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

MSC Fishery Scope Extension- EPO Skipjack

Announcement Comment Draft Report (ACDR)

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3 Glossary

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened or Protected species
FAO	Food and Agriculture Organization of the United Nations
FCM	Fisheries Certification Methodology
IFQ	Individual Fishing Quota
ITQ	Individual Transferable Quota
Kg	Kilogram
Lb.	Pound, equivalent to roughly 2.2 kg
LOA	Length Over-All
M	Million (lbs.)
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
nm	nautical mile
OFL	Over-Fishing Level
PI	Performance Indicator
SCS	SCS Global Services
SI	Scoring Issue
SSB	Spawning Stock Biomass
t and mt	metric ton
TAC	Total Allowable Catch
WWF	World Wildlife Fund

4 Executive Summary

This report presents the Marine Stewardship Council (MSC) scope extension to the existing certified fishery, Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS), seeking to modify its UoA(s) by moving, Skipjack tuna, a species previously considered in Principle 2 to Principle 1. Following Annex PE (MSC FCP v2.2 clause 7.27.10) a gap analysis was conducted which confirmed that all Principle 2 and Principle 3 components are held in common, thus only Principle 1 for Skipjack is included in this assessment report. The assessment was conducted, and the findings were prepared by SCS Global Services (SCS), an MSC-accredited, independent, third-party conformity assessment body, in accordance with the MSC Principles and Criteria for sustainable fishing. The assessment complies with the MSC Fisheries Certification Process (FCP v2.2) and the MSC Fisheries Standard v2.01.

Table 1. Unit of Certification(s) and Unit of Assessment(s) Scope extension in blue

UoA	Fishing fleet (FCP V2.1 7.5.2.c)	Method of Capture (FCP V2.1 7.5.2.b)	Stock/Species (FCP V2.1 7.5.2.a)
1	Select vessels flagged to **Ecuador**, fishing in the EEZs of Ecuador and the international waters in the IATTC Convention area.	Purse-seine on free sets	Eastern Pacific Ocean Yellowfin Tuna (Thunnus albacares) stock
2		Purse-seine on FAD sets	
3	Select vessels flagged to **Panama** and US fishing in the international waters in the IATTC Convention area.	Purse-seine on free sets	
4		Purse-seine on FAD sets	
5	Select vessels flagged to the **US** fishing in the EEZs of the US and the international waters in the IATTC Convention area.	Purse-seine on free sets	
6		Purse-seine on FAD sets	
7	Select vessels from the **US California Coastal Small Purse Seine fleet** flagged to the US fishing in the EEZs of the US and the international waters in the IATTC Convention area.	Purse-seine on free sets	
8	Select vessels flagged to **Ecuador**, fishing in the EEZs of Ecuador and the international waters in the IATTC Convention area.	Purse-seine on free sets	Eastern Pacific Ocean Skipjack (Katsuwonus pelamis) stock
9		Purse-seine on FAD sets	
10	Select vessels flagged to **Panama** and US fishing in the international waters in the IATTC Convention area.	Purse-seine on free sets	
11		Purse-seine on FAD sets	
12	Select vessels flagged to the **US** fishing in the EEZs of the US and the international waters in the IATTC Convention area.	Purse-seine on free sets	
13		Purse-seine on FAD sets	
14	Select vessels from the **US California Coastal Small Purse Seine fleet** flagged to the US fishing in the EEZs of the US and the international waters in the IATTC Convention area.	Purse-seine on free sets	

Fishery Operations Overview

The fishery is comprised of a group of larger purse seine vessels operating in the Exclusive Economic Zones (EEZs) and international waters in the IATTC (Inter American Tropical Tuna Commission) Convention Area and fleet of smaller purse seine vessels operating out of California within the US EEZ. The larger fleet is referred to as the 'TUNACONS UoAs' and is comprised of purse seine vessels from five fishing companies

and three countries that set on both free schools and Fish Aggregating Devices (FADs). Fishing vessel carrying capacities range from 270 t to 2,304 t and fishing generally occurs in high seas areas of the EPO equatorial region. The California Coastal Small Purse Seine UoA is comprised of three small purse-seine vessels flagged to the U.S. with carrying capacities ranges from 127 t to 145 t that set exclusively on free schools. Fishing is conducted in waters adjacent to San Pedro, California U.S.A.

Assessment Overview

The team selected to undertake the assessment includes one team member, Dr. Gerard DiNardo, Principle 1 Expert and Lead, who meets the criteria in Table PC2 for Scope Extensions (MSC FCP v2.2 PE1.2.4.1).

The team met with fishery representatives, scientists, and stakeholders remotely on November 12 and December 8, 2022. Documents were presented by fishery representatives and fisheries scientists. Client representatives were thorough in their approach and provided the assessment team with supporting documents. The original announcement for the assessment indicates that the Risk-based framework (RBF) would not be needed.

Summary of Findings

For Principle 1, the average of all draft PI scores for skipjack tuna in the EPO is at or above 80. As all PI scores are at or above 80 there are no conditions. The high scores are a direct result of the outcomes associated with the 2022 interim skipjack stock assessment and the 2022 external review of the assessment. The review panel endorsed the interim assessment and determined that the established TRP for skipjack tuna (30%S0) represents a conservative biomass proxy for MSY. Additional analysis presented by IATTC staff and supported by the review panel show that even when the TPR increases to 40% of the no-fishing level, the chances of being below this target are low. The panel also provided short- and long-term roadmaps to advance the benchmark skipjack assessment scheduled to be completed in 2024.

5 Report Details

5.1 Authorship and peer review details

Audit Team

Gabriela Anhalzer, SCS Global Services, Team Lead

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.

Ms. Gabriela Anhalzer meets the MSC requirements for a Team Leader as described in PC2 (FCP v2.2):

- ✓ Completed training meeting requirements in Table 1 of GCRV2.4, as evidenced by the certificate of passing auditor training for the ISO course 19011 (2016).
- ✓ Holds a Masters degree in coastal environmental management, and has over five years' experience in the fisheries sector related to stakeholder management and facilitation.
- ✓ Completed of the latest MSC training modules applicable to this assessment within the past five years (2019) .
- ✓ Has undertaken several MSC fishery assessment and surveillance site visits as a team member in the last 5 years including: Surveillance for the southern Gulf of California Thread Herring Fishery in Sinaloa & Nayarit Mexico, the Small pelagics fishery in Sonora, Gulf of California, US Atlantic Sea Scallop Fishery, US Atlantic Spiny Dogfish Fishery, and the North-eastern Tropical Pacific Purse Seine Yellowfin and Skipjack Tuna Fishery.
- ✓ Has demonstrated experience in applying different types of interviewing and facilitation techniques, as verified by SCS records audit witness records and previous audit reports.
- ✓ Is competent in the MSC Standard and current Certification Requirements, auditing techniques, and communication and stakeholder facilitation techniques, as verified by the completion of ISO 19011 auditor training (2016).
- ✓ Has affirmed she holds no conflict of interest.
- ✓ Will attend the site visit remotely (per Covid-19 derogation 3).

Dr. Gerard DiNardo, Sr. Technical Specialist – SCS Global Services, Principle 1

Dr. Gerard DiNardo has over 25 years of experience as a research fishery scientist and senior manager for NOAA Fisheries in the United States, as well as extensive knowledge, understanding, and involvement in fishery issues and processes of tuna-RFMOs and RFOs. Ensuring sustainable development and management of fisheries, including the identification of research and plans of action to support effective management decision making has been the focus throughout his career, and with a strong background and understanding of international fisheries and MSC. He holds an MSc from Long Island University, C.W. Post Center and a Ph.D from University of Maryland, where his dissertation topic was FISHMAP: An Expert System for Sampling Fish Populations.

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

Dr. DiNardo has served as Principal 1 and Principal 2 Team member on several purse-seine and longline MSC fishery tuna assessments managed under IOTC, WCPFC, IATTC, and ICCAT RFMOs. He offers extensive experience assessing the status and management of tuna stocks and their impacts on ecosystem elements in accordance with the MSC Standard and Fishery Certification Process.

Dr. Gerard DiNardo meets the MSC requirements for a Team Member as described in PC2 (FCP v2.2):

- ✓ With relevant degree (Ph.D. from the University of Maryland) and over 25 years of experience as a research fishery scientist and senior manager for NOAA Fisheries in the United States, verified by CV.
- ✓ Has passed the MSC compulsory training modules for Team Members within the last 5 years (2019).
- ✓ Affirms he has no conflict of interest in conducting this assessment.
- ✓ Will attend the site visit remotely (per Covid-19 derogation 3).

The team collectively meets the MSC Table PC3 team qualification and competency criteria:

- ✓ Dr. Gerard DiNardo meets the qualifications for fish stock assessment with Dr. 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. Dr. DiNardo has Primary authorship of roughly 30 peer-reviewed stock assessments of a type used by the fishery under assessment. In addition, Dr. Dinardo has 26 years of experience with NOAA, National Marine Fisheries Service as a stock assessment scientist and later Program Leader for

the Stock Assessment Program at the Pacific Island Fisheries Science Center and later the Southwest Fisheries Science Center as Director of the Fisheries Resource Division. In this capacity he was responsible for conducting stock assessments on highly migratory species (i.e., tuna), demersal fish species (snappers and groupers), and crustaceans (lobsters) in the Pacific Ocean, and overseeing the application of modelling platforms to advance stock assessment research.

- ✓ Dr. 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 As evidenced by his research and publications on post release mortality and development of the HI longline observer program. Dr. DiNardo also Chaired the International Scientific Committee (2010- 2017), an RFO tasked with completing stock assessments for the WCPFC on highly migratory stocks in the North Pacific Ocean.
- ✓ Understanding of the CoC Standard and CoC Certification Requirements. As evidenced by Team Member [Ms. Gabriela Anhalzer] completing the MSC's Traceability training module (2019).

Peer Reviewers

Peer reviewer information to be completed at the Public Comment Draft Report Stage.

5.2 Version details

Table 2. Fisheries program documents versions

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

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

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

6.1.1 Unit(s) of Assessment

The Unit of Assessment includes yellowfin and skipjack caught by the select 46 Ecuadorian, Panamanian, and US vessels that belong to members of TUNACONs using purse-seine gear (both free school and FAD[1]) fishing within the IATTC and for some vessels, within Ecuador's EEZ management area. The purse-seine vessels include class 6 (subject to IATTC mandatory observer coverage) and class 3-5. These vessels are referred to as the TUNACONs fleet. In addition, there are three other vessels from the California Coastal small purse-seine vessels flagged to the US fishing in the IATTC.

This fishery has been found to meet scope requirements (FCP v2.1 7.4) for MSC fishery assessments as it

- Does not operate under a controversial unilateral exemption to an international agreement, use destructive fishing practices, does not target amphibians, birds, reptiles or mammals and is not overwhelmed by the dispute. (FCP 7.4.2.1, 7.4.2.2, 7.4.3, 7.4.5)
- The fishery does not engage in shark finning, has mechanisms for resolving disputes (FCP 7.4.5.1), and has not previously failed assessment or had a certificate withdrawn.
- Is an enhanced fishery based on the use of FADs, is not based on an introduced species and does not represent an inseparable or practically inseparable species (FCP 7.5.1, 7.5.2, 7.5.8-13).
- Does overlap with other MSC certified or applicant fishery (7.5.14), and scores have been harmonized following FCP Annex PB. For a list of overlapping fisheries see the Harmonised fishery assessments section in this report.
- And does not include an entity successfully prosecuted for violating forced labor laws (7.4.4)
- The Unit of Assessment, the Unit of Certification, and eligible fishers have been clearly defined, traceability risks characterized, and the client has provided a clear indication of their position relative to certificate sharing (7.5.1-7.7.7).

[1] FADs are defined in this assessment to include drifting logs, and anchored/drifting FADs.

Table 3. Unit(s) of Assessment (UoA) TUNACONs free school and FAD fleet. Scope Extension components in blue

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: US

Table 4. 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.

6.1.2 Unit(s) of Certification

Unit of Assessment and Unit of Certification are the same size.

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

This fishery involves fish aggregation devices (FADs) deployed, which under G7.4.2.12 (MSC FCP v2.2) are considered a "habitat modification" and subject to fishery enhancement considerations. The assessment

team evaluated the use of FADs in the UoA against the MSC eligibility criteria in Table 1 of the MSC FCP v2.2 and determined that FADs meet the following requirements:

Any modifications to the habitat of the stock are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure and function.

Following clause 7.7.1.2 d in the MSC FCP v2.2, the CAB shall assess the impacts of habitat modification under the habitats and ecosystems components in Principle 2, considering environmental impacts including:

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

Reversible modification of habitat: FADs are deployed in the epipelagic zone often in relatively deep waters where there is no habitat impact, however, FADs may also transition into derelict and/or stranded gear that may entangle with benthic habitat when lost and/or not recovered. These potential indirect impacts of drifting FADs are considered reversible once FADs are removed. Additionally, the assessment team considered the potential for drifting FADs to cause serious or irreversible harm in PIs 2.4.x. Derelict FADS are considered abandoned fishing gear. The MSC intent regarding impacts from gear loss on habitat is described in Box GSA7 (MSC Standard v2.01), indicating that the impacts of gear loss on habitats are considered under the Habitats components, specifically at the SG100 level for PI 2.4.2, where fisheries are required to have a management strategy in place even for gears that do not regularly contact benthic habitats since gear loss could occur. Considering a broader interpretation of the MSC's intent (in line with clause 7.7.1.2) the assessment team took a more precautionary approach categorizing coral reefs that are impacted by abandoned fishing gear as VMEs.

The assessment team noted that the use of FADs is subject to management measures and controls at both national and IATTC levels. Though measures are in place, evidence of habitat impacts on VMEs and other habitat types due to lost or derelict FADs require actions by the UoA to ensure measures are implemented. As a result, the assessment team issued conditions to ensure adequate progress for implementation of relevant management measures and controls within the UoA (see PIs 2.4.X).

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

6.2 Assessment results overview

6.2.1 Determination, formal conclusion and agreement

The determination of the fishery is drafted at the final report and completed at the PCR.

6.2.2 Principle level scores

To be drafted at Client and Peer Review Draft Report stage.

Table 5. Principle level scores

6.2.3 Summary of conditions

To be drafted at Client and Peer Review Draft Report stage.

Table 6. Summary of conditions

6.2.4 Recommendations

Given an interim harvest strategy process (C-16-02) that presently limits the fishing effort on tropical tunas is currently enforced, incorporating results from SAC-13-07 into this conservation measure shall help parties to discuss species-specific harvest strategies. The stock assessment review panel's report provides a detailed and concise review of the 2022 skipjack stock assessment, and the provided recommendations may provide a roadmap for advancing the stock assessment and improving scientific advice for management purposes.

7. Traceability and eligibility

7.1 Eligibility date

The target eligibility date will be the date of the certification of the fishery.

7.2 Traceability within the fishery

Description of Tracking, Tracing and Segregation Systems

The following traceability evaluation is for the UoC/UoA covering the TUNACONS and US California Coastal small PS fleet. Because some components of the assessment use set types not covered under this fishery assessment, chain of custody (CoC) is expected to begin at the point of capture; all vessels will require their own CoC certificate, which will require an evaluation of the processes in place to ensure eligibility into the MSC supply chain.

Below we've listed the main stages of the supply chain within the TUNACONS and US-based fleet fishery and the relevant tracking, tracing and segregation systems at each step:

1. **Capture of product:**
   Tunacons UoAs: All vessels in the UoA are tracked using a monitoring system (VMS) during operation. Vessels target tuna using purse seine gear, on either FADs or free school sets. All vessels have 100% observer coverage. Once the tuna is identified by the vessel, the set is made, and the catch is brought onboard. The catch is sorted on the deck and retained species are placed into the pre-designated well. The captain's logbook records an estimate of the catch (volumes, species), set type, late and long, date when fishing started/ended, and the well. Observer also record catch, set type, and date. Product is stored in wells after capture. Any transfer of fish between wells is recorded in the captain's log sheet.
   US California Coastal small PS: Vessels are required to record catch data in logbook and submit to the National Marine Fisheries Service.
2. **On-board processing:**
   Tunacons UoAs: No onboard processing occurs. Fish are placed into wells and frozen at sea.
   US California Coastal small PS: No onboard processing occurs.
3. **Product unloading and product sale/change of ownership"**
   Tunacons UoAs Product is offloaded in port. No transshipment occurs. At the point of offload, a port inspector will validate the information presented by the vessel, verifying that documentation meets requirements, including fishing permit, volume of product captured,

[2] Note that this fishery was assessed under FCP 2.0, assessing only FAD and free school sets, sets on dolphins are not part of the UoA. For such fisheries MSC requires that CABs shall apply the Unit of Assessment (UoA) and Unit of Certification (UoC) requirements (FCP 7.5.2, 7.5.3 and 7.5.6) by 25 March 2023. The UoA requirements under FCP 2.2 requires all set types to be included within the UoA and UoC.

species captured and fishing gear. All vessels provide the first receiver with the captain logsheet of the trip, captain statement, and well summary. Once the inspection is completed, the offloading of the product is approved to be transported to the processing companies. A transportation permit (*guia de transito*) is emitted by the port inspector detailing the license plates of the transport vehicle, estimated volume and destination of the product. The first receiver will require their own chain of custody certificate for the catch to be eligible to enter the MSC supply chain Several of the fishing fleets and processing companies are vertically integrated companies, for which the change of ownership may occur after initial processing. For other companies change of ownership will take place at point of offloading. However, for purposes of this assessment CoC starts at offloading, expect for the select vessels authorized to fish on dolphin sets, for which CoC starts at point of capture. For product landed in Ecuadorian ports the following documents are submitted to the first buyers once the port inspection is completed: for foreign flag vessels the Guide for the mobilization of Fishery Products (*Guia de Movilizacion de Products Pesqueros – GMPP)*, which detailed the product offloaded and is supported with import authorization. For national flagged vessels, the Fishing Landing Control Monitoring Certificate (*Certificado de Monitoreo de Control de Desembarque Pesquero* CMCDP) is issues, which is delivered to the owner of the vessel. .. *US small PS UoA*: Product is offloaded in port. No transshipment occurs. At the time of unloading, the California Department of Fish and Wildlife regulations require that a Fish Landing Receipt be issued by the first receiver and be provided to the fishing vessel and to the State**.** A lot number is assigned to all fish offloaded by each vessel and products are tracked through the freezing process, storage and ultimate sale or export. The first receiver will require their own chain of custody certificate for the catch to be eligible to enter the MSC supply chain.

Table 7. Traceability within the fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? If Yes, please describe:	***Tunacons UoAs:*** Vessels only target tuna using purse-seine gear. No gear types not included in the UoC would be used. Gear type and set type is verified via several mechanisms including 100% observer coverage, vessel logbook and port inspections. For vessels in the Tunacons UoA that are authorized only fish on FAD and Free school sets, there is no risk that gears or set types that are not part of the UoC are employed, allowing CoC to start at point of landing. In the Tunacons UoAs a few select large purse seine vessels are permitted by the IATTC to employ set types that are not covered in the assessment (dolphin sets). IATTC regulation require large purse seine vessels to always carry an observer on board, and that both the observer and vessel logbook report information on set type. enter. Observers must be present any time fish is transferred between wells. Systems in place are considered appropriate to manage the risk of mixing between non-certified and certified fishing method, however segregation systems would need to be confirmed through a chain of

	custody audit. For this reason, for these two vessels, chain of custody begins at the point of capture. There is no risk that other vessels in the fleet ***US small PS UoA:*** In the US Small PS UoA, all gear and set types are part of the UoA, thus chain of custody begins at the point of landing. This information is validated via vessel logbook and fishing permits.
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, please describe: *Well level segregation is believed to be maintained*	***Tunacons UoAs:*** The large purse-seine vessels flagged to Ecuador and Panama do not operate outside of the UoA geographic area (Ecuador EEZ and IATTC comission area), thus segregation is not required. However, the larger US flagged vessels (Tri Marine vessels) under assessment also fishes in the Western Pacific Ocean under the purview of the WCPFC. These vessels also covered under another MSC fisheries certificate in the WCPFC (F-SCS-0094). Vessels will continue to fish in both convention areas The US fleet. Fishing masters are required to complete official logbooks which records information about the fishing vessel's activities including inter alia set location, type of set, catch volumes by species and well numbers. Only fish captured in the IATTC is MSC eligible under this assessment. The fishing master's logbook and well chart enables identification of catch from MSC-eligible areas. If there is catch from non-UoA regions, it must either be stored in separate wells, or a double-separation net must be used to prevent mixing when stored within the same dry well. In July 2020, under the authority of the Western and Central Pacific Fisheries Convention Implementation Act and the Tuna Conventions Act, NMFS issued a final rule revising the management regime for U.S. fishing vessels that target tunas and other highly migratory fish species in the overlap area. The rule applies all regulations implementing IATTC resolutions in the area of overlapping jurisdiction and some regulations implementing WCPFC provisions. US flagged vessels fishing on the high seas in the overlap area must be registered on the IATTC Regional Vessel Register and be authorized by NOAA to fish on the high seas in the WCPFC Area. Catch and effort data is reported to both the WCPFC and IATTC. However, only the IATTC catch and effort limits implemented by the United States in NMFS regulations apply in the overlap area. Based on this rule and its application to the UoC we consider all catch and effort in the overlap area as part of the EPO and therefore as part of the UoC for this assessment. These vessels segregate MSC-eligible catch in the WCPFC from any catch from the EPO. Non-MSC eligible catch is segregated at the well-level (or by double-nets if stored in the same well). The following records are passed on: captain's log sheet records the location, set type, and well chart identifying the fish as MSC or non-MSC. The Tri Marine office receives a weekly update on the well report and reviews these documents and then issues an MSC qualification determination. The systems in place are already in place for the certified Tri Marine Western and Central Pacific skipjack and yellowfin fishery and considered appropriate to manage the risk of mixing between non-certified and certified fishing methods.

	US small PS UoA: The US-based fleet fishes uniquely in areas under assessment (US EEZ).
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities. If Yes, please describe how any risks are mitigated.	***Tunacons UoAs:*** The fishery clients handle both certified and non-certified fish. See the section above regarding fishing activity outside the geographic area and using non-certified set types and description of mitigation of these risks. ***US small PS UoA:*** The fishery clients handle only certified fish. No mitigation is necessary.
Does transshipment occur within the fishery? If Yes, please describe:	***Tunacons UoAs:*** No transshipment occurs for any vessels in the fishery. ***US small PS UoA:*** No transshipment occurs for any vessels in the fishery.
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	***Tunacons UoAs:*** No other risks are known at this stage. ***US small PS UoA:*** No other risks are known at this stage.

7.3 Eligibility to enter further chains of custody

To be drafted at Client and Peer Review Draft Report stage.

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

There are no IPI stocks in this fishery. Tuna species, including skipjack, yellowfin and bigeye are stored in the same wells. While there is a concern of the risk that bigeye may not be distinguishable from yellowfin.

The client explained that species sorting takes place once the product is offloaded and prior to any processing activity.

8 Scoring

8.1 Summary of Performance Indicator level scores

Table 8. Summary of Performance Indicator Scores and Associated Weights Used to Calculate Principle 1 Score for EPO SKJ.

Principle	Component	Wt	Performance Indicator (PI)		Wt	Score SKJ
One	Outcome	0.333	1.1.1	Stock status	1.0	>80
	Management	0.667	1.2.1	Harvest strategy	0.25	>80
			1.2.2	Harvest control rules & tools	0.25	>80
			1.2.3	Information & monitoring	0.25	>80
			1.2.4	Assessment of stock status	0.25	>80

Table 9. Final Principle Scores

Final Principle Scores	
Principle	Score EPO SKJ
Principle 1 – Target Species	>80
Principle 2 – Ecosystem	*Not Assessed in Scope Extension*
Principle 3 – Management System	*Not Assessed in Scope Extension*

8.2 Principle 1

8.2.1 Principle 1 background

8.2.1.1 Skipjack Tuna (*Katsuwonus pelamis*)

Life History Information

Taxonomic classification

Class: Actinopterigii
Order: Perciformes
Family: Scombridae
Genus: *Katsuwonus*
Species: *pelamis*

Behavior

An early description of the schooling behavior of skipjack tuna (SKJ) reported that 71% of the fish caught by bait boats and 80% by the purse seine fishery in the eastern Pacific, were schools of pure skipjack aggregations with no yellowfin present (Forsbergh 1980). Contrary to yellowfin tuna, skipjack is not reported to school in strong association with dolphins but are seen associated with birds, drifting objects, sharks and whales (**Error! Reference source not found.**). Skipjack tuna are also found in free-swimming schools of fish. Figure 2 depicts total catch of skipjack in the EPO from 1975 – 2021 for all fleets separated by set type. Figure 2 shows that historically skipjack tuna has been caught by purse seiners predominantly associated with floating objects (≈ 67%) although catches by purse seiners on free swimming schools have been important (≈30%). Very little skipjack is caught in other types of fisheries (≈3%) (IATTC 2022)

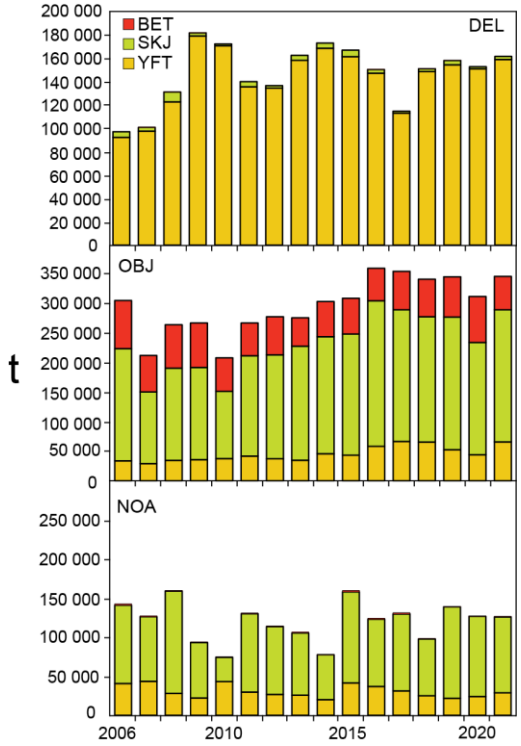

Figure 1. Purse-seine catches of tunas, by species and set type (associated with dolphins (DEL), associated with floating objects (OBJ), and unassociated (NOA)) in the EPO during 2006-2021 (from IATTC 2022).

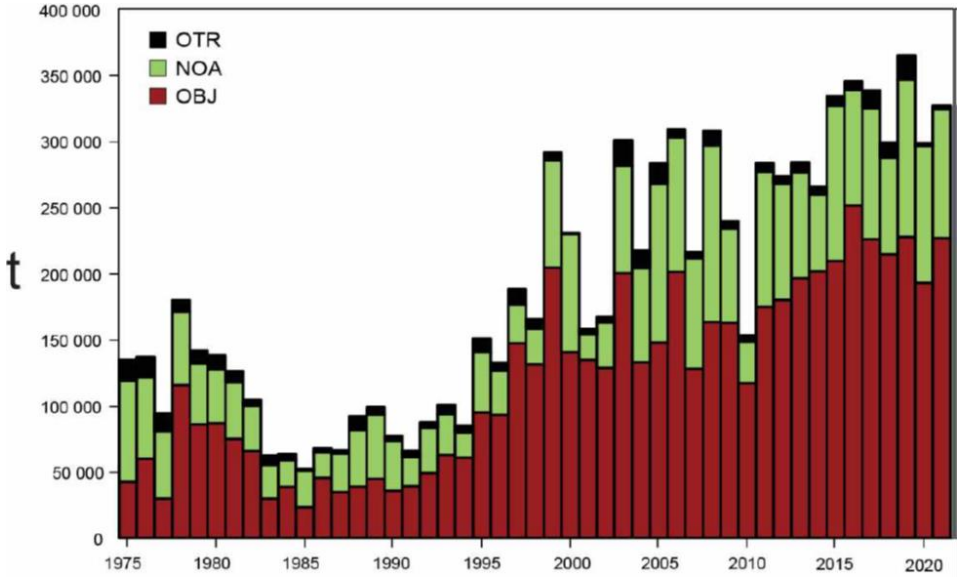

Figure 2. Total catch of skipjack tuna in the eastern Pacific Ocean by type of fishery. Reproduced from ITAAC-94901. OBJ signifies object sets, NOA signifies non-object or unassociated sets, and OTR signifies other set types (from IATTC 2022).

Growth and Natural Mortality

Skipjack tuna is heterosexual and sexual maturity is reached at about 400 mm and spawn throughout the year in tropical waters and from spring to early fall in subtropical waters. No estimates of longevity exist, but an individual at the large end of the size range (106.5-108.4 size class) was estimated to be at least 12 years (Forsbergh 1980).

The natural mortality of the skipjack tuna has been difficult to estimate and previous values (Wild and Hampton 1994) may have been severely biased by high juvenile mortality due to tagging and adult tagged animals leaving the study area (Maunder 2012b). The latest assessment of skipjack used a length-based schedule of mortality that declines sharply and irregularly from about 0.8 in small individuals to 0.15 when individuals attain approximately 60 cm, and stays at that level of mortality thereafter (Figure 3; Maunder 2012b).

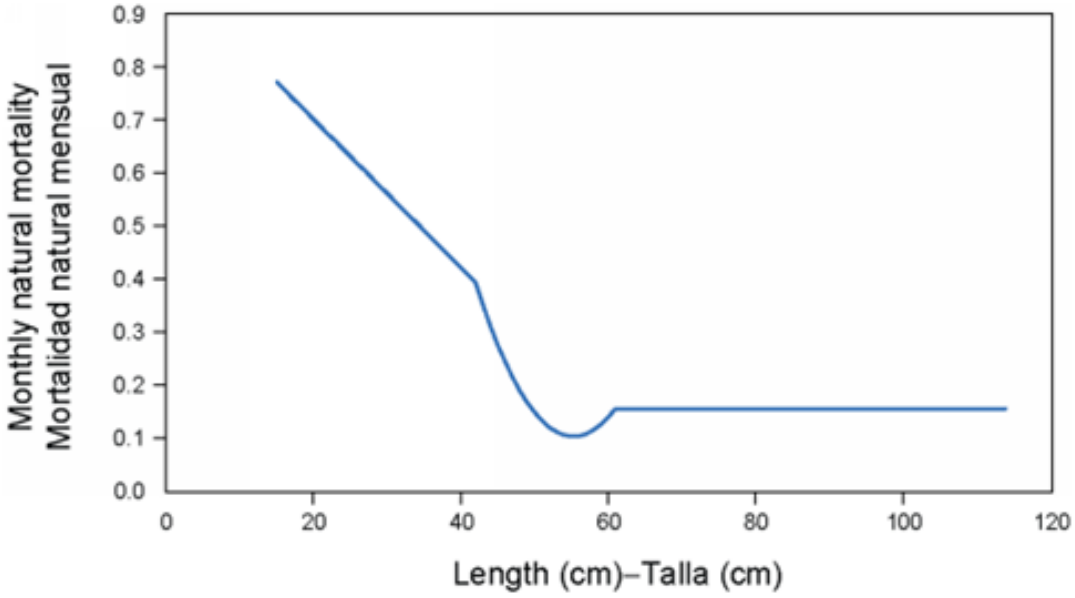

Figure 3. Monthly natural mortality rates used in the SKJ assessment of 2010. Reproduced from Maunder (2012b).

Reproduction and Recruitment

Like all tunas, the skipjack is an oviparous, broadcast, batch spawners that can have fecundities much higher than other species of tuna. Skipjack becomes sexually mature very quickly once they are about 40 cm in total length and, depending on the water temperature, can spawn almost daily. The spatial pattern of spawning is “confluent throughout tropical and subtropical regions” (Forsbergh 1980; Schaefer 2001).

No stock-recruitment relationship has been identified (Maunder et al.,2022) and assessment models only restrict the degree of variability around the average (Figure 4). A clear correlation between recruitment and environmental variables such as temperature is uncertain. In the Western Pacific, the abundance of larvae doubles with each 1 degree of increase in water temperature from 23°C up to 29°C. On the other hand, no correlation was found between recruitment and Sea Surface Temperature and the Southern Oscillation Index inside or outside assessment models. However, it is suggested that the effect of environmental variables on recruitment in different stages of fish development should be investigated (Maunder 2002).

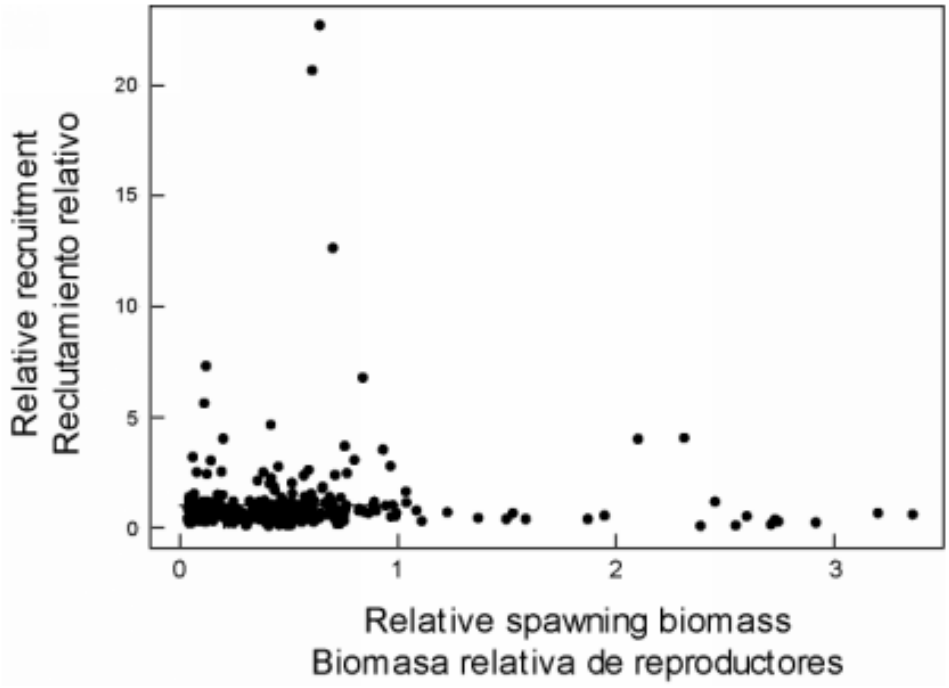

Figure 4. Estimated relationship between recruitment and spawning biomass of skipjack tuna assuming dome shaped selectivity. Scales in both axes are relative to average recruitment and average unexploited spawning equal to one (reproduced from Maunder (2002)).

Distribution and Stock Structure

Skipjack tuna is an inhabitant of tropical, subtropical and warm temperate waters, and in the Pacific, they are found from 40° N to 40° S across the whole oceanic basin with highest concentrations in tropical waters (Figure 5). Water temperature above 20° C appears to be the limiting factor of the latitudinal distribution. Given the age-dependent preference regarding certain levels of temperature and oxygen, on the vertical dimension, both factors play a role on the overall distribution of the species because the thermocline may be located at different depths in different locations.

An extensive review by Schaefer (2009) concluded that a northern and a southern stock of skipjack tuna may exist, separated at about 15° N with very little mixing between them. However, research attempting

to determine stock structure of skipjack has been inconclusive. Knowledge about the movement of this species indicates there is considerable movement among areas which can constitute different conceptual units either geographically or from a stock-related perspective. Tagging in the study showed movement of fish from the eastern to the western Pacific, but no tagged fish in the west were recovered in the east. Schaefer (2009) downplays the relevance of what he calls “long-range movement of a few tagged skipjack” (see IATTC 1995, Fig. 64), indicating that data in the EPO only support offshore-onshore and north-south movements, meaning the extent of the displacement capacity of skipjack is limited. Interestingly, this author points to results that concluded that skipjack may not present definite migratory movements but move in random directions within broad limits--as a diffusion process. This type of movement across a large geographic range plus a very large effective population size may be help explain the lack of genetic

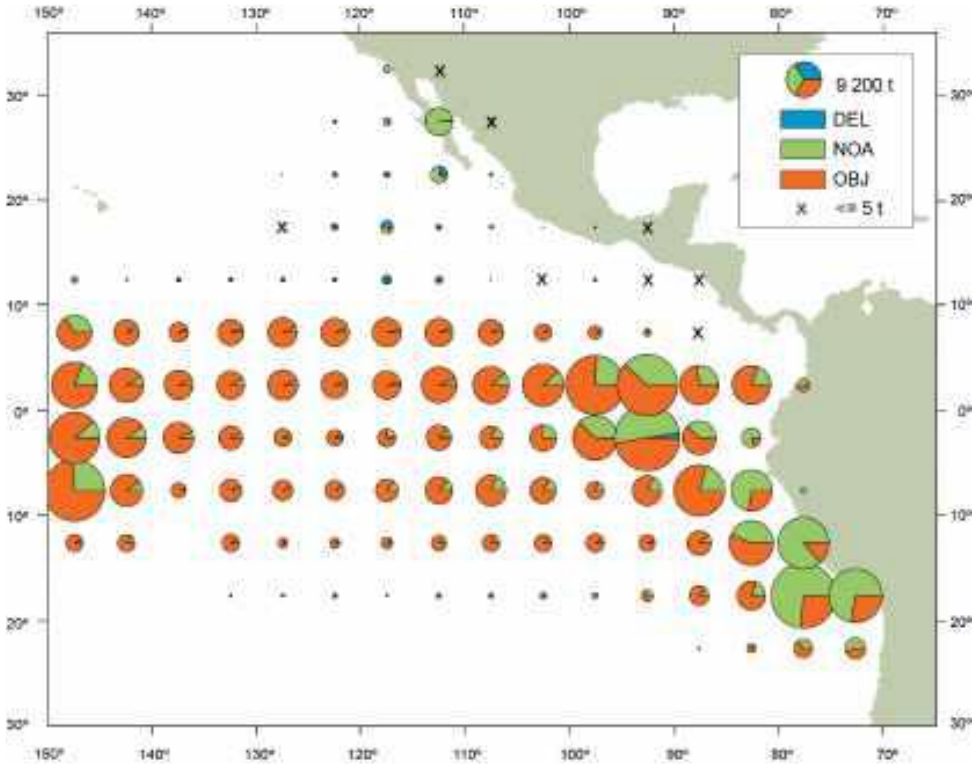

Figure 5. Average annual distributions of the purse-seine catches of skipjack, by set type, 2016-2020. The sizes of the circles are proportional to the amounts of skipjack caught in those 5° by 5° areas (from IATTC 2022).

differentiation[3] between the Pacific and Atlantic oceanic basins (Ely et al 2005). Similarly, even rare long-range movements that introduce small amounts of genetic exchange between populations are capable of maintaining genetic homogeneity across many genetic markers.

If these processes do not allow for interoceanic genetic differentiation, it would make it even more difficult to determine a definitive stock structure in the Pacific alone. Alternative criteria such as differences in spawning, growth and movement, as discussed by Schaefer, still need to be put in the appropriate context to make sense when no genetic differences can be identified within a population or between putative sub-units. The latest IATTC on skipjack assumes that for the purpose of stock assessment the single stock in the EPO does not interact with skipjack in the Western and Central Pacific.

8.2.1.2 Status of stocks

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 term *interim* results from additional improvements being expected in the skipjack assessment under the ongoing 2021-proposed methodology and workplan to develop a benchmark stock assessment for skipjack in the EPO that includes tagging data in 2024. 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.

[3] The analysis used the hypervariable non-coding control region I and a segment of a coding region of mitochondrial DNA

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 tradeoff 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 ($0.3S_0$) 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, $0.3S_0$, 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, $0.3S_0$, to represent MSY. Following guidance in GSA2.2.3.1 “in the case where B_{MSY} is analytically determined to be lower than $40\%B_0$ (as in some highly productive stocks), and there is no analytical determination of the PRI, the default PRI should be $20\%B_0$ unless $B_{MSY}<27\%B_0$, in which case the default PRI should be $75\%B_{MSY}$”. Noting skipjack MSY = $30\%B_0$, the Assessment Team considers PRI = $20\%B_0$.

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 10). While the probability of spawning biomass falling below the LRP (S_{LIMIT}) or PRI was not estimated in the interim assessment the time series and associated 95% confidence intervals of spawning biomass relative to S_{LIMIT} indicates the likelihood of S breaching S_{LIMT} is likely zero (Figure 6).

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% S_0) and the fishing mortality below the target fishing mortality (Figure 6 & Figure 7).

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 (S_0 or B_0) 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, $S_{MSY}/S_0 = 0.3$, 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, $0.3S_0$, 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 11). While not explicitly estimated in Maunder (2022) the time series and associated 90% confidence intervals of spawning biomass relative to PRI ($20\%S_0$) indicates the likelihood of S breaching PRI is likely zero (Figure 8).

All except 3 models have a 95% or higher chance of being above the $S/S_0 = 0.30$ 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 11). There is more of a range of probabilities of being above the $S/S_0 = 0.40$ target reference point (Table 11).

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/S_0 projections for the reference model are plotted in Figure 8 and the probability of being above the $S/S_0 = 0.3$ and $S/S_0 = 0.4$ 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.

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 10. 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 exceeded (from Maunder et al., 2022).

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

Table 11. 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

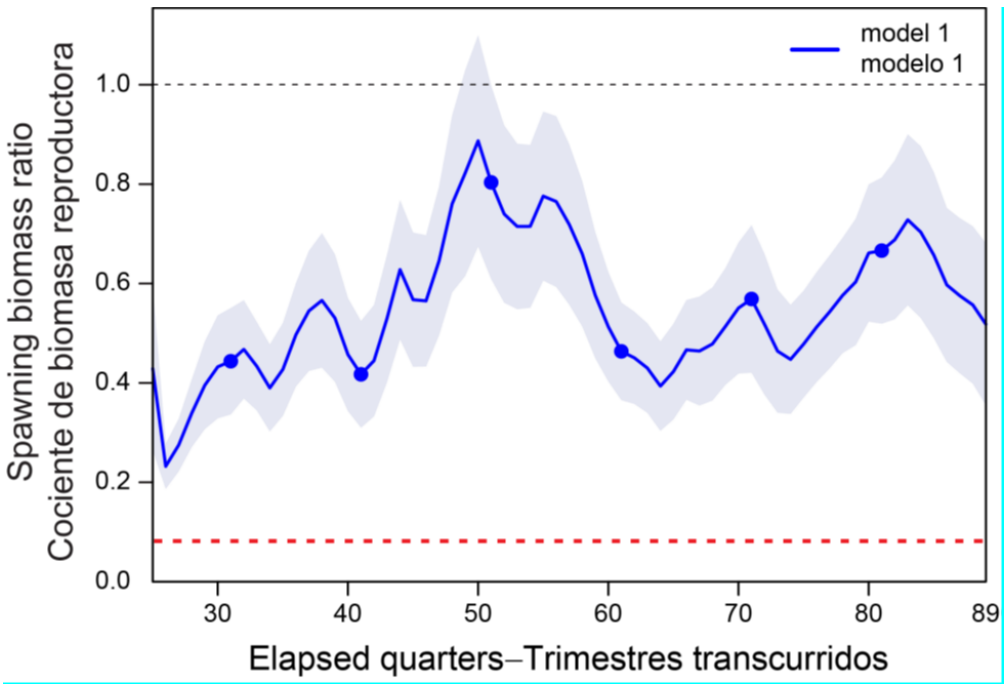

Figure 6. Spawning biomass ratio (SBR) for skipkjack tuna in the EPO, 2006-2021 estimated by the reference model. The solid lines represent the maximum likelihood estimates and the shaded area the approximate 95% confidence intervals around those estimates. The red dashed horizontal line (at 0.077) identifies the SBR at S_{LIMIT}. 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).

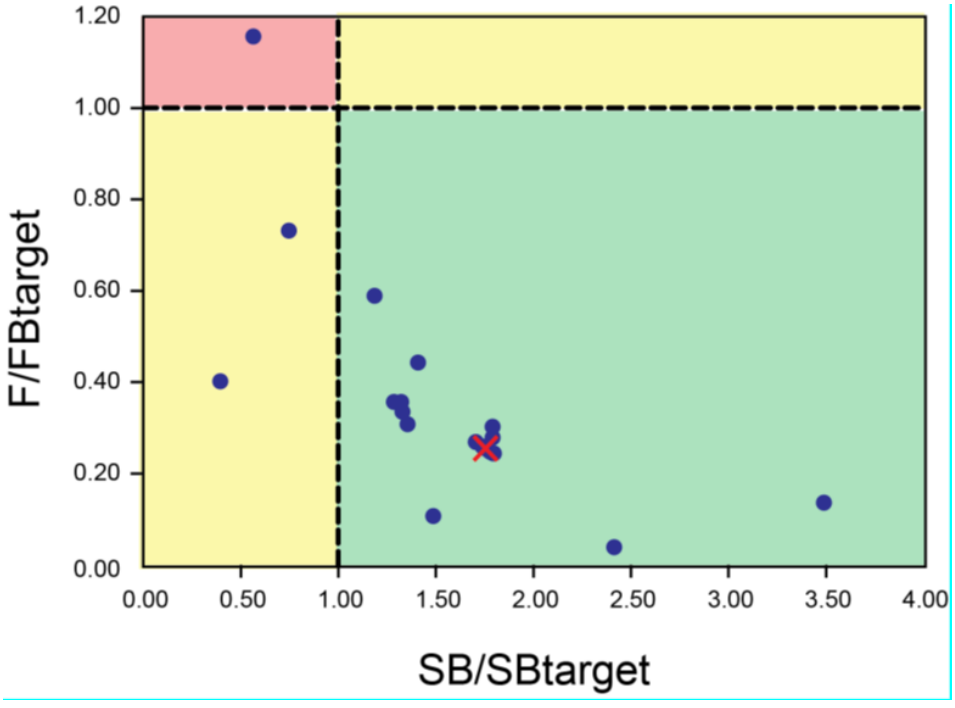

Figure 7. Kobe plot showing the stock status estimates from all the models. The red X indicates the median value. (from Maunder et al., 2022).

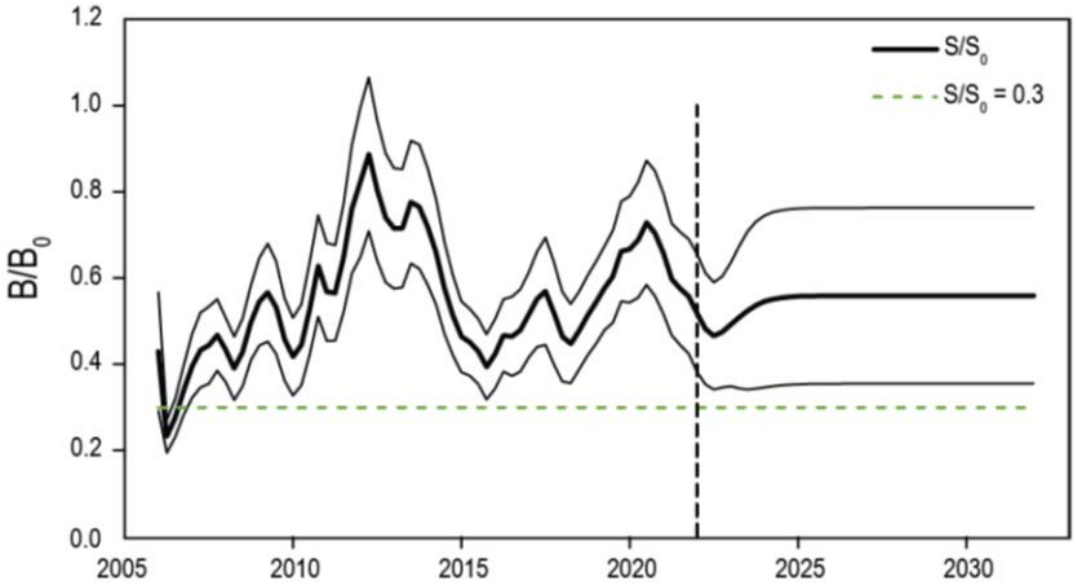

Figure 8. Estimated and projected S/S_0 (unadjusted) for the reference Model with 90% confidence intervals compared to the proxy target biomass reference point ($S/S_0 = 0.3$). Note PRI is equal to 0.2 along the Y-axis. The vertical dashed line is the start of 2022 (from Maunder 2022).

8.2.1.3 Fishing and Management

The harvest strategy specifies that if fishing mortality is higher than the level consistent with producing MSY, F is reduced to F_{MSY}. Implementation requires estimation of the F-multiplier management parameter, which is the ratio of $F_{MSY}/F_{current}$. Simply put the amount of fishing mortality above or below F_{MSY} is represented as a proportion of effort (in days of fishing) that would be needed to reduce F if it exceeds FMSY, or, conversely, could be increased if $F_{current}$ is below F_{MSY}. The F-multiplier is adjusted to account for the change in the fleet carrying capacity and then applied to the current number of days of open season. The multiplier is computed for yellowfin, bigeye and skipjack stocks, and the one with the lowest value is used to obtain the total length in days of closure for the following fishing year.

IATTC agreed on interim limit and target reference points intended to maintain stocks at MSY. The LRP for skipjack is set at $0.077S_0$ which correspond to the spawning biomass that produces 50% of the virgin recruitment (R_0) if the spawner-recruitment relationship follows the Beverton-Holt function with a (h) of 0.75. The fishing mortality (F) limit reference point is the value of F that, under equilibrium conditions, maintains the spawning biomass at the biomass limit reference point. The biomass TRP for skipjack is set at 30% of the unexploited spawning biomass ($0.3S_0$) based on the range estimated under different assumptions for yellowfin and bigeye tuna in the EPO. The definition of this reference point was based on the same productivity-susceptibility argument that has been used previously to manage skipjack tuna based on the assessments of yellowfin and bigeye tuna (i.e. skipjack is more productive than the other two species and has similar susceptibility). The TRP was recently determined to represent a conservative proxy estimate of MSY (Bence et al., 2022).

IATTC Resolution C-16-02 established the harvest control rules for yellowfin, bigeye and skipjack, based on the reference points outlined above. The HCR follows:

- multi-year management measures will attempt to keep F below F_{MSY} for the species requiring the strictest management (i.e. the most vulnerable of the three tropical tuna species in terms of stock status);
- if the probability that $F>F_{lim}$ is >10 %, management measures shall be established such that there is at least a 50 % probability that F will reduce to F_{MSY} or below, and a probability of <10 % of $F>F_{lim}$; and
- if the probability that $SB<SB_{lim}$ is >10 %, management measures shall be established such that there is at least a 50 % probability that SB will recover to SB_{MSY} or above, and a probability of <10 % that SB will decline to $<SB_{lim}$ within two generations or 5 years, whichever is greater.

The main conservation measure established by the IATTC for yellowfin, bigeye and skipjack tuna is Resolution C-21-04 which is in place for the 2022-2024 fishing years, and includes:

- an annual closure of 72-days for all purse seine vessels greater than 182 t capacity and longline vessels greater than 24 m in overall length;
- a seasonal closure (9 October to 8 November) of the purse seine fishery within the area of 96° and 110°W and between 4°N and 3°S, known as the “corralito”, where catch rates of small bigeye are high;
- a full retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas;
- limits on the number of active FADs that each purse seine vessel can have active at any one time, ranging from 66 FADs/vessel for the smallest vessels (class 1-3) to 400 FADs/vessel for Class 6 vessels (> 1200 m^3 capacity). Further reductions on the number of active FADs fishing at any one time occur on purse seine vessels in classes 1-5 occur in both 2023 and again in 2024. All purse seine vessels are also required to not deploy FADs 15 days before the selected closure period. All class 6 purse seine vessels recover FADs 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;
- Daily reporting of the number of the number of active FADs deployed and there location;
- Increased monitoring and control systems for tuna catches; and
- specific measures for bigeye tuna including the potential for an extended purse seine closure period (8 days), catch limits (longline and purse seine fisheries), penalties for exceeding annual catch limits of bigeye tuna, completion of a update bigeye assessment in 2023.

Pole-and-line, troll, and sportfishing vessels, and purse-seine vessels of IATTC capacity classes 1-3 (182 t carrying capacity or less) and longline vessels less than 24 m length overall, are not subject to the above measures, except those related to the management of FADs.

Uncertainty in the stock assessments have led to difficulties in the operation of the HCR. In 2018, the outcomes of assessments of bigeye and yellowfin were considered in relation to the C-16-02 HCR and the requirements of C-17-02. The results of the 2018 assessment of bigeye, specifically the F multiplier (0.87) was below the previous estimate, suggesting that the current 72-day seasonal closures should be extended to 107 days. For yellowfin the 2018 estimated F-multiplier was 0.99. While the results suggested an increase in the closure period would be needed no change in the duration of the closures was recommended. The reasons included a significant amount of uncertainty in the bigeye tuna assessment to support modifying the current management measure and current fishing mortality for yellowfin was at the approximate level corresponding to MSY. Given the continuing increase in fishing effort in the purse-seine fishery, IATTC scientific staff recommended a limit on the total number of floating-object and unassociated purse seine sets. However, due to difficulties in limiting floating-object sets no action was taken. In 2019 the IATTC staff reiterated its 2018 recommendation to limit the total combined number of floating-object and unassociated purse-seine sets based on a continuing increase in the number of purse seine sets (particularly floating-object sets) observed in the EPO.

In 2020, IATTC conducted a risk-based analysis to determine if the current 72-day closure period meets the objectives specified in the harvest strategy for both yellowfin and bigeye. The analyses suggested that under the pessimistic scenario for bigeye the 72-day closure period meets the objectives of the harvest strategy and no additional closure days are needed. However, the P(SB>SBLIMIT) was determined to be at the established threshold of 10%, and, consistent with the harvest strategy, IATTC staff recommended additional conservation measures to reduce fishing mortality, including a limit on floating-object sets for all purse-seine vessels, combined with individual-vessel daily active FAD limits. The measures were adopted in 2021 as part of C-21-04.

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 term *interim* results from additional improvements being expected in the skipjack assessment under the ongoing 2021-proposed methodology and workplan to develop a benchmark stock assessment for skipjack in the EPO that includes tagging data in 2024. 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).

Based on follow up analyses conducted during the November 2022 skipjack stock assessment review the panel concluded that the adopted target reference point, $0.3S_0$, is in fact a conservative proxy for MSY biomass, assuming that h=0.75 represents a plausible lower bound on steepness. The panel also endorsed the interim stock assessment and provided recommendations for advancing the assessment. In the longer

term and under the strategic plan, IATTC proposes to conduct a comprehensive Management Strategy Evaluation (MSE) for EPO tropical tuna.

8.2.1.4 \Total Allowable Catch (TAC) and catch data

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

TAC	Year	YYYY	Amount	n, unit
UoA share of TAC	Year	YYYY	Amount	n, unit
UoA share of total TAC	Year	YYYY	Amount	n, unit
Total green weight catch by UoC	Year (most recent)	YYYY	Amount	n, unit
Total green weight catch by UoC	Year (second most recent)	YYYY	Amount	n, unit

8.2.2 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock Status – EPO Skipjack Tuna

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

Rationale

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) (Maunder et al., 2022). 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. Improvements to the assessment are consistent with the ongoing 2021-proposed methodology and workplan to develop a benchmark stock assessment for skipjack in the EPO that includes tagging data in 2024. The interim assessment spans the period 2006 to 2021, when the fishery, data collection, and environmental conditions were less variable, and assumes a single homogeneous stock. Input data sources for the assessment model include relative abundance indices from longline and purse seine (floating object and free-swimming schools) fisheries, and a recently developed index based on echosounder buoy data. There are noted caveats with the input data and sensitivity analyses run to assess the impact of uncertainty with input data.

Interim limit reference points (LRPs) for biomass and fishing mortality were adopted by IATTC at its 87th meeting in 2014 and reaffirmed in IATTC Resolution C-16-02 (Harvest Control Rules for Tropical Tunas). The biomass LRP is $SB0.5R_0$, the biomass which corresponds to a 50% reduction in recruitment from its average unexploited level, based on a conservative value of stock-recruitment steepness (h = 0.75). This spawning biomass is equal to 0.077 of the equilibrium virgin spawning biomass (Maunder and Deriso, 2014). While the interim LRP established by IATTC could be considered as the PRI for skipjack tuna, it is a lower value than used for other MSC certified stocks. Following guidance in GSA2.2.3.1 "in the case where B_{MSY} is analytically determined to be lower than $40\%B_0$ (as in some highly productive stocks), and there is no analytical determination of the PRI, the default PRI should be $20\%B_0$ unless $B_{MSY}<27\%B_0$, in which case the default PRI should be $75\%B_{MSY}$". Noting skipjack MSY = $30\%B_0$, the Assessment Team considers PRI = $20\%B_0$.

The trend in spawning biomass with associated 95% confidence intervals from 2006 (Quarter 25) to 2022 (Quarter 89) indicates a zero probability of current spawning biomass breaching S_{LIMT} ($0.077S_0$) and the likelihood of breaching PRI (assumed at $20\%S_0$) likely approaches zero (Figure 6). Based on this information the Assessment Team considers it is highly likely that the stock is above the PRI; SG 60 and SG 80 are met.

The probability of exceeding a reference point is computed by assuming that the probability distribution for the ratio S/S_0 is normally distributed. Some approximations had to be applied because S/S_0 was calculated using S_0

based on average recruitment rather than the parameter R_0, but the standard deviation estimated in Stock Synthesis is for S/S_0. Using the computed standard deviation estimates, the coefficient of variation (CV) of S/S_0 for each of the models was estimated to range from 12%-19% with an average CV of 16% (Table 10). The estimated probability of being below the limit reference point is zero for all models (Table 10) and since 2007 S/S_0 has been well above the PRI ($20\%B_0$) (Figure 8). Based on this information the Assessment Team considers there is a high degree of certainty that the stock is above the PRI; SG100 is met.

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

Rationale

MSY-based quantities cannot be estimated because of trade-offs 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. A conservative proxy for the MSY target reference point (TRP) was chosen based on values for bigeye and yellowfin, and the fishing mortality corresponding to that biomass, and is currently set at a spawning biomass ratio (SBR) of 0.3, where SBR is defined as the current spawning biomass divided by the spawning biomass in the unfished state. The assessment provides two metrics to assess stock status and formulate management advice: absolute estimates of stock status relative to proxy reference points and stock status estimates relative to the status quo period (2017-2019) when the PSA rationale was still valid

Based on output from the reference model spawning biomass is currently estimated to be above the TRP proxy of 30% of the unexploited spawning biomass under either the static (SBR) or the dynamic (SBR_d) spawning biomass 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 11). Using the computed standard deviation estimates, the coefficient of variation (CV) of S/S_0 for each of the models was estimated to range from 12%-19% with an average CV of 16% (Table 11). All except 3 models have a 95% or higher chance of being above the $S/S_0 = 0.30$ 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 11). There is more of a range of probabilities of being above the $S/S_0 = 0.40$ target reference point (Table 11).

Since 2007 S/S_0 has been well above the proxy TRP ($S/S_0 = 0.30$) (Figure 8). Stock projections from 2022-2032 also indicate stock levels well above the proxy TRP where the probability in 2032 of being above $S/S_0 = 0.30$ is estimated at 0.98 (Maunder 2022). Based on the information provided in the interim assessment (Maunder et al. 2022) and follow-up analyses (Maunder 2022) and noting MSC Guidance (GSA 2.2.3.1) requires the more precautionary MSY metric of $40\%B_0$, the Assessment Team considers the stock to be at or fluctuating around a level consistent with the precautionary MSY metric; SG80 is met.

Despite results suggesting the stock may be at, or fluctuating around, a level consistent with the precautionary MSY metric, achieving SG 100 requires there be at least a 95% probability that the true status of the stock is above the MSY reference point. Based on results in Maunder (2022) there is only a 90% probability of being above the precautionary MSY metric; SG 100 is not met.

References			
Maunder et al. (2022); Maunder (2022)			
Stock status relative to reference points			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Reference point used in scoring stock relative to PRI (SIa)	IATTC limit reference point MSC defined PRI (based on GSA 2.2.3.1)	$0.077S_0$ $20\%S_0$	$Pr(S_{CUR} < S_{LIMIT}) = 0$ While $Pr(S_{CUR} < PRI)$ is not explicitly stated it can be inferred from Figures 1 and 3 and based on this information $Pr(S_{CUR} < PRI) = 0$.
Reference point used in scoring stock relative to MSY (Sib)	IATTC TRP (MSY proxy)	$30\%S_0$	The $Pr(S_{CUR} < TRP) = 0.98$ based on projection analyses.
Draft scoring range and information gap indicator added at Announcement Comment Draft Report			
Draft scoring range			≥80
Information gap indicator			
Overall Performance Indicator scores added from Client and Peer Review Draft Report			
Overall Performance Indicator score			
Condition number (if relevant)			

PI 1.2.1 – Harvest strategy – EPO Skipjack Tuna

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

Rationale

MSC defines a harvest strategy as the combination of monitoring, stock assessment, harvest control rules and management actions, which may include a management procedure or a management procedure (implicit) and be tested by management strategy evaluation (MSE). The IATTC management objective for tuna stocks is to maintain or restore populations to levels capable of producing MSY.

The IATTC harvest strategy for tropical tunas, including skipjack tuna, is effectively set out in Resolutions C-16-02 and C-17-01, and together with monitoring and assessment processes inform decision-making. Interim limit and target refence points were adopted by IATTC in 2014. Resolution C-16-02 details the HCR and how scientific advice should be framed. The measures of C-17-01 were rolled over into C-20-06 in December 2020 and then into C-21-04 in October 2021 which remains in effect during 2022-2024 (IATTC, 2021). The status of skipjack is estimated and relative to the defined reference points, with outcomes discussed at SAC meetings and at annual Commission meetings. In practice, the harvest strategy for skipjack does not necessarily relate directly to the skipjack stock status but rather depends on all tropical tuna stocks assessed, with resultant measures based on the worst case (at present bigeye tuna). Therefore, the harvest strategy is responsive to the state of the more vulnerable species (bigeye tuna), resulting in the adoption of more precautionary measures for yellowfin and skipjack tuna. The HCR requires that if the estimated fishing mortality is higher than FMSY then it should be reduced to FMSY (based on the F-multiplier). There are currently two management tools used by the IATTC, agreed among fishing nations and passed as IATTC Resolutions; these are season closures and mechanisms to limit fishing capacity.

Stock assessments are regularly conducted, and the model estimation procedures constantly tested and improved. Stock status metrics are compared to the agreed reference points which is used to develop scientific advice and conservation measures for consideration at annual meetings. Observer data (100% coverage on purse seine vessels), logbooks, supervised port-sampling, and additional research projects form the basis of data for stock assessments in the EPO, and monitoring of harvest strategies. Given the overlap of some stocks across the EPO and WCPO, liaison with the WCPFC is provided for explicitly in C-16-02.

A new interim stock assessment of skipjack tuna in the eastern Pacific Ocean was conducted by IATTC staff in May 2022 (Maunder et al., 2022) and 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., 2022meeting final report; Maunder 2022). The 2022 stock assessment found the EPO skipjack stock to be not overfished and not subject to overfishing. Based on follow up analyses conducted during the November 2022 skipjack stock assessment review the review panel concluded that the adopted target reference point, $0.3S_0$, 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 that h=0.75 is not a plausible lower bound the review panel suggested that the skipjack benchmark assessment in 2024 show that h<0.75 is implausible. The utility of varying durations of purse seine closure periods was tested as part of the 2020 benchmark assessments for yellowfin and bigeye tuna and a formal procedure developed to assess the risk of exceeding the Resolution C-16-02 fishing mortality reference points (Aires-da-Silva., et al., 2020). Results indicated that the current closure period of 72 days is appropriate in meeting management objectives.

Based on available information elements of the harvest strategy are in place and expected to achieve management reflected in PI 1.1.1 SG80; the SG 60 level requirements are met. The provisions in C-16-02 and evidence of management decisions being enacted through C-17-01 and subsequently in C-21-04, the harvest strategy provides for a response to the state of the stock. Noting the regular collection of information/data, undertaking of stock assessments, and adoption of measures, demonstrates that the elements of the harvest strategy work together to meet objectives reflected in PI 1.1.1 SG80, and on this basis requirements at the SG 80 level are met.

There are multiple stock assessment uncertainties that are not yet resolved, despite elements of the harvest strategy working together. The review panel provided concise recommendations for addressing many of the uncertainties in both the short-term (by 2024) and longer term. On this basis SG 100 is not yet met.

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

Rationale

At the SG 60 level, the SI requires that the strategy is likely to work based on prior experience or plausible argument. The current strategy restricts fishing effort of the entire fishery on the basis of stock status determinations from stock assessments and/or stock status indicators for SKJ, YFT and BET, and the indicators used to assess change are those that are generally incorporated into traditional stock assessment models. IATTC Resolution C-16-02 provides a rebuilding framework should recovery of the stock be warranted based on stock status determinations from regularly conducted stock assessments and/or stock status indicator analyses. Therefore, the requirements for SG 60 are met.

Temporal purse seine closures are the main tool of the strategy, controlling exploitation rates through effort controls; utilizing as input the F multiplier parameter representing the change in effort needed to keep stocks at F_{MSY} or below F_{MSY} (IATTC 2007). The measures also ensure that the stock fluctuates around MSY by maintaining F at a rate corresponding to the maximum sustainable yield (F_{MSY}) for the species that requires the strictest

management, in this case bigeye tuna. This approach is precautionary in that stricter management measures would be applied then if management was based on the less vulnerable species, skipjack tuna. Additionally, the review panel determined that the IATTC stipulated TRP for tropical tuna (30%S_0) is a conservative proxy for MSY (Bence et al., 2022). Also, **additional** analysis presented by IATTC staff and supported by **the** review panel show that even when the TPR increases to 40% of the no-fishing level, the chances of being **below this targ**e**t are low.** While the harvest strategy has not been fully tested it has been partially tested (Maunder et al, 2015) through the use of MSE applied to bigeye tuna. Finally, the fact that objectives at PI1.1.1 SG 80 are met demonstrates the capacity of the harvest strategy to respond to available information. Based on the totality of information requirements at the SG 80 level are met.

IATTC is committed to undertaking MSE development and implementation for tropical tunas and this is noted in its work plans, with an initial workshop held in December 2019 and terms of reference for MSE workshops established in Resolution C-19-07. Although the harvest strategy has previously provided evidence of achieving its objectives, its performance has not been fully evaluated. On this basis SG 100 is not met.

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

Rationale

There is a considerable amount of data that is being collected that informs various aspects of the harvest strategy. Observer coverage at 100% (for vessel categories 3-6), logbook records, and additional research data gathering provide the basic inputs for assessment models that have been developed over a long period of time and are used in conjunction with the HCR to support decision making. Contracting parties are required to submit annual national reports on national compliance schemes and actions taken to implement agreed IATTC measures, including any controls on fleets and any Monitoring, Control and Surveillance (MCS) measures established. Additionally, C-20-06 requires that IATTC scientific staff analyse the effects of implementing these measures, as well as previous conservation and management measures, on the stocks, and, if necessary, to propose appropriate measures to be applied in future years. On this basis there is sufficient monitoring in place to determine whether the harvest strategy is working, and SG 60 is met.

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

Rationale

The IATTC does regularly conducts stock assessments (benchmark and updates), reviews, and different types of analyses to evaluate and improve the different mechanisms in the harvest strategy. C-17-02 includes explicit provision for evaluation of the effectiveness of all measures, with necessary evaluation (via monitoring and assessment) by IATTC scientific staff. There are annual reviews through advisory processes (SAC meetings and

workshops), as well as in Commission meetings by contracting parties, and measures have been updated (see https://www.iattc.org/ResolutionsActiveENG.htm for evidence of regular updating of Resolutions for all stocks).

C-21-04 is the most recent evidence of review and updating, and the expectation is for a new resolution with updated measures to be adopted in 2025. As stipulated by C-21-04, CPCs must strengthen their monitoring and control systems for tuna catches and for purse seine vessels exceeding their allowable catch additional closure days above the already established 72-day period will be applied. The updated measures were in response to concerns noted by IATTC scientific staff that the capacity of the purse-seine fleets fishing for tunas in the Convention Area continues to increase.

IATTC staff recommended additional precautionary measures to address potential increases in F caused by the floating-object fishery to prevent fishing mortality increasing beyond the status quo conditions associated with maintaining the 72-day closure in 2020. IATTC staff concluded that a limit on floating-object sets for all purse-seine vessels, combined with individual-vessel daily active FAD limits, would be the best option for maintaining the status quo to prevent an increase in F within a management cycle. 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, held by videoconference on 22 December 2020. At this meeting, 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 (resumed) meeting of the IATTC held in the October 2021 additional conservation and management measures were adopted covering the period 2022-2024 (recorded as Resolution C-21-04).

While IATTC staff periodically review the harvest strategy and recommend improvements the proposed measures are either not implemented or implemented in a timely manner. Also, there has not been a sufficient review of the harvest strategy in response to measures adopted through C-21-04; SG 100 is not met.

E	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				
Not applicable as the target is not a shark.				
F	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	Not relevant	Not relevant	Not relevant
Rationale				

Reporting of discards is done via vessel logbooks and observer programs. Reported discards for the UoA represented approximately 1 % for skipjack tuna, and less than 0.1 % for yellowfin and bigeye tuna. Hence, there is no “unwanted catch”* of skipjack in this a fishery. Discarding of target stock within the UoA is considered insignificant and we consider this scoring issue not to be relevant. * SA3.1.6: The term ‘unwanted catch’ shall be interpreted by the team as the part of the catch that a fisher did not intend to catch but could not avoid and did not want or chose not to use.
References
IATTC (2007); Bence et al. (2020); IATTC (2021); Maunder (2022); Maunder et al. (2022)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	≥ 80
Information gap indicator	Information on the development and implementation of tropical tuna HCR and harvest strategy is requested. Also, what strategies within the UoA are being implemented to support the development of a plausible tropical tuna harvest strategy.

Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.2 – Harvest control rules and tools – EPO Skipjack Tuna

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**HCRs design and application**			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	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

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.

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 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)

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

Draft scoring range	≥ 80

Information gap indicator	
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.3 – Information and monitoring – EPO Skipjack Tuna

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

Rationale

The Commission monitors the fishery in a variety of ways, leading to a very complete record of fishing operations, catch, bycatch, efficiency, and environmental interactions. In 2016, total catch of SKJ by all fleets of all size and gear was approximately 343,000 mt. Of this total, purse seiners caught approximately 342,000 mt. The total purse seine catch was obtained setting approximately 33,000 times, and out of these, only about 7,000 were by vessels smaller than 363 mt (IATTC 2019). This means that most of the fishing effort on SKJ was monitored by an observer program that has 100% coverage for purse seiners larger than 363 mt. This coverage is by all standards large enough to consider that some information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. On this basis SG 60 is met.

Stock status indicators for tropical tuna, including skipjack tuna are annually updated, and stock assessments for yellowfin, bigeye, and now skipjack tuna, routinely conducted in support of the harvest strategy. The most recent skipjack stock assessment was externally reviewed, and all concerns identified by the review panel addressed through additional data summaries and assessment model runs. Based on the additional information the panel agreed that the basic stock assessment modelling approach was sound and did not recommend major changes to the model structure (Bence et al., 2022). On this basis, sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy; SG 80 is met.

The 2019 IATTC report on the tuna fishery, stocks, and ecosystems in the EPO noted the difficulties in detecting the effect of fishing on the population of skipjack in the EPO without the incorporation of tagging data into the assessment (IATTC 2019). The review panel echoed this need and provided short-term analytical recommendations for the next stock assessment, currently scheduled for 2024, and long-term analytical recommendations for evaluating the reliability of indices of abundance, length compositions, and demographic estimates, and approaches for incorporating tagging data into the assessment model. The large-scale tagging program (Project E.4.a) that commenced in 2019 is therefore critical." (IATTC 2019, Maunder 2019). While a considerable amount of data on skipjack tuna already exists a key element, skipjack tagging data, has yet to be included in the stock assessment. These data will be incorporated into the 2024 skipjack stock assessment.

Given the importance of tagging data the Assessment Team does not consider there to be a comprehensive range of available information; SG 100 is not met.

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

Rationale

A substantial amount of information is collected to support the HCR, including data on retained catches, discards, indices of abundance, and the size composition of the catches of the various fisheries. To this end, extensive amounts of data are obtained by observers placed on every trip of vessels of class 4 and above, and port technicians. A considerable amount of information on the biology of the species has been historically obtained to get a reasonable understanding of abundance and dynamics of the stock and fishery. Observer reported catches are verified using port technician collected data. The reference assessment model in the 2022 interim stock assessment fitted two indices of abundance, including a longline CPUE and echosounder buoy index of abundance. Based on this information, data are sufficient to undertake regular stock assessments and estimate quantities such as stock status relative to reference points, required for management in support of the HCR; SG 60 and SG 80 are met.

While the main uncertainties are well identified and understood there is not a high degree of certainty surrounding all the information. The review panel developed a roadmap for further evaluations on the reliability of requisite input data to substantially advance the stock assessment process and assess impacts on management, including monitoring system of the IATTC. The roadmap also defines a process for improving scientific advice for management purposes. On this basis SG 100 is not met.

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

Rationale

Monitoring of catches is sufficient to conduct a skipjack stock assessment and data used in the assessment is outlined in the assessment report (Maunder et al., 2022). The fishery for SKJ in the EPO is conducted by many countries including Mexico and Ecuador that together hold more than half of the carrying capacity of the fleet. Other countries include Venezuela, Colombia, Panama, Nicaragua, Argentina and El Salvador. Although the number of boats of small capacity is similar to others of larger size, most of the capacity is in vessels of class 4 and above (nearly 95% in 2014). Information on retained catch is available from the extensive observer

coverage and there is no indication from the information available that IUU fishing is at a level which would impact stock assessment outcomes. This meets the requirements of this SI at SG80.	
References	
Maunder et al (2022); IATTC (2019); Maunder (2019); IATTC (2019)	
Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.4 – Assessment of stock status – EPO Skipjack Tuna

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

Rationale

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 term *interim* results from additional improvements being expected in the skipjack assessment under the ongoing 2021-proposed methodology and workplan to develop a benchmark stock assessment for skipjack in the EPO that includes tagging data in 2024. 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 review panel determined that the interim biomass limit reference point adopted in 2014 for tropical tunas (IATTC Resolution C-16-02) and equal to 0.077 of the equilibrium unfished spawning biomass (S_0 or B_0) represents an adequate LRP for tropical tuna (including skipjack 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, $0.3S_0$, represents a conservative proxy estimate of MSY for tropical tuna in the EPO. Concerns identified by the review panel were addressed through additional data summaries and assessment model runs by the IATTC scientific staff and based on the additional information the panel agreed the basic stock assessment modelling approach was sound and did not recommend major changes to the model structure (Bence et al., 2022; www.iattc.org/GetAttachment/381d00ab-807b-4247-9b27-2455f023a72a/WSSKJ-01-PRES_Staff-responses-to-panel-requests.pdf). On this basis, the assessment is considered appropriate for the stock and for the harvest control rule; SG 80 is met.

As noted by the IATTC and review panel, a major feature relevant to the biology of the species that is pivotal to advancing the assessment is the inclusion of tagging data in the stock assessment (IATTC 2019; Bence et al., 2022). IATTC is currently engaged in a skipjack tuna tagging program and the review panel recommended short- and long-term research to advance the tagging program, as well as analytical and methodological approaches for incorporating movement data into future stock assessments starting with the skipjack benchmark stock assessment scheduled for 2024. Noting the importance of including movement data into the assessment model

and that these data have yet to be included into the assessment, the current assessment does not take into account the major feature (movement) relevant to the biology of the species; SG 100 is not met.

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

Rationale

The stock assessment review panel determined that the interim biomass limit reference point adopted in 2014 for tropical tunas (IATTC Resolution C-16-02) and equal to 0.077 of the equilibrium unfished spawning biomass (S_0 or B_0) represents an adequate LRP for tropical tuna (including skipjack 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, $0.3S_0$, represents a conservative proxy estimate of MSY for tropical tuna in the EPO. Stock status relative to these reference points was provided in the interim skipjack stock assessment and follow-up analyses conducted as part of the 1st review of the stock assessment of skipjack tuna in the EPO (Maunder et al., 2022; Maunder 2022; Bence et al., 2022).

This approach follows the intent outlined in guidance, to support the harvest strategy, and is appropriate for the stock: this meets the requirement at the SG60 and SG80 levels.

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

Rationale

The skipjack tuna interim stock assessment explicitly took sources of uncertainty into account when identifying the reference model for defining stock status and formulating management advice (Maunder et al., 2022). The reference model represents the most plausible set of assumptions (states of nature) about the biology of the fish, the productivity of the stocks, and/or the operation of the fisheries. and sensitivity analyses conducted to determine the robustness of the results to model assumptions and inclusion of different data sets. Additional sensitivity analyses were conducted during the review of the interim skipjack stock assessment to determine their impact on stock status and management advice (Bence et al., 2022). On this basis SG 60 and SG 80 are met.

The approach takes into account the different results, providing probabilistic statements and effectively incorporating uncertainty into the formulation of management advice. Although there are uncertainties that are to be further investigated, the fishery meets requirements at the SG 100 level.

d	**Evaluation of assessment**			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			No

Rationale

The interim skipjack tuna stock assessment (Maunder et al., 2002) and review of the skipjack tuna stock assessment (Bence et al., 2022) considers uncertainties in relation to several assumptions and explicitly includes uncertainty in the evaluation of stock status and formulation of management advice (Maunder2022). However, uncertainties concerning the spatial structure and movement of skipjack tuna in the EPO remain. On this basis SG 100 is not met.

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

Rationale

Internal review of stock assessments is provided by the Scientific Advisory Committee each year. IATTC reports show discussion on model inputs, output uncertainties, stock structure and data gaps (www.iattc.org/GetAttachment/3a1c2ba7-3078-41fb-a4c3-169e7bc618b8/SAC-13-14_Staff-recommendations-to-the-Commission.pdf). On this basis requirements at the SG 80 level are met.

The interim skipjack tuna stock assessment (Maunder et al., 2022) underwent an external review in November 2022 and a detailed report of the meeting has been published (Bence et al., 2022). This meets requirements at the SG 100 level.

References

Maunder (2022); Maunder et al. (2022); Bence et al. (2022) Methot and Wetzel (2013); IATTC (2019)

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

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

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

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10 Appendices

10.1 Assessment information

10.1.1 Previous assessments

The Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery was previously certified in 2022. The full assessment is available on the MSC website.

Table 13. Summary of previous assessment conditions.

Condition number	Condition	Performance Indicator (PI)	Related to previous 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	NA
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	NA
2-3	US Small PS UoA: By the 4th annual surveillance audit, provide evidence that it is highly likely that shark finning is not taking place	PI 2.2.2 SI d	NA
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)	NA
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)	NA
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)	NA
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)	NA

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	NA
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	NA
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	NA
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	NA

10.1.2 Small-scale fisheries

This fishery is not a small scale fishery.

10.2 Evaluation processes and techniques

10.2.1 Site visits

Information will be included at the client and peer review draft report stage.

also took place at hotels and restaurants in the San Diego and Mazatlan regions.

Table 14. Audit Plan: Key Meetings and Locations

10.2.3 Evaluation techniques

Scoring and Report Development Process

Scoring Methodology

The assessment team followed guidelines in MSC FCP v2.2 Section 7.10 "Scoring the fishery". Scoring in the MSC system occurs via an Analytical Hierarchy Process and uses decision rules and weighted averages to produce Principle Level scores. There are 28 Performance Indicators (PIs), each with one or more Scoring Issues (SIs). Each of the scoring issues is considered at the 60, 80, and 100 scoring guidepost levels. The decision rule described in Table 15 determines the Performance Indicator score, which must always be in an increment of 5. If there are multiple 'elements4' under consideration (e.g. multiple main primary species), each element is scored individually for each relevant PI, then a single PI score is generated using the same set of decision rules described in Table 15.

Table 15. Decision Rule for Calculating Performance Indicator Scores based on Scoring Issues, and for Calculating Performance Indicator Scores in Cases of Multiple Scoring Elements. (Adapted from MSC FCPV2.2 Table 4)

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

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

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

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

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

10.3 Peer Review reports

To be drafted at Public Comment Draft Report stage.

10.4 Stakeholder input

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

Table 16. Summary of Stakeholder Submissions

10.5 Conditions

10.5.1 Summary of conditions closed under previous certificate

No conditions have been closed under previous certificate at the time of the publication of this report.

10.5.2 New conditions & Client Action Plan

To be added at the Client and Peer Review Draft stage.

Table 17 Condition X NEW

10.6 Client Action Plan

To be drafted at Public Comment Draft Report stage.

10.7 Surveillance

To be drafted at Client and Peer Review Draft Report stage.

Table 18. Fishery surveillance audit

Table 19. Timing of surveillance audit

Table 20. Surveillance level rationale

10.8 Harmonised fishery assessments

10.8.1 Principle 1 Harmonisation

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 harmonisation discussion with other relevant CABs to agree on scores.

Table 21. Fisheries in the MSC System Considered for Harmonization.

Standard v2.0/2.01			**1.1.1**	**1.1.2**	**1.2.1**	**1.2.2**	**1.2.3**	**1.2.4**
Fishery Name	**CAB**	**Report Version**	**1.1.1 Overall score**	**1.1.2 Overall score**	**1.2.1 Overall score**	**1.2.2 Overall score**	**1.2.3 Overall score**	**1.2.4 Overall score**
AGAC four oceans Integral Purse Seine Tropical Tuna Fishery **SKJ MOVED TO P2**	Lloyds Register	Final Report Oct 2021	70	80	70	60	80	80
Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery **SKJ MOVED TO P2**	SCS Global Services	ACDR Sep 2020	70	80	70	60	80	80
Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery- **SCOPE EXTENSION**	SCS Global Services	ACDR January 2022	>80	>80	>80	>80	>80	>80
Eastern Pacific Purse Seine Skipjack and Yellowfin tuna fishery (FSC and FAD set fishery) **SKJ MOVED TO P2**	Lloyds Register	FDR Aug. 2022	60-79	≥80	60-79	60-79	≥80	≥80
Northeastern Tropical Pacific Purse Seine yellowfin and skipjack tuna fishery **SKJ SUSPENDED IN 2021**	Control Union	PCR Nov 2017	SUS	SUS	SUS	SUS	SUS	SUS
US Pacific Tuna Group Purse Seine FSC and FAD Set Fishery **SKJ MOVED TO P2**	SCS Global Services	ACDR May 2021	70	80	60-79	60-79	≥80	≥80

MSC Harmonized Scores	70	80	70	60	80	80

Table 22. Overlapping fisheries

Supporting information	
Describe any background or supporting information relevant to the harmonisation activities, processes and outcomes.	
Was either FCP v2.2 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	**Yes / No**
Date of harmonisation meeting	**DD / MM / YY**
If applicable, describe the meeting outcome	
e.g. Agreement found among teams or lowest score adopted.	

10.9 Objection Procedure

To be added at Public Certification Report stage

11 Template information and copyright

This document was drafted using the 'MSC Reporting Template v1.2'.

Template version control

Version	Date of publication	Description of amendment
1.0	17 December 2018	Date of first release
1.1	29 March 2019	Minor document changes for usability
1.2	25 March 2020	Release alongside Fisheries Certification Process v2.2

A controlled document list of MSC program documents is available on the MSC website (msc.org).

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