probabilities > 90%) to meet the second rebuilding target by 2029 (ISC, 2022). While the stock clearly shows signs of rebuilding it has not reached the second rebuilding target. A new assessment is scheduled to be completed in 2024 which will provide information on progress towards the second rebuilding target. This condition is considered on-target. |
|---|---|
| **Status** | Open. On target. Score remains at 60 |
| **Additional information** | No additional information |

Table 3. Condition 2-3. Secondary Species Management Strategy - US Small PS UoA

Performance Indicator	**PI 2.2.2(d) Secondary Species Management Strategy-Shark finning**	
Score	70	
Justification	See Rationale PI 2.2.2 SI d	
Condition	US Small PS UoA: By the 4th annual surveillance audit, provide evidence that it is highly likely that shark finning is not taking place.	
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023) Present a plan to provide evidence that it is highly likely that shark finning is not taking place. Expected score: 70	
Client Action Plan	**Activities:**	An action plan will be developed to install an onboard an electronic monitoring system (EMS) to collect the data for the US Small PS UoA fleet to provide "good external validation" that it is highly likely that shark finning is not taking place. The plan will include the objectives of the system, the means to be used for data collection and interpretation, external verification of the data and the expected results.
	Expected outcome:	Minutes of meetings held Action plan published
		Responsible Party/ies: Lead: Tri Marine Scientific partner: NOAA IATTC

		Other stakeholders:
		Technical consultancy and companies specialized in Electronic Monitoring Systems.
Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024)	
	Provide a report describing progress on the plan outlined in Year 1. Recommend adjustments to the plan as necessary.	
	Expected score: 70	
Client Action Plan	**Activities:**	Implementation of the electronic monitoring system on board UoA fishing vessels and first data processed.
	Expected outcome:	Minutes of meetings held
		Photographs of the installed systems and videos with the recorded images and first reports of processed data
		Responsible Party/ies:
		Lead: Tri Marine
		Scientific partner:
		NOAA
		IATTC
		Other stakeholders:
		Technical consultancy and companies specialized in Electronic Monitoring Systems.
Milestone Year 3	Surveillance: Milestone Year 3 (expected 2025)	
	Provide a report describing progress on the plan. Recommend adjustments to the plan as necessary.	
	Expected score: 70	
Client Action Plan	**Activities:**	From the third year of the Condition, provide a report describing shark management on board UoA vessels based on availableinformation obtained from the electronic monitoring system installed.
	Expected outcome:	Minutes of meetings held and progress report
		Photographs of the installed systems and videos with the recorded images and reports of processed data
		Responsible Party/ies:
		Lead: Tri Marine
		Scientific partner:
		NOAA
		IATTC
		Other stakeholders:
		Technical consultancy and companies specialized in Electronic Monitoring Systems.

	Surveillance: Milestone Year 4 (expected 2026)	
Milestone Year 4	Provide evidence (good external validation) that it is highly likely that shark finning is not taking place in the UoA. Expected score: 80	
Client Action Plan	**Activities:**	From the accumulated information provided by the electronic monitoring system, evidence in the form of processed data, technical reports, videos, and photographs, demonstrate that shark finning is not taking place in the UoA.
	Expected outcome:	Minutes of meetings held
		Pictures of the installed systems and videos with recorded images and reports of the processed data that provide 'good external validation' consistent with MSC Guidelines , that shark finning is not taking place
		Responsible Party/ies:
		Lead: Tri Marine
		Scientific partner:
		NOAA
		Other stakeholders:
		Technical consultancy and companies specialized in Electronic Monitoring Systems.
Consultation on condition	See attached letters of support	
Progress on Condition (Year 1)	For Condition 2-3 of the Year-1 surveillance to be on target TUNACONS must present a plan to provide evidence that it is highly likely that shark finning is not taking place. To this end the client provided two documents to address this condition: 1. Pilot plan for the implementation of an electronic monitoring system on board TRI MARINE Group (UoC: US Small PS) purse seine vessel installation of EMS onboard US small purse seine vessel, and 2. Electronic monitoring in fishing vessels. Requirements (UNE195007). The Plan establishes the requirements and technical conditions for the implementation of a pilot EMS on vessels in the US small purse seine UoA and is based on ISSF, NOAA Fisheries, and European Union recommendations and protocols on Electronic Monitoring onboard fishing vessels. Noting that vessels in the US small purse seine UoA are < 364 t carrying capacity, the plan aligns with the IATTC staff recommendation for purse seine vessels less than 364 t carrying capacity to implement an observer program that monitors at least 20% of the fishing effort. The objective of the EMS is to provide evidence that shark finning is not occurring and document ETP interactions and their fate (e.g., released alive). As noted in the plan the EMS information will be cross-checked with logbooks and official landings documentation presented to NOAA. The plan specifies the general requirements of the EMS (e.g., power and communications) and its components (e.g., cameras), the data format, and system testing (e.g., camera placement) to provide information on total catch per set and species composition, discard rates, and interactions with ETP.	

| | The EMS will be installed by a provider authorized by NOAA Fisheries or that complies with the standards proposed for this purpose in collaboration with the equipment manufacturer, the data analysis entity (certified or recognized by NOAA Fisheries), and the boat owner(s). Noting the potential confidentiality of the collected data the plan provides guidance on data storage and accessibility, as well as ownership of the data.

Noting that a plan to provide evidence that it is highly likely that shark finning is not taking place was provided as part of the Year-1 Surveillance this condition is considered on target. The next step is for the UoA to identify a potential vendor that can develop a system consistent with the specified requirements, register UoA vessel captain(s) to conduct the testing, and the collection of provisional data. |
|---|---|
| **Status** | Open. On target. Score remains at 75 |
| **Additional information** | No additional information |

Table 17. Condition 2-4. ETP Species Information - All Flags – Tunacons Fleet

Performance Indicator	PI 2.3.3(b) ETP Species Outcome – Information adequacy for management strategy (Mobulid Rays and Sea Turtles)	
Score	70	
Justification	See rationale in PI 2.3.3 (b) for Tunacons UoAs	
Condition	Tunacons UoA: By the fourth surveillance, provide evidence that information is adequate to measure trends and support a strategy to manage impacts on ETP species (Mobulid Rays and Sea Turtles).	
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023)

Noting that the collection of requisite data to support PI2.3.3(b) is collected by observers, present a collaborative plan including procedures, protocols, and schedule to ensure the collection of robust data consistent with Resolution C-19-04 and C-15-04. Outreach programs to inform and educate observers and vessel captains will be part of the plan.

Expected score: 70 | |
| **Client Action Plan** | **Activities:** | Development of a collaborative plan including procedures, protocols, and schedule to ensure the collection of robust data consistent with Resolution C-19-04 and C-15-04, to improve the identification of bycatch species on board fishing vessels by fishery observers.

This Plan will focus especially on the identification of shark, manta, ray and turtle species, as well as other species that are more complicated to differentiate. In addition, specific graphic material for species identification will be developed to be carried on board the vessels.

During the first year, reinforcement training will be given to fishery observers, and they will be provided with graphic material for the correct identification of bycatch species. |
| | | Collaborative Plan published |

	Expected outcome:	Evidence that observers have received specific training courses. Published support material
		Responsible Party/ies: Lead: TUNACONS Scientific: IATTC, Ecuadorian Government (SRP)
Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024) Provide a report describing progress on the plan outlined in Year 1. Recommend adjustments to the plan as necessary. Expected score: 70	
Client Action Plan	**Activities:**	Collection of information on board the vessels by the observers and preparation of follow-up reports to determine whether the problems of species identification have been corrected. These reports will be validated by IATTC and IPIAP scientific staff.
	Expected outcome:	Follow-up reports Meeting minutes
		Responsible Party/ies: Lead: TUNACONS Scientific: IATTC, Ecuador Government (SRP)
Milestone Year 3	Surveillance: Milestone Year 3 (expected 2025) Provide a report describing progress on the plan outlined in Year 1. Recommend adjustments to the plan as necessary. Expected score: 70	
Client Action Plan	**Activities:**	The collection of information, preparation of reports and publication of the information will continue.
	Expected outcome:	Follow-up reports Meeting minutes
		Responsible Party/ies: Lead: TUNACONS Scientific: IATTC, Ecuadorian Government (SRP)
Milestone Year 4	Surveillance: Milestone Year 4 (expected 2026) Provide evidence to demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species (Mobulid Rays and Sea Turtle). Expected score: 80	
Client Action Plan	**Activities:**	The collection of information, preparation of reports and publication of the information will continue. For this fourth-year it is expected that the information published will include adequate identification and that there will be a considerable reduction of uncertainty in the identification of these species.

	Expected outcome:	Final report
		Meeting minutes
		Information on results of on-board observations available
		Responsible Party/ies:
		Lead: TUNACONS
		Scientific: IATTC, Ecuadorian Government (SRP)
Consultation on condition	See attached letters of support	
Progress on Condition (Year 1)	Noting that the collection of requisite data to support PI2.3.3(b) is collected by observers and for sea turtles and mobulid rays many of the observed interactions were not identified to the species level (mobulid rays 55%; sea turtles 45%) information to develop and measure trends was not considered adequate. For Condition 2-4 of the Year-1 surveillance to be on target a collaborative plan including procedures, protocols, and schedule to ensure the collection of robust data consistent with monitoring requirements in Resolutions C-19-04 and C-15-04 should be presented. Outreach programs to inform and educate observers and vessel captains should be part of the plan.

To this end TUNACONS provided an action plan for the improvement of species identifications with the goal of reinforcing knowledge through training of the different species, especially turtles, sharks, and manta rays (Action plan for the improvement of Spp. species identification by TUNACONS). The training course (110 min. in total) is directed at TUNACONS observers and uses a combination of explanatory videos and slides; an exam is administered at the end of the course. A detailed implementation schedule of the action plan is detailed within the plan, commencing with preparatory activities in 2023 and course training spanning 2024 and 2025.

The plan specifies that observer trip data will be reviewed after each trip by a technical work team to provide feedback, and, if necessary, implement remedial steps. Periodic reports of the results will be presented to determine if the quality of data collected by the observers is evolving and if improvements to the training course are necessary.

Noting that a plan to improve species identifications as specified in the year 1 milestone was provided by the client this condition is considered on target. | |
| Status | Open. On target. Score remains at 75 | |
| Additional information | No additional information | |

Table 18. Condition 2-5. ETP Species Information - US Small PS UoA

Performance Indicator	PI 2.3.3(a) ETP Species Outcome – Information adequacy for management strategy
Score	70

Justification	See rationale in PI 2.3.3 (a) for US Small PS UoA
Condition	US Small PS UoA: By the fourth surveillance, provide evidence to demonstrate that some quantitative information is adequate to assess the US Small PS UoA related mortality and impact on ETP species.
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023) Present a plan including procedures to provide some quantitative information to assess the US Small PS related mortality and impact on ETP species. Expected score: 70

Client Action Plan	Activities:	In the first year of the condition a plan will be presented that includes procedures to be put in place that can provide some quantitative information that will allow assessment of U.S. small PS-related mortality and its impact on ETP species. To this end, a pilot on-board electronic monitoring plan will be implemented to provide insight into the actual interactions of this fleet with ETP species. This pilot plan has been described in the action for indicator 2.2.2 (d) for the same fleet.
	Expected outcome:	Minutes of meetings held Action plan published See condition 2-3
		Responsible Party/ies: Lead: Tri Marine Scientific partner: NOAA IATTC Other stakeholders: Technical consultancy and companies specialized in Electronic Monitoring Systems.

Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024) Provide evidence to demonstrate that the plan outlined in Year 1 is being implemented. If necessary, update the plan accordingly. Expected score: 70

Client Action Plan	Activities:	Implementation of the electronic monitoring system on board UoA fishing vessels and first data processed agree whit the Plan published.
	Expected outcome:	Minutes of meetings held and progress report
		Responsible Party/ies: Lead: Tri Marine Scientific partner: NOAA IATTC Other stakeholders:

		Technical consultancy and companies specialized in Electronic Monitoring Systems.
Milestone Year 3		Surveillance: Milestone Year 3 (expected 2025)
		Provide evidence to demonstrate further progress of the plan outlined in Year 1. If necessary, update the plan accordingly.
		Expected score: 70
Client Action Plan	**Activities:**	Implementation of the electronic monitoring system on board UoA fishing vessels and first data processed.
	Expected outcome:	Minutes of meetings held and a progress report
		Responsible Party/ies:
		Lead: Tri Marine
		Scientific partner:
		NOAA
		IATTC
		Other stakeholders:
		Technical consultancy and companies specialized in Electronic Monitoring Systems.
Milestone Year 4		Surveillance: Milestone Year 4
		Provide evidence to demonstrate that some quantitative information is adequate to assess the US Small PS UoA related mortality and impact on ETP species.
		Expected score: 80
Client Action Plan	**Activities:**	From the cumulative information provided by the electronic monitoring system, evidence will be presented that there is adequate quantitative information to assess the U.S. small purse seine UoA related mortality and impact on ETP species.
	Expected outcome:	Minutes of meetings held and final report, including pictures of the installed systems and videos with recorded images and reports of the processed data,
		Responsible Party/ies:
		Lead: Tri Marine
		Scientific partner:
		NOAA
		IATTC
		Other stakeholders:
		Technical consultancy and companies specialized in Electronic Monitoring Systems.
Consultation on condition		See attached letters of support

	For Condition 2-5 of the Year-1 surveillance to be on target TUNACONS must present a plan, including procedures, that provides some quantitative information to assess the US Small PS related mortality and impact on ETP species.
Progress on Condition (Year 1)	To this end the client provided two documents to address this condition: 1. Pilot plan for the implementation of an electronic monitoring system on board TRI MARINE Group (UoC: US Small PS) purse seine vessel installation of EMS onboard US small purse seine vessel, and 2. Electronic monitoring in fishing vessels. Requirements (UNE195007). The Plan establishes the requirements and technical conditions for the implementation of a pilot EMS on vessels in the US small purse seine UoA and is based on ISSF, NOAA Fisheries, and European Union recommendations and protocols on Electronic Monitoring onboard fishing vessels. Noting that vessels in the US small purse seine UoA are < 364 t carrying capacity, the plan aligns with the IATTC staff recommendation for purse seine vessels less than 364 t carrying capacity to implement an observer program that monitors at least 20% of the fishing effort. The objective of the EMS is to provide evidence that shark finning is not occurring and document ETP interactions and their fate (e.g., released alive). As noted in the plan the EMS information will be cross-checked with logbooks and official landings documentation presented to NOAA. The plan specifies the general requirements of the EMS (e.g., power and communications) and its components (e.g., cameras), the data format, and system testing (e.g., camera placement) to provide information on total catch per set and species composition, discard rates, and interactions with ETP. The EMS will be installed by a provider authorized by NOAA Fisheries or that complies with established standards proposed for electronic monitoring in collaboration with the equipment manufacturer, the data analysis entity (certified or recognized by NOAA Fisheries), and the boat owner(s). Noting the potential confidentiality of the collected data the plan provides guidance on data storage and accessibility, as well as ownership of the data. Noting that a plan to develop and install an onboard EMS to provide some quantitative information to assess the US Small PS related mortality and impact on ETP species was provided as part of the Year-1 Surveillance, this condition is considered on target. The next steps are for the UoA to identify a potential vendor that can develop a system consistent with the specified requirements, register UoA vessel captain(s) to conduct the testing, and collection of provisional data.
Status	Open. On target. Score remains at 70
Additional information	No additional information

Table 19. Condition 2-6. Habitats Outcome – All Flags – Tunacons Fleet

Performance Indicator	PI 2.4.1 (b) 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.
Score	75 (FADs only)

Justification	Corals and MPAs are recognized as potential VMEs in all ocean basins, including the EPO. The intent of the MSC habitat component is to characterize habitats in the area(s) fished by the UoA (GSA3.13.1 MSC Standard v2.01) or in the 'managed area' (GSA3.13.5, MSC Standard v2.01), and to assess the impacts of fishing attributed to the UoA in the area(s). Derelict FADs are considered abandoned fishing gear and the MSC objective regarding impacts from gear loss (abandoned gear) on habitat is described in Box GSA7 (MSC Standard v2.01). As derelict FADs can potentially drift over large spatial scales the footprint of the impact can expand beyond the managed area. The actual numbers of lost or derelict FADs by UoA vessels is routinely not recorded, and their impacts have not been evaluated. On this basis requirements at the SG 80 level were not met. See rationale for PI 2.4.1b for additional information.
Condition	Tunacons FAD UoA: By the fourth surveillance audit provide evidence that FAD sets by the UoA are highly unlikely to reduce the structure and function of the VME habitats (coral reefs and protected areas) to a point where there would be serious or irreversible harm.
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023) Develop and provide a plan for investigating the impact of lost FADs on the structure and function of coral reefs and MPAs in the EPO region. Expected score: 75
Client Action Plan	**Activities:** • During the proposed 4-year time frame for this condition, TUNACONS will promote the implementation of a research plan to improve the understanding of the impacts of FADs on coral reef structure and function in the EPO MPAs. • The Plan will be structured in two lines of work. On the one hand, the direct impact of FADs on the reefs will be analyzed. In this way it will be possible to know the impact on their structure and functioning. In addition, since TUNACONS is integrating in its fleet FADs built with degradable materials of natural origin, the impacts of the different types will be analyzed and the results obtained in the design and use of the best materials in their construction will be incorporated and, thus, specific mitigation measures will be established if the impact is substantial. • On the other hand, guidelines will be established to improve the recovery processes of FADs before they reach the coral areas. To this end, natural drift processes will be studied, and a code will be developed to reduce the number of FADs in certain high-risk areas or at specific times when prevailing currents or winds may have a greater influence on the arrival of FADS to reef areas. In addition, the monitoring system for FADs deployed in higher drift risk locations will be improved to monitor 100% of FADs at the end of the proposed 4-year period: • 1. TUNACONS drafting and implementation of the research plan for the control and monitoring of FADS and to improve the knowledge of their impact on coral reefs in Marine Protected Areas.

		2. Establish a working group made up of researchers from the IATTC, IPIAP and other research centers (Universities, NGOs) to work together in the collection and analysis of information.
	Expected outcome:	Copy of the proposed plan
		Copy of the collaboration agreement between TUNACONS and other parties.
		Minutes of the creation of the working group of item 2 above.
		Lead: TUNACONS
		Consultancy and technical assistance:
		IATTC,, WWF, ATUNEC, National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries
Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024)	
	Provide information on the number of FADs lost by the fishery and the materials used in their construction.	
	Expected score: 75	
Client Action Plan	**Activities:**	1. Continue implementation of the plan 2. Publication of first research results regarding the number of FADs lost and the materials used in their construction.
	Expected outcome:	Progress reports Minutes of meetings held
		Lead: TUNACONS
		Consultancy and technical assistance:
		IATTC, WWF, , National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries
Milestone Year 3	Surveillance: Milestone Year 3 (expected 2025)	
	Provide an initial evaluation of the potential impacts of FADs lost by vessels operating in the EPO region on coral reefs, and of any additional measures that might be needed if this impact is substantial	
	Expected score: 75	
Client Action Plan	**Activities:**	1. Based on data obtained during the previous two years of Plan implementation, an assessment of the impact on coral reefs of FADs lost by fishing vessels operating in the EPO area will be conducted. This initial assessment will include the evidence found of these impacts, by type of FADs and how the impacts are associated with climatic and oceanographic conditions. In addition, if necessary, recommendations and changes in the design and materials of FADs that minimize impacts will be implemented. • A meeting will be organized with the participation of all interested parties at which the initial results of the ongoing work will be presented, and which will also serve as a forum for information exchange. The results of this meeting will be used to improve the strategy for minimizing FAD impacts.

	Expected outcome:	Development of strategy for adoption by interested countries (Ecuador and Panama) Minutes of meetings held
	Lead: TUNACONS Consultancy and technical assistance: IATTC, WWF, National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries (VAP)	
Milestone Year 4	Surveillance: Milestone Year 4 (expected 2026) Provide evidence that the UoA is highly unlikely to reduce structure and function of coral reefs (VME) in the EPO region to a point where there would be serious or irreversible harm. Expected score: 80	
Client Action Plan	**Activities:**	1. Preparation of final reports on the research carried out and presentation of results
	Expected outcome:	Technical and scientific reports analyzing how the measures adopted are contributing and will contribute in the future to prevent the structure and function of coral reefs from being seriously and irreversibly affected. Minutes of meetings held
	Lead: TUNACONS Consultancy and technical assistance: IATTC, WWF, , National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries (VAP)	
Consultation on condition	Letters of support from UoA flag state authorities.	
Progress on Condition (Year 1)	Derelict FADs are abandoned fishing gear that can potentially drift over large spatial scales, potentially reducing the structure and function of the VMEs (coral reefs and MPAs) habitats. The actual numbers of lost or derelict FADs by UoA vessels is routinely not recorded, and their impacts have not been evaluated. For Condition 2-6 of the Year-1 surveillance to be on target TUNACONS must develop and provide a plan for investigating the impact of lost FADs on the structure and function of coral reefs and MPAs in the EPO region. To this end the client provided a plan to investigate the impact of lost FADs on the structure and function of coral reefs and MPAs in the EPO region. Central to the plan is the collection of data from UoA vessels when deploying/retrieving FADs as well as fishing activities on FADs, including type of FAD (e.g., biodegradable) and its characteristics (material), deployment location, and fishing activity on a FAD (including location of fishing and FAD identification number). To facilitate efficient data collection and data entry a digital template form in EXCEL format was developed for use by the TUNACONS UoA. Noting that collected data includes fishing activities on FADs the behavior of the fleet can be monitored and assessed, and the number of lost FADs estimated. TUNACONS has also spearheaded a program focused on reducing and eliminating the impact of FADs in sensitive habitats in Ecuador, the Galapagos archipelago. The program, "Caring for Galapagos Initiative", has among its objectives the recovery of FADs before they become stranded on islands in the archipelago. Companies involved in the initiative communicate	

	information on the position and drift direction of derelict FADs to the program coordinator. The information is then relayed to local Galapagos fisherman who intercept and collect the FAD before becoming beached. Since IATTC requires FADs to be uniquely marked A report from the "Caring for Galapagos Initiative" for the period June-December 2022 was published and is publicly available (https://tunacons.org/galapagos-cooperation/). Of the 13 reported derelict FADs 12 were successfully recovered near the islands of Isabela, Santa Cruz, Floreana, Baltra and San Cristóbal. Noting a plan for investigating the impact of lost FADs on the structure and function of coral reefs and MPAs in the EPO region was provided as part of the Year-1 Surveillance and that the plan has been adopted by the TUNACONS based on interviews during the surveillance, this condition is considered on target. The initiative spearheaded by TUNACONS to reduce and/or eliminate the threat of derelict FADs on the Galapagos archipelago, a UNESCO World Heritage Site, is noted.
Status	Open. On target. Score remains at 75
Additional information	No additional information

Table 20. Condition 2-7. Habitats Management Strategy – All Flags Tunacons FAD UoA

Performance Indicator	PI 2.4.2 (a) and (b) Habitats Management Strategy – Management strategy in place & Management Strategy Evaluation	
Score	75 (FADs only)	
Justification	The only potential impacts from the UoA on VMEs is from derelict FADs beaching on coral reefs or MPAs noting that the VMEs potentially affected may be within the UoA management area or outside the managed area. UoA vessels comply with IATTC time-area closures and because purse seine fishing gear does not interact with the benthos, move on rules would likely not support the delivery of SG 80 in PI 2.4.1 and are not considered appropriate. The UoA supports the development and implementation of best practices for derelict FADs to improve environmental protection and to support best available science to minimize negative impacts on the environment. While there are voluntary initiatives to report details of lost FADs, we have seen no evidence of implementation of voluntary efforts to mitigate impacts to VMEs from lost FADs. On this basis there does not appear to be a partial strategy in place to achieve the Habitat Outcome 80 level of performance or above, including 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, thus requirements at the SG 80 level were not met. See EPO rationales for PI 2.4.2 (b) for additional information.	
Condition	Tunacons FAD UoA: By the fourth-year surveillance audit, provide evidence that: SI a. there is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above [For VMEs] SI b. There is some objective basis for confidence that the measures/partial strategy [for VMEs] will work, based on information directly about the UoA and/or habitats involved.	
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023) Provide information on activities taken by the UoA to report lost FADs and fulfill FAD management requirements. Expected score: 75	
Client Action Plan	**Activities:**	• During the first year, TUNACONS in coordination with IATTC, Governments of the flag countries and other tuna fishing industry groups in the EPO and that are part of the same UoA, will work together to improve the reporting of the loss of FADs, updating the existing information in this regard. This information will be the basis for building a strategy to minimize or eliminate the impact of FADs on Vulnerable Marine Ecosystems.
	Expected outcome:	Copy of the collaboration agreement between TUNACONS and other parties. Minutes of meetings held Evidence of new information on FADs lost. Progress reports
		Lead: TUNACONS Consulting and technical assistance: IATTC, WWF, , National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries

Milestone Year 2 and Year 3	Surveillance: Milestone Year 2 (expected 2024) and Year 3(expected 2025) Provide evidence of increasing activity to report all lost FADs from UoA vessels operating in the EPO region and that these activities meet FAD management requirements. Expected score: 75	
Client Action Plan	**Activities:**	1. TUNACONS will hold periodic meetings with the IATTC staff to know the progress of the lost FAD reporting activity. In addition, it will improve the reporting level of its vessels in this regard. • The contents of these meetings and the information gathered will be made available to the evaluation team during years 2 and 3 of the Action Plan.
	Expected outcome:	Minutes of meetings held Progress reports
		Lead: TUNACONS Consulting and technical assistance: IATTC, IPIAP, WWF, ATUNEC, National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries (VAP)
Milestone Year 4	Surveillance: Milestone Year 4 (expected 2026) For the EPO region provide evidence that for VMEs there is (1) a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above and (2) some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved. Expected score: 80	
Client Action Plan	**Activities:**	Ongoing reporting during the previous 3 years on the FAD loss situation will serve to determine, in an objective manner, the proper performance of the existing strategy. This information will result in technical reports, the content of which will be made available at specific meetings between the parties and IATTC.
	Expected outcome:	Minutes of meetings held Progress reports Strategy status report
		Lead: TUNACONS Consulting and technical assistance: IATTC, IPIAP, WWF, ATUNEC, National Chamber of Fisheries, Galapagos Artisanal Associations, Galapagos National Park, Vice Ministry of Aquaculture and Fisheries (VAP)
Consultation on condition	Letters of support from UoA flag state authorities.	
Progress on Condition (Year 1)	There is the potential for lost or derelict FADs becoming beached on coral reefs or drifting into marine protected areas/marine reserves, both considered to be VMEs. To address this concern resolutions have been adopted by the IATTC with measures directed at CPCs	

| | requiring limitations on the number of active FADs deployed, data reporting requirements, FAD identification and geolocation procedures, and evidence on the use of lesser-entangling consistent with established requirements. For Condition 2-7 in the Year-1 surveillance to be on target TUNACONS must provide information on activities taken by the UoA to report lost FADs and fulfill FAD management requirements.

During the Year 1 Surveillance the clients implemented plan to investigate the impact of lost FADs on the structure and function of coral reefs and MPAs in the EPO region was reviewed and discussed. Central to the plan is the collection of data from UoA vessels when deploying/retrieving FADs as well as fishing activities on FADs, including type of FAD (e.g., biodegradable) and its characteristics (material), deployment location, and fishing activity on a FAD (including location of fishing and FAD identification number). To facilitate efficient data collection and data entry a digital template form in EXCEL format was developed for use by the TUNACONS UoA and is operational. Noting that collected data includes fishing activities on FADs the behavior of the fleet and spatial extent (and trajectory) of active/lost FADs can be monitored and assessed, and the total number of lost FADs estimated. Data collected using the digital template form was presented by the client at the Year-1 Surveillance, further noting they (TUNACONS) are in the process of contracting staff to analyze collected data and develop models to estimate the trajectory of active/lost FADs.

As additional evidence to support activities taken by TUNACONS to report lost FADs the "Caring for Galapagos Initiative" was presented and discussed. This program has among its objectives the recovery of FADs before they become stranded on islands in the Galapagos archipelago. Companies involved in the initiative communicate information on the position and drift direction of derelict FADs to the program coordinator. The information is then relayed to local Galapagos fisherman who intercept and collect the FAD before becoming beached. A report from the "Caring for Galapagos Initiative" for the period June-December 2022 has been published and is publicly available (https://tunacons.org/galapagos-cooperation/). Of the 13 reported derelict FADs 12 were successfully recovered near the islands of Isabela, Santa Cruz, Floreana, Baltra and San Cristóbal.

Since 2021 TUNACONS has been voluntarily testing the catchability and durability of ecofads (biodegradable FADs) relative to that of "regular" FADs. The voluntary program also conducted testing to determine degradation times of materials used in the construction of biodegradable FAD. The research is fully supported by IATTC and aligns with their call for CPCs to conduct research on FAD designs. A report of the research conducted from 2021-2022 was reviewed and discussed during the Year-1 surveillance (Report on the use of 20% of ecofads 2021 -2022). While still preliminary the results can be used to determine the longevity of biodegradable FADs in meeting their intended goal (reducing entanglement).

Noting that information on activities taken by the UoA to report lost FADs and fulfill FAD management requirements was provided and discussed during the Year-1 Surveillance this condition is considered to be on-target. |
| --- | --- |
| **Status** | Open. On target. Score remains at 75 |
| **Additional information** | No additional information |

Table 21. Condition 2-8. Habitats Information – All Flags

Performance Indicator	PI 2.4.3 (scoring issue b) Habitats information – Information adequacy for assessment of impacts	
Score	75 (FAD sets)	
Justification	See VME scoring rationale for PI 2.4.3 (b)	
Condition	Tunacons UoA FADs: By the third surveillance audit, provide evidence that available 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.	
Milestone Year 1	Surveillance: Milestone Year 1 (expected 2023) Develop and provide a plan for determining the spatial extent, timing, and location of FAD interactions with VMEs (coral reefs) in the EPO region. Expected score: 75	
Client Action Plan	**Activities:**	For the development of the actions proposed for elements 2.4.1 (b); 2.4.2 (a and b) it is necessary to have sufficient information to determine the real impact of FADs on Vulnerable Marine Ecosystems, especially on coral reefs and their intensity, and to establish management strategies to prevent these impacts from seriously and irreversibly affecting the structure and function of coral reefs. Therefore, and as a complement to the actions proposed for indicators 2.4.1 and 2.4.2, a plan will be implemented to determine the spatial extent, timing, and spatial location of interactions with VMEs (coral reefs).
	Expected outcome:	Lead: TUNACONS Consulting and technical assistance: IATTC, ARAP, other fleets present in the EPO.
		1. Copy of the Plan 2. Collaboration agreement between TUNACONS and other parties. 3. Minutes of meetings held 4. Progress reports
Milestone Year 2	Surveillance: Milestone Year 2 (expected 2024) Provide information on the number of FADs lost by the fishery that might interact with VMEs (coral reefs) in the EPO region. Expected score: 75	
Client Action Plan	**Activities:**	Shares actions 2 and 3 with action 2.4.2 (a and b): "TUNACONS will hold regular meetings with IATTC staff to learn about the progress of the lost FAD reporting activity. In addition, it will improve the reporting level of its vessels in this regard. The contents of these meetings and the information gathered will be made available to the evaluation team during years 2 and 3 of the Action Plan."

	Expected outcome:	Lead: TUNACONS
		Consulting and technical assistance:
		IATTC, , ARAP, other fleets present in the EPO.
		Minutes of meetings held
		Progress reports with updated statistics on the number of FADs lost and their characterization: (spatial extent, timing, and spatial location of interactions with VMEs (coral reefs)).
Milestone Year 3	Surveillance: Milestone Year 3 (expected 2025) For the EPO region provide evidence that available 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. Expected score: 80	
Client Action Plan	**Activities:**	During the third year, the activities of previous years will continue, and a workshop will be held to validate the information obtained from the activities in the different actions of indicators 2.4.1; 2.4.2 and 2.4.3 for their use in the framework of the fishery management processes.
	Expected outcome:	Lead: TUNACONS
		Consulting and technical assistance:
		IATTC, ARAP, other fleets present in the EPO.
		Minutes of meetings held
		Progress reports
		Technical report of the final workshop
Consultation on condition	Letters of support from UoA flag state authorities.	
Progress on Condition (Year 1)	In the EPO, FADs deployed above and below the equator move westward. While there is reliable information on the spatial locations of fishing, there is uncertainty on the number of active FADs deployed per vessel per month, the number of new FADs deployed per year, locations of FADs fished, and the number and location of lost FADs. This limited reliable information on the spatial extent, timing, and location of active and derelict FADs hinders a full understanding of the impacts from this gear (FADs) on VMEs in the EPO region. For Condition 2-8 in the Year-1 surveillance to be on target TUNACONS must develop and provide a plan for determining the spatial extent, timing, and location of FAD interactions with coral reefs in the EPO region. To this end the client provided a plan to collect requite data on the number and spatial extent of deployed/retrieved/lost FADs, and the location of FAD fishing activities. Note the plan discussed here is the same plan discussed under Condition 2-6. To facilitate efficient data collection and data entry a digital template form in EXCEL format was developed for use by the TUNACONS UoA. Noting that collected data includes fishing activities on FADs the behavior of the fleet can be monitored and assessed, the number of lost FADs estimated, and the trajectories of both active and lost FADs and potential interaction with coral reefs can be modeled.	

	TUNACONS has also spearheaded a program focused on reducing and eliminating the impact of FADs in sensitive habitats in Ecuador, the Galapagos archipelago. The program, "Caring for Galapagos Initiative", has among its objectives the recovery of FADs before they become stranded on islands in the archipelago. Companies involved in the initiative communicate information on the position and drift direction of derelict FADs to the program coordinator. The information is then relayed to local Galapagos fisherman who intercept and collect the FAD before becoming beached. Since IATTC requires FADs to be uniquely marked A report from the "Caring for Galapagos Initiative" for the period June-December 2022 was published and is publicly available (https://tunacons.org/galapagos-cooperation/). Of the 13 reported derelict FADs 12 were successfully recovered near the islands of Isabela, Santa Cruz, Floreana, Baltra and San Cristóbal. Noting a plan for determining the spatial extent, timing, and location of potential FAD interactions with coral reefs in the EPO region was provided as part of the Year-1 Surveillance and that the plan has been adopted by the TUNACONS based on interviews during the surveillance, this condition is considered on target.
Status	Open. On target. Score remains at 75
Additional information	No additional information

Table 22. Condition 3-1. Monitoring, control and surveillance mechanisms Panama

Performance Indicator	3.2.3a Monitoring, control and surveillance mechanisms Panama
Score	60
Justification	Executive decrees 160, 161 and 162 address administrative sanctions, mechanisms for the monitoring, control and surveillance, and the permitting of fishing and fishing support vessels respectively. Decree 160 of 2013 established a fishery monitoring and control centre to manage VMS information. It also made logbooks mandatory for vessels greater than 20m, specified required observer coverage and established a system of vessel inspection. Fishing and fishing support vessels licensed to operate in international waters are available online. In October 2019, Panama received a yellow card from the European Union over shortcomings in the mechanisms that the country has put in place to ensure compliance with its international obligations as flag, port and market state. These shortcomings include: - Deficiencies in terms of control, notably over the activities of the fishing and fishing related activities of vessels flying the flag of Panama. - Deficiencies in the implementation of the Port State Measures Agreement in order to prevent fish stemming from IUU fishing activities reaching national and international markets and to effectively prevent IUU vessels from receiving port services. MCS mechanisms are established by Executive decrees 160, 161 and 162 and NOAAs 2021 Biennial Report to the US Congress did not report any negative fishing certifications with respect to IUU fishing by vessels flagged to Panama. We can conclude that monitoring, control and surveillance mechanisms exist for Panama and that there is a reasonable expectation that they are effective However, there is insufficient evidence to conclude for Panama 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.

Condition	By the fourth year surveillance audit the client provides evidence to show that for Panama 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.
Milestone Year 1	Surveillance year 1 (expected 2023): By the first surveillance audit the client shall provide evidence of a completed review of the monitoring, control and surveillance system and identify gaps in Panama's ability to enforce relevant management measures, strategies and/or rules. Expected score: 60

Client Action Plan	**Activities:**	According to the justification given for this condition, Panama must be able to effectively implement monitoring, control and surveillance mechanisms in the fishery that demonstrate that the measures, strategies and/or standards for fisheries management are being effectively complied with both for vessels flying the Panamanian flag and for other flags that may be carrying out IUU fishing activities. Given that in Panama there are legal regulations and plans or measures to combat illegal fishing and that, in addition, the country is a signatory to international conventions and strategies focused on preventing, combating and discouraging IUU fishing actions, it is necessary, in order to improve the score of this indicator, that ARAP within 4 years provides evidence that the monitoring, control and surveillance system of the fishery demonstrates its ability to enforce compliance with existing management measures, strategies and/or regulations. To this end, TUNACONS will encourage through the Panamanian flagged fleet that the National Fisheries Authority makes adequate progress in achieving the stated objectives. To this end, it will hold periodic meetings and will make available to the National Authority the advisory and monitoring tools necessary for this purpose. During the first year of the condition, an analysis of Panama's current monitoring, control and surveillance system for fisheries will be carried out to identify gaps and deficiencies in the country's capacity to implement relevant management measures, strategies and/or standards in a comprehensive and effective manner. To this end, it will work with ARAP to encourage and provide the necessary support to implement the improvement process.
	Expected outcome:	Document reviewing the current monitoring, control and surveillance system, carried out by ARAP, including an analysis of the gaps and deficiencies in the system.
		Responsible Party/ies: Lead: ARAP Consulting and technical assistance: TUNACONS

Milestone Year 2	Surveillance year 2 (expected 2024): By the second surveillance the client shall provide evidence of a plan, including a timeline to create a monitoring, control and surveillance system that addresses identified gaps in Panama's ability to enforce relevant management measures, strategies and/or rules. Expected score: 60
Client Action Plan	**Activities:** Once the gaps have been identified in the first year, ARAP will design a work plan to carry out a thorough review of the country's fisheries monitoring, control and surveillance system. This Plan will include specific actions to

		adequately address the deficiencies found in the first year analysis with objectives, stakeholders and a timeline to achieve the expected results. The Plan will be developed by ARAP and TUNACONS and other stakeholders in the fishery will provide technical support for the best approach to the Plan's actions.
	Expected outcome:	Work plan published
		Responsible Party/ies: Lead: ARAP Consulting and technical assistance: TUNACONS
Milestone Year 3	Surveillance year 3 (expected 2025): By the third surveillance the client shall provide evidence that Panama has begun implementing a monitoring, control and surveillance system that improves Panama's ability to enforce relevant management measures, strategies and/or rules. Expected score 70	
Client Action Plan	**Activities:**	Once the ARAP is implementing the modifications and advances in its fisheries monitoring, control and surveillance system, the Client will request the information that allows accrediting that this system is working and that it has demonstrated its capacity to enforce compliance with the relevant management measures, strategies and/or standards. TUNACONS will hold meetings with the country's fishing authority and will request supporting information according to the objectives of the proposed condition.
	Expected outcome:	Evidence of the implementation of the work plan. Minutes of meetings
		Responsible Party/ies: Lead: ARAP Consulting and technical assistance: TUNACONS
Milestone Year 4	Surveillance Year 4 (expected 2026): By the fourth year surveillance audit the client provides evidence to show that for Panama 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. Expected score: 80	
Client Action Plan	**Activities:**	The Work Plan developed in the second year of the condition, for the improvement of the monitoring, control and surveillance system, will be implemented during the third year and will provide evidence of the improvement of Panama's capacity to enforce the relevant management measures, strategies and/or standards. TUNACONS will hold meetings with the ARAP to learn about the status of the implementation of the Plan and will provide its opinions regarding the implementation of the Plan, according to its experience in Ecuador with the vessels that are flagged in this country.

	Expected outcome:	Evidence of the results of the work plan, in accordance with the objectives proposed therein.
		Minutes of meetings
		Responsible Party/ies:
		Lead: ARAP
		Consulting and technical assistance:
		TUNACONS
Consultation on condition	See attached letters of support	
Progress on Condition (Year 1)	At the first surveillance audit the Aquatic Resources Authority of Panama (ARAP) provided an overview and review of the monitoring, control and surveillance system that identified gaps in Panama's ability to enforce relevant management measures, strategies and/or rules. Identified were matters associated with: ■ Legal frameworks and the implementation of Law 204 of March 18, 2021, regulating fishing and aquaculture in the Republic of Panama ■ Fishing fleet management and cooperation with foreign governments ■ Monitoring, control and surveillance systems including international service fleet tracking, catch documentation, and traceability, ■ Law enforcement and penalties. ARAP detailed plans for addressing these gaps and actions that are underway to implement these plans. There is evidence of both a completed review of the monitoring, control and surveillance system and of a plan to create a monitoring, control and surveillance system that addresses identified gaps in Panama's ability to enforce relevant management measures, strategies and/or rules meeting the milestones for the first and second surveillance audit milestones 1 and potentially the second surveillance audit.	
Status	Ahead of target	
Additional information	*No additional information*	

Table 23. Condition 3-2. Sanctions (Ecuador)

Performance Indicator	3.2.3b Sanctions (Ecuador)
Score	60
Justification	Ecuadorian authorities acknowledge that until recently they faced legal and practical issues to recover the fines, and cumbersome administrative procedures often result in practical impossibility to address recidivism. Information provided by Ecuadorian authorities to the European Commission indicates a previous uneven approach in relation to the application of sanctions, notably as regards the confiscation of illegal catches. As a result, the previous sanctioning system neither deprived the offenders from the benefits accruing from IUU fishing, nor deterrent.

Condition	By the fourth year surveillance the fishery client shall present evidence to demonstrate that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	
Milestone Year 1	Surveillance year 1 (Expected 2023): By the first surveillance audit provide evidence that sanctions to deal with non-compliance are applied. Expected score: 60	
Client Action Plan	**Activities:**	During the first year following certification, the Undersecretariat of Fisheries of Ecuador will provide evidence that the new system of sanctions in the current Fisheries Law is working and is effective as a deterrent to repeat offenses against the law, and that these sanctions are entered through the country's existing official collection system.
	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures. Minutes of meetings
		Responsible Party/ies: SRP Consulting and technical assistance: TUNACONS
Milestone Year 2	Surveillance year 2 (Expected 2024): By the second surveillance provide evidence that measures are in place to ensure sanctions to deal with non-compliance are being consistently applied Expected score: 60	
Client Action Plan	**Activities:**	During the second year following certification, the Undersecretariat of Fisheries of Ecuador will continue to provide evidence that the new system of sanctions in the current Fisheries Law is working
	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures. Minutes of meetings
		Responsible Party/ies: VAP Consulting and technical assistance: TUNACONS
Milestone Year 3	Surveillance year 3 (Expected 2025): By the third surveillance continue to provide evidence that measures are in place to ensure sanctions to deal with non-compliance are being *consistently* applied. Expected score 60	
Client Action Plan	**Activities:**	During the third year following certification, the Undersecretariat of Fisheries of Ecuador will continue to provide evidence that the new system of sanctions in the current Fisheries Law is working

	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures.
		Evidence of the collection of these sanctions and their effectiveness in preventing reoccurrence of the offenses.
		Minutes of meetings
		Responsible Party/ies:
		VAP
		Consulting and technical assistance:
		TUNACONS
Milestone Year 4	Surveillance Year 4 (Expected 2025):: By the fourth year surveillance the fishery client shall present evidence to demonstrate that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence	
	Expected score: 80	
Client Action Plan	**Activities:**	During the fourth year following certification, the Undersecretariat of Fisheries of Ecuador will provide evidence that the system of sanctions in the current Fisheries Law continues to work and is effective as a deterrent to repeat offenses against the law, and that these sanctions are entered through the country's existing official collection system.
	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures.
		Evidence of the collection of these sanctions and their effectiveness in preventing reoccurrence of the offenses.
		Minutes of meetings
		Responsible Party/ies:
		VAP
		Consulting and technical assistance:
		TUNACONS
Consultation on condition	See attached letters of support	

	At the first surveillance audit Ecuadorian management authorities (SRP) provided:
Progress on Condition (Year 1)	- A description of the administrative sanction system - A Classification of infractions and sanctions that are in force with the new Fisheries Law and Regulations. - Details of infractions since the new fishing law came into force in 2020, generally and by the UoA. - Number of investigations resulting in a sanction - Amounts collected for the sanctions imposed, and - Non-monetary sanctions linked to infractions (cancellation of fishing permits, criminal prosecution for illegal activities, etc.) Evidence of both monetary and non-monetary sanctions being imposed in each year from 2020 to 2023 was provided as well as the number of reoffending vessels each season. We note that: - Although financial administrative penalties are being imposed, only a small fraction of that amount has been paid. This is explained as being due to fishing companies pursuing appeals in the courts that can be time consuming and delay the final resolution of cases. - Non-financial penalties including gear and catch confiscation, company suspensions and vessels bans are commonly imposed on the tuna fleet - some 366 through 2023 (noting 2023 figures are still being complied). - The UoC received some, yet relatively sanctions, - The number of vessels being sanctioned a second time appears to be decreasing for 2020-to 2023 suggesting the scheme may be providing a deterrence. This is evidence that sanctions to deal with non-compliance are applied
Status	On target
Additional information	

Table 24. Condition 3-3. Sanctions- Panama

Performance Indicator	3.2.3b Sanctions Panama
Score	60
Justification	Panama passed Executive Decree No. 160 of June 6, 2013, which established procedures to impose administrative sanctions for violations of the regulations on aquatic, coastal/marine, and fishery resources included in Law 44 of November 23, 2006. Panama received a second yellow card in 2019 from the European Union because of deficiencies in measures and actions to deter IUU fishing. The European Commission determined that law enforcement is affected by inefficient administrative procedures and a lenient approach towards infringements. The EU concluded there are significant delays in the imposition of sanctions and the sanctioning system is neither depriving the offenders from the benefits accruing from IUU fishing, nor deterrent. Although sanctions to deal with non-

		compliance exist, there is no evidence that that are consistently applied or that they provide effective deterrence.
Condition		By the fourth year surveillance the fishery client shall present evidence to demonstrate that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.
Milestone Year 1		Surveillance year 1 (Expected 2023): By the first surveillance audit provide evidence that sanctions to deal with non-compliance are applied. Expected score: 60
Client Action Plan	**Activities:**	Panama's new fisheries law was approved in May 2021 so its practical application is very recent and has not given time to test its effectiveness in relation to the improvement of administrative procedures rated as ineffective and by a lenient attitude towards infractions in accordance with the criterion of the European Union in the justification for the second yellow card granted to the country.
		As a result, there are significant delays in the imposition of sanctions, and the system of sanctions does not deprive offenders of the benefits derived from IUU fishing nor does it have a deterrent effect.
		Consistent with the Condition attached to this indicator, in Year 4, TUNACONS shall provide evidence that Panama's legal framework demonstrates that sanctions are in place to address non-compliance, are consistently applied and are considered to be dissuasive.
		During the first year of this condition, ARAP will conduct a review of the system of sanctions and how they are being applied since the approval of the new Fisheries Law. This review will include of existing sanctions, their application and identify gaps in the available sanctions, their application and their ability to provide effective deterrence. This review will be driven by TUNACONS.
	Expected outcome:	Report on the review of the sanction system in accordance with the new fisheries law and its effective application
		Minutes of meetings held
		Responsible Party/ies:
		Lead: ARAP
		Consulting and technical assistance:
		TUNACONS
Milestone Year 2		Surveillance year 2 (Expected 2024): By the second surveillance provide evidence that measures are in place to ensure sanctions to deal with non-compliance are being consistently applied Expected score: 60
Client Action Plan	**Activities:**	During the second year, ARAP will continue to work on improving the implementation of the new sanction system based on the information obtained from the analysis of the new system in the first year of the condition.
		In this second year, a report will be made detailing the effectiveness of the sanction system to avoid recidivism of previously sanctioned vessels or individuals.
	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures.

		Minutes of meetings
		Responsible Party/ies: Lead: ARAP Consulting and technical assistance: TUNACONS
Milestone Year 3	Surveillance year 3 (Expected 2025): By the third surveillance continue to provide evidence that measures are in place to ensure sanctions to deal with non-compliance are being *consistently* applied. Expected score 60	
Client Action Plan	**Activities:**	During the third year, ARAP will continue to work on improving the implementation of the new sanction system based on the information obtained from the analysis of the new system in the second year of the condition. In this third year, a report will be made detailing the effectiveness of the sanction system to avoid recidivism of previously sanctioned vessels or individuals.
	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures. Evidence of the collection of these sanctions and their effectiveness in preventing reoccurrence of the offenses. Minutes of meetings
		Responsible Party/ies: Lead: ARAP Consulting and technical assistance: TUNACONS
Milestone Year 4	Surveillance Year 4 (Expected 2025): By the fourth-year surveillance the fishery client shall present evidence to demonstrate that sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence Expected score: 80	
Client Action Plan	**Activities:**	During the fourth year following certification, the ARAP will provide evidence that the system of sanctions in the current Fisheries Law continues to work and is effective as a deterrent to repeat offenses against the law, and that these sanctions are entered through the country's existing official collection system.
	Expected outcome:	Evidence of sanctions imposed by the Fishing Authority for illegal fishing procedures. Evidence of the collection of these sanctions and their effectiveness in preventing reoccurrence of the offenses. Minutes of meetings
		Responsible Party/ies: Lead: ARAP Consulting and technical assistance:

		TUNACONS
Consultation on condition	See attached letters of support	
Progress on Condition (Year 1)	At the first surveillance audit ARAP provided: ▪ A description of the administrative sanction system. ▪ A list of 157 Chinese flagged vessels associate with two companies that Panamanian companies and flagged vessels are prohibited form doing business with. ▪ Details of infractions since 2021 to 2023. ▪ Outcomes of the investigation including those resulting in a sanction ▪ Amounts collected for the sanctions imposed, and ▪ Non-monetary sanctions linked to infractions (cancellation of fishing permits, criminal prosecution for illegal activities, etc). This is evidence that sanctions to deal with non-compliance are applied.	
Status	On target	
Additional information		

3.4   New conditions

Table 25. Condition 1-0 – Scope Extension Condition Tunacons UoA- EPO Skipjack

Performance Indicator	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place		
Score	75		
Justification			
Condition	By the fifth surveillance audit (2028), the client must demonstrate that the HCRs are likely to be robust to the main uncertainties.		
Milestones Year 1	**Year 1 (2024) :** the client will provide evidence that it is actively working to support completion of the SKJ assessment in 2024 and the identification of main uncertainties inherent in the operation of the HCRs. *Expected score: 75*		
Client Action Plan	**Activities:**	- Encourage the IATTC to complete the SKJ stock assessment in 2024, including: 1. incorporating new CPUEs 2. Evaluate the responsiveness of the existing HCR to changes in F - Maintain institutional arrangements for the provision of FAD data (fine scale) for the production of indices of abundance to contribute to improve the stock assessments.	
	Expected outcome:	- Emails with the management bodies - Completed SKJ stock assessment report - Report identifying main uncertainties inherent in the operation of the HCR - Minutes of meetings	
	Responsible Party/ies:	TUNACONS and IATTC	
Milestone Year 2	**Year 2 (2025):** Either demonstrate that the HCRs are likely to be robust to the main uncertainties or show evidence that there is a plan in place to make the HCRs likely to be robust to the main uncertainties. *Expected score: 75*		
Client Action Plan	**Activities:**	- Encourage that the following work is carried out at the IATTC: robust HCRs are in place, taking into account the main uncertainties for skipjack tuna that are consistent with the harvest strategy. TUNACONS will engage with other relevant stakeholders in the promotion of these activities.	
	Expected outcome:	- Emails with the management bodies - Provide evidence that the HCRs are likely to be robust to the main uncertainties or demonstrate there is a plan in place to progress the development of HCRs that are likely to be robust to the main uncertainties identified in Year 1. - Minutes of the meeting	

	Responsible Party/ies:	TUNACONS and IATTC
Milestone Year 3	**Year 3 (2026):** If the HCRs are not likely to be robust to the main uncertainties, present evidence that the plan adopted in Year 2 to address main uncertainties is being followed and communicate preliminary results. *Expected score: 75*	
Client Action Plan	**Activities:**	As above.
	Expected outcome:	- Emails with the management bodies - Provide evidence that the plan adopted in Year 2 to address main uncertainties is being followed. - Minutes of the meeting
	Responsible Party/ies:	TUNACONS and IATTC
Milestone Year 4	**Year 4 (2027):** Present evidence that the plan adopted in year 2 to address main uncertainties continues to progress and communicate final options to address main uncertainties. *Expected score: 75*	
Client Action Plan	**Activities:**	As above.
	Expected outcome:	- Emails with the management bodies - Provide evidence that the plan adopted in Year 2 to address main uncertainties continues to progress and present provisional findings if available. - Minutes of the meeting
	Responsible Party/ies:	TUNACONS and IATTC
Milestone Year 5	**Year 5 (2028):** Demonstrate that the HCRs are likely to be robust to the main uncertainties. *Expected score: 80*	
Client Action Plan	**Activities:**	By the fifth surveillance audit (2028), the client must demonstrate that the HCRs are likely to be robust to the main uncertainties.
	Expected outcome:	- Emails with the management bodies - Report demonstrating the HCRs are likely to be robust to the main uncertainties. - Minutes of the meeting
	Responsible Party/ies:	TUNACONS and IATTC
Consultation on condition		

3.5 Client Action Plan

Please see section 3.3 for the Client Action Plan.

4 Appendices

4.1 Evaluation Processes and Techniques

4.1.1 Site Visits

An audit plan for the site visit was developed and provided by SCS to the client, management, scientists, and interested stakeholders before the meeting began.

The surveillance audit site visit (onsite meeting) was held in Manta, Ecuador from January 8th- 9th, 2023. Site visit activities included meeting with the client and relevant personnel as well as interested stakeholders. A list of key meetings and participants is provided in Table 26.

Table 26. Audit Plan: Key Meetings and Locations

Meeting Date	Location	Topic	Attendees
8 January 2023	Manta, Ecuador	- Client Opening Meeting - Overview of MSC assessment process - Brief explanation of transition to version 3.0 - Discussion on open conditions - Questions from client	- TUNACONS Members/Vessel Owners - Assessment Team Members - ARAP
9 January 2023	Manta Ecuador	- Continued discussion on open conditions - Client Closing Meeting including summary of preliminary findings and next steps	- TUNACONS Members/Vessel Owners - Assessment Team Members - SRP

4.1.2 Stakeholder Participation

The CAB identified relevant stakeholders for this fishery through the professional networks of SCS and the audit team as well as consulting with organizations working in the area where the fishery operates. A list of different organizations was compiled including representatives from the government, private sectors, and non-profit sectors working at regional and national levels. Stakeholders on the list received an email with the surveillance announcement, the MSC stakeholder template to provide input, and an invitation to participate at the onsite meeting. The announcement was sent on October 20th, 2023, for the site visit conducted in Ecuador from January 8th-11th, 2023. The announcement was also published and contact information (email) for the CAB representative was made available on the Track a Fishery website.

Stakeholder comments received prior to the closing of the 30-day consultation period are included in Section 4.2.

No stakeholders requested a private meeting with the team.

4.2   Stakeholder input

Full stakeholder input and CAB responses are provided Table 28.

Table 27. Summary of Stakeholder Submissions

Stakeholder Name/Organization	Evidence	Input Date
ISSF	Template for Stakeholder Input into Surveillance Audits v1.0	November 2023

Table 28. Stakeholder Comments and Responses from Team by Performance Indicator

HS Advocacy ISSF urges the CAB to share the following specific actions with the client, as they are expected to contribute to meeting the existing conditions. 1) Publicly support the high-level appeals for RFMOs developed by global NGOs that are participants in the NGO Tuna Forum 2) Advocate to the flag state delegations of the fishery and all other parties associated with the fishery at IATTC to take a strong public position on advancing harvest strategies and HCRs, in line with ISSF's RFMO priorities and ISSF's Position statements. 3) Publicly support ISSF Position Statements that contain detailed asks to the RFMOs on Harvest Strategies and Harvest Control Rules, as well as on other issues like Electronic Monitoring, transshipment, etc. 4) Support technical work of the RFMO as well as capacity workshops on Management Strategy Evaluation in the region so as to increase the leverage of RFMO members for the discussion and adoption of robust Harvest Strategies and HCRs.	ISSF RFMO Priorities ISSF IATTC Position Statements: https://www.iss-foundation.org/downloads/34576/?tmstv=1697704200 https://ngotunaforum.org/rfmo-advocacy/	Thank you for your comment. We have shared these actions with the client via report review.	Accepted (condition on target)
Transition to v3.0 The fishery should elect to transition to the new MSC standard 3.0 immediately. Transitioning to the new standard entails the adoption of further important sustainability practices that ISSF is currently advocating for, including: · Prohibiting shark finning · Higher levels of monitoring and surveillance · Improved management of ETP impacts	https://www.msc.org/species/tuna/what-msc-fisheries-standard-version-3-means-for-tuna	Thank you for your comment. We have shared your suggestions to the client via report review. Furthermore, SCS has sent out communication to all clients outlining the implementation timelines and changes of the new standard.	Accepted (condition on target)
Fishery description ISSF acknowledges the fishery's efforts in FAD management but emphasizes the need for more detailed information. The fishery should provide a comprehensive description of its FAD operations, including drifting. This description should include data like: the annual deployment of FADs; FAD design and materials; FAD marking methods; the number of tracking buoys used annually; and the number of lost and abandoned FADs, as well as FADs recovered. These details will facilitate stakeholder input and help identify areas	ISSF 2023-10: Recommended Best Practices for FAD Management in Tropical Tuna Purse Seine Fisheries (Update to ISSF 2019-11).	Thank you for your comments and reference to technical report ISSF 2023-10. Noting the increasing use of dFADs in purse fisheries worldwide (including in the EPO) and the comprehensive nature of the technical report, the link to the report will be forwarded to TUNACONS. While sufficient knowledge may be publicly available, as pointed out, data to address and	Accepted (condition on target)

for improvement. The action plan aims to close the condition on FAD management by the fourth surveillance audit, which seems too long an amount of time. Sufficient knowledge is publicly available from the extensive ISSF body of research and best practices to allow the fishery to have a more rapid transition to sustainable FAD management practices.		close the condition on FAD management is insufficient, also as pointed out. Therefore, allowing time for the fishery to adopt, implement, and collect sufficient data to close the condition is necessary and setting the closure of this condition by the fourth surveillance provides sufficient time to collect requisite data. Note this condition can be closed earlier than the fourth surveillance if sufficient information is available as detailed in MSC guidelines and binding IATTC Resolutions. During the Year 1 Surveillance TUNACONS presented their plan to investigate the impact of lost FADs on the structure and function of coral reefs and MPAs in the EPO region. Central to the plan is the collection of data from UoA vessels when deploying/retrieving FADs as well as fishing activities on FADs, including type of FAD (e.g., biodegradable) and its characteristics (material), deployment location, and fishing activity on a FAD (including location of fishing and FAD identification number). To facilitate efficient data collection and data entry a digital template form in EXCEL format was developed for use by the TUNACONS UoA. The plan was adopted by TUNACONS and provisional data is already being collected. Noting that collected data includes fishing activities on FADs the behavior of the fleet can be monitored and assessed, the number of lost FADs estimated, and the trajectories of both active and lost FADs and potential interaction with VMEs can be modeled. TUNACONS has also spearheaded a program focused on reducing and eliminating the impact

| | | of FADs in sensitive habitats in Ecuador, the Galapagos archipelago. The program, "Caring for Galapagos Initiative", has among its objectives the recovery of FADs before they become stranded on islands in the archipelago. Additionally, since 2021 TUNACONS has been voluntarily testing the catchability and durability of ecofads (biodegradable FADs) relative to that of "regular" FADs. The voluntary program also conducted testing to determine degradation times of materials used in the construction of biodegradable FAD. The research is fully supported by IATTC and aligns with their call for CPCs to conduct research on FAD designs. A report of the research conducted from 2021-2022 was reviewed and discussed during the Year-1 surveillance (Report on the use of 20% of ecofads 2021 - 2022). While still preliminary the results can be used to determine the longevity of biodegradable FADs in meeting their intended goal (reducing entanglement). | |

4.3 Revised Surveillance Program

Table 29. Fishery surveillance program

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

Table 30. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1	July 2022	January 2024	The deviation of the audit timeline outlined in FCP v2.3 7.29.8.1 is justified by the limited availability of audit team members to conduct the surveillance in person.

4.4 Harmonised Fishery Assessments

4.4.1 Principle 1

The fisheries that overlap with this assessment are presented in tables 32 and 36.

Table 31. Overlapping Units of Assessment – EPO skipjack tuna

Standard v2.0/2.01 Fishery Name Fisheries with Skipjack Under Assessment	CAB	Report Version	1.1.1 Over all Score	1.1.2 Over all Score	1.2.1 Over all Score	1.2.2 Over all Score	1.2.3 Over all Score	1.2.4 Over all Score
Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery **- Skipjack Scope Extension**	SCS Global Servic es	SKJ Scope PCR June 2023	90	N/A	80	80	80	90
Eastern Pacific Ecuador Purse Seine Tropical Tuna Fishery (FSC and FAD set fishery) - **Skipjack Scope Extension**	Lloyds Regist er	SKJ Scope Ext – PCR December 2023	100	N/A	85	75	80	90
US Pacific Tuna Group Purse Seine FSC and FAD Set Fishery- **Skipjack Scope Extension**	SCS Global	SKJ Scope Ext- CPRDR June 2023	100	N/A	85	75	80	90

	Servic es							
Atún Sostenible EPO Panamá Tuna Fishery	Contr ol Union	ACDR March 2023	> 80	N/A	60-79	60-79	>80	60-79
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery **Skipjack Scope Extension**	Lloyds Regist er	PCR June 2023	100	N/A	85	75	80	90
MSC Harmonized Scores (March 2023)			90	N/A	80	80	80	90
MSC Harmonized Scores (June 2023)			100	N/A	85	75	80	90

Changes have occurred in overlapping fisheries since the last assessment for Eastern Pacific Ocean tropical tuna – purse seine (TUNACONS) fishery. They are documented in the following tables.

Table 32. Overlapping Units of Assessment – supporting information

Supporting information
The assessment overlaps with a few other fisheries that also target skipjack in the Eastern Pacific. Currently no other fisheries have certified EPO Skipjack, given scores for Skipjack in the EPO for Principle 1 failed to reach an aggregate score of 80. The assessment team used the previous assessment, including the previous report for this fishery, in their baseline the rationale and scores. New information was employed to justify new scores. SCS will convene a harmonization discussion with other relevant CABs to agree on scores. Scoring in this report is based on the first stock assessment for skipjack tuna since 2005 and represents the first MSC assessment using such information. Harmonization discussions were initiated and the scores and outcome from this assessment were shared with CABs representing overlapping fisheries and currently undergoing assessment. An initial discussion with LRQA was initiated on 23 March 2023 to discuss SCS scoring and further discussions will occur as needed after they have completed their site visits and review available information. March 2023- An initial discussion with LRQA was initiated on 23 March 2023 to discuss SCS Global Services (SCS) scorings. LRQA have carried out a preliminary review of the SCS ACDR scorings and preliminarily agreed that all PIs score ≥80, however at this point no formal scores were adopted. . No further discussions occurred and LRQA has not proposed any rescoring. Subsequently, after the publication of the ACDR reports for the LRQA fisheries, there are some inconsistencies in scoring. Following MSC FPC v2.2. requirement PB1.3.4.5, if there is no agreement among teams, the lowest score shall be adopted. It was decided to convene another harmonization meeting as soon as possible to see if consensus on scoring could be reached. June 2023- A follow up meeting between SCS, CU, and LRQA was convened on June 13, 2023, to discuss and resolve P1 scoring differences in overlapping fisheries. In attendance were P1 Assessors and CAB representatives for all overlapping fisheries and consensus on scoring was reached. The harmonized scored are noted in the table above.
Has there been an Annual Harmonisation meeting of which the results will be adopted? / **Yes**
Date of harmonisation meeting / **13/06/23**

If applicable, describe the meeting outcome
There was agreement on scoring among all overlapping fisheries; P1 scores for skipjack tuna in the EPO are harmonized.

Table 33. Overlapping Units of Assessment –EPO yellowfin tuna

Standard v2.0/2.01	CAB	Report Version	1.1.1	1.1.2	1.2.1	1.2.2	1.2.3	1.2.4
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery	Lloyds Register	Final Report Oct 2021	80	n/a	80	80	80	95
Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery	SCS Global Services	ACDR Sep 2020	80	n/a	80	80	80	95
Eastern Pacific Purse Seine Skipjack and Yellowfin tuna fishery (FSC and FAD set fishery)	Lloyds Register	ACDR Dec 2020	≥80	n/a	≥80	≥80	≥80	≥80
Fiji Albacore, Yellowfin and Bigeye Tuna longline	Lloyds Register	SV3 June 2021	90	n/a	70	60	90	95
French Polynesia albacore and yellowfin longline fishery	Control Union	SV2 July 2021	80	n/a	80	80	80	90
Hawaii longline swordfish, bigeye and yellowfin tuna fishery	Control Union	ACDR Oct 2021	≥80	n/a	≥80	≥80	≥80	≥80
Northeastern Tropical Pacific Purse Seine yellowfin and skipjack tuna fishery	Control Union	SV2 Dec 2020	100	n/a	95	80	80	95
US Pacific Tuna Group Purse Seine FSC and FAD Set Fishery	SCS Global Services	ACDR May 2021	>80	n/a	>80	>80	>80	≥80
Pacific and Indian Ocean Longline Tuna and Swordfish (Ocean Family)	SCS Global Services	Under Assessment	≥80	n/a	≥80	≥80	≥80	≥80
MSC Harmonized Scores 2021			80	n/a	80	80	80	95

Table 34. Overlapping fishery – supporting information

Supporting information
Describe any background or supporting information relevant to the harmonization activities, processes and outcomes.
Initial harmonization discussions for yellowfin tuna commenced in March 2019 with assessors from each of the CABs identified in Table 36. Given that benchmark assessments for yellowfin tuna were scheduled for completion in 2020, further harmonization discussions were postponed until 4 September 2020, at which point discussions between CAB assessors commenced. During the meeting it was determined that a recently published ACDR for

the OPAGAC Tuna Fishery did not rely on the most recent (2020) data and information for yellowfin tuna ~~and~~ that rescoring using the new data (2020 assessment) would need to occur. It was further determined that SCS Global Services had conducted draft scoring using the new information and agreed to share P1 scores for yellowfin~~with~~ interested CABs. Other P1 assessors shared their scores and during subsequent discussions on 15 September 2020 scores for yellowfin tuna in the EPO were harmonized to the extent that no material differences in scoring were identified. ~~‒~~	
Was either FCP v2.1 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonizing?	**Yes**
Date of harmonization meeting	15/03/2019 (initial) 04/09/2020 15/09/2020

Table 35. Rationale for scoring differences – yellowfin tuna

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.1 Annex PB1.3.6)
The differences in scoring noted above in Table 6 under 1.2.3 have been discussed and the fisheries have agreed to harmonize with the agreed upon scores at the time of their next audit.

4.4.2   Principle 2

This surveillance the score for PI 2.1.1 SI a EPO BET tuna was updated and the condition was removed, harmonization requirements for PI 2.1.1a Table GPB1 state that "For stocks that are 'main' in both UoAs, harmonise status relative to PRI (at SG60,80 and 100), and if below PRI, harmonise cumulative impacts at SG80 (not at SG60)." The proposed changes in scores were shared with overlapping fisheries, these scores were agreed on March 2024.

As per the MSC Harmonization database the following fisheries have EPO BET has a scoring element under PI 2.1.1:

Fishery	Report Version	Score PI 2.1.1 SI a
French Polynesia albacore, yellowfin and swordfish longline fishery	ACDR, published Sep 2023	60
Hawaii longline swordfish, bigeye and yellowfin tuna fishery	PCR, published Oct 2022	60
US Pacific Tuna Group Purse Seine FSC and FAD Set Fishery	Year 1 Surveillance Report, published October 2023	60

[Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery](#)	Year 1 Surveillance Report, published March 2024	80

4.4.3   Principle 3

There have been no changes in scoring or rationale for relevant PIs for Principle 3 for Eastern Pacific Ocean tropical tuna – purse seine (TUNACONS) fishery/UoA since the last assessment.

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