# Ecuador South Eastern Pacific swordfish – longline fishery

## Pre-Assessment Report

| | |
|---|---|
| Conformity Assessment Body (CAB) | Kiwa España S.L.U. |
| Fishery client | Fundación Escuela De Pesca Del Pacifico Oriental (EPESPO) |
| Assessment type | Pre-assessment |
| Date | August 2025 |

# 1 Contents


1. Contents ..... 2
2. Glossary ..... 3
3. Executive summary ..... 5
4. Report details ..... 7
*4.1. Aims and constraints of the pre-assessment ..... 7*
*4.2. Version details ..... 8*
5. Unit(s) of Assessment and Unit(s) of Certification ..... 8
5.1. Unit(s) of Assessment ..... 8
5.2. Vessels list(s) ..... 9
5.3. Fishery overview ..... 11
6. Traceability ..... 13
*6.1. Traceability - initial review and planning ..... 13*
*6.2. Traceability within the fishery ..... 14*
*6.3. Traceability risks and mitigations ..... 16*
7. Pre-assessment results ..... 20
*7.2. Pre-assessment results overview ..... 20*
*7.3. Summary of potential conditions by Principle ..... 24*
*7.4. Summary of Performance Indicator level scores ..... 24*
*7.5. Principle 1 ..... 24*
*7.6. Principle 2 ..... 65*
*7.7. Principle 3 ..... 165*
8. Appendices ..... 184
*8.1. Evaluation processes and techniques ..... 184*
*8.2. Harmonised fishery assessments ..... 185*
*8.3. Assessment Team – biographies/summaries of CVs (optional) ..... 188*
*8.4. References (Bibliography) ..... 189*
9. Template information and copyright ..... 196

# 2 Glossary

CAB (MSC) Conformity Assessment Body
CITES Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMM Conservation and Management Measure
CoC Chain of Custody
CPUE Catch per Unit Effort
EEZ Exclusive Economic Zone
EPO Eastern Pacific Ocean
ETP Endangered, Threatened or Protected species
F Fishing mortality
FADs Fishing Aggregation Devices
FAO Food and Agriculture Organization of the United Nations
FCP Fisheries Certification Process
FIP Fisheries Improvement Plan
FMSY Fishing mortality at MSY
HCR Harvest Control Rule
IATTC Inter-American Tropical Tuna Commission
ISSF International Seafood Sustainability Foundation
ITQ Individual Transferable Quota
IUCN International Union for Conservation of Nature
Kg Kilogram
LRP Limit reference point
MCS Monitoring, Control and Surveillance
MFCL MULTIFAN-CL Stock Assessment Software
MP Management plan/procedures
MSC Marine Stewardship Council
MSE Management Strategy Evaluation
MSY Maximum Sustainable Yield
NGO Non-Government Organisation
PAN National Action Plan
PI Performance Indicator
PRI Point of Recruitment Impairment
RFMO Regional Fisheries Management Organisations
ROP Regional Observer Programme
SB Spawning Biomass
SBMSY Spawning biomass at MSY SC Science Committee
SI Scoring Issue
SSB Spawning Stock Biomass
t/mt metric ton

TAC Total Allowable Catch

TRP Target reference point

UoA Unit of Assessment

UoC Unit of Certification

VME Vulnerable Marine Ecosystem

WWF World Wildlife Fund

# 3 Executive summary

This pre-assessment was requested by Fundación Escuela De Pesca Del Pacifico Oriental (ERESPO), henceforth 'the client', to Kiwa España S.L.U. The purpose of this pre-assessment is to assess the performance against the requirements of the MSC Fisheries Standard of the **Ecuador South Eastern Pacific swordfish - longline fishery**, with the swordfish species assessed as the only P1.

The experience of the team that has prepared this pre-assessment report is summarized below:

**Macarena García,** holds a degree in Environmental Sciences from the Polytechnic University of Madrid and a Master's in Sustainable Management of Coastal and Marine Systems from the University of Barcelona. She was the Manager of the Inemar Association (Association for the Study of the Sea and its Resources). She worked at the public company TRAGSATEC as a technician in the Maritime Affairs and Fisheries Directorate, in the Marine Environment Unit, and at TRAGSA as a Technician in the Environmental Services Department. In both companies, her work was related to the impact of human activities on marine resources. She has participated in scientific publications such as "Ecological framework for the management of different habitats in Spain (Council Directive 92/43/CE)", "Supporting report accompanying the thematic cartography of the MedRAS Project", and "Draft of the Basis for Marine Planning in Spain". She was responsible for the technical and scientific coordination of the bilingual publications "Mares de España" and "Human Activities in the Seas of Spain" edited by the Ministry of Environment, Rural, and Marine Affairs of Spain.

In 2011, she began her professional career in the field of certification and conformity verification for the fishing and aquaculture sector at Bureau Veritas Certification. Initially as an inspector and technical expert in fishing, she evolved over the years to acquire the necessary competencies and qualify as a lead auditor for third-party schemes and sustainability project manager, always linked to the fishing sector. In 2015, she assumed the role of scheme manager for MSC fisheries and MSC Chain of Custody for all of Bureau Veritas.

In February 2021, she joined Kiwa España SLU to develop the business line for fishery products both in Spain and for other international subsidiaries. The projects to be developed include inspections on supermarket platforms, supplier audits, private label projects, sustainability policies, and second and third-party scheme certifications, notably MSC fisheries and MSC Chain of Custody.

Regarding the MSC Fisheries scheme, she is qualified as a Team Leader, meeting the competencies in local fishery knowledge and traceability.

For this pre-assessment Macarena García acted as team leader.

**Cláudia Correia** is a marine biologist with 18 years of dedicated experience in fisheries management and empowering fishing communities. Currently pursuing a PhD in Public Policy at ISCTE, University Institute Lisbon, her research focuses on the role of public policies in strengthening communities, promoting their long-term sustainability and resilience. As part of her doctoral work, she actively participates in initiatives aimed at empowering fishing communities and is supporting the creation of a seaweed harvesters' association in São Martinho do Porto, Portugal.

Blending academic research with fieldwork, Cláudia collaborated with MARE - Marine and Environmental Sciences Centre at the University of Évora, where she monitored sea lamprey and shad fisheries, joining fishers both on rivers and at sea. She worked closely with the fishing communities of the Mondego and Vouga River basins and small-scale fisheries in Figueira da Foz, promoting their active involvement in resource management. Additionally, the fieldwork conducted at the University of Évora was highly relevant for the ecological assessment of species and the monitoring of fisheries, with a strong focus on analysing the health and dynamics of stocks and their ecosystems. The collaboration with MARE involved detailed biological sampling, where key parameters such as growth, recruitment, and stock characterization of lamprey and shad populations were assessed. This experience, which included direct collaboration with local fishing communities, allowed her to acquire in-depth knowledge of the ecology and sustainability of fisheries, particularly in relation to the impacts of fishing on aquatic ecosystems, including bycatch, endangered, threatened, or protected species, and habitat and ecosystem interactions.

She also led an innovative, patented project at the Polytechnic Institute of Leiria, inspired by the bubble-net feeding technique of humpback whales.

For over a decade, she worked with NGOs, where she played a key role in promoting sustainable fisheries and marine conservation. During this time, she was part of the co-management committee for the Berlenga goose barnacle fishery, contributing to the development of more sustainable and collaborative management practices.

Currently, Cláudia is developing a Fisheries Improvement Project for the Louisiana crayfish fishery in Spain, aligned with Marine Stewardship Council principles, conducting fieldwork with fishers monitoring and biological sampling to promote sustainable fishing practices and assess stock health.

Recently, she joined Kiwa Spain’s fisheries team as an auditor and consultant, ensuring fisheries' compliance with sustainability standards and supporting certification processes. As part of her role at Kiwa she is particularly dedicated to the Embarca – Rumo à Pesca Sustentável project in Portugal, contributing her expertise to ensure fisheries' compliance with sustainability standards and supporting certification processes.

As a trainer at FOR-MAR in Peniche and Nazaré, she empowers fishing communities through specialised training on ocean literacy, sustainable fisheries, and marine conservation.

Her career reflects a continuous commitment to bridging science, public policy, and communities — advocating for a fairer, more sustainable fisheries management system where fishers play a key role in safeguarding marine ecosystems.

For this pre-assessment Cláudia acted as Principle 2 and Principle 3.

The client’s strengths are:

- The Ecuadorian FIP members, including the swordfish fishery, signed an MoU with the IATTC in 2023. This agreement focuses on collaborating in scientific and technical programs and projects aimed at strengthening data collection, promoting good on-board practices, and, above all, providing information to support stock assessment processes and exploitation strategies.
- A work plan is expected focused on research and monitoring of the swordfish stock. A new southern swordfish stock assessment will then be developed and presented in 2025.

- Comprehensive Monitoring and Data Collection: The IATTC has implemented a robust data collection program that tracks both target and non-target species, including critical ETP species such as turtles, dolphins, and sharks. The monitoring of physical oceanographic factors also enables a better understanding of how climate conditions, like El Niño and La Niña, influence the ecosystem, allowing for early detection of any potential risks to the ecosystem (IATTC SAC 13-10; SAC 14-11).

- An on-board observer program has been implemented under the Fisheries Improvement Project (FIP), with the objective of collecting data from four steel-hull vessels operated by one of the companies participating in the FIP. The results of this work were used as one of the sources of information on the catch composition of the steel fleet (UoA2).

- The fishing gear is a surface longline that has no direct interactions with any benthic habitats.
- Ecuador has a comprehensive legal framework governing fisheries.
- Ecuador has taken substantial steps to address the EU IUU regulation yellow label status.

The client's weaknesses:

- Lack of Recent and Formally Adopted Stock Assessment. Provisional and Unadopted Reference Points
- Incomplete and Uncertain Monitoring Data
- Absence of Comprehensive Strategic Research Plan
- Incomplete Implementation of Harvest Strategy
- Lack of Review and Implementation of Alternative Bycatch Measures
- Uncertainty Not Fully Addressed in Harvest Control Rules
- Uncertainty in obverse coverage: Although the MPCEIP-SRP-2021-0208-A introduced progressively higher observer coverage targets for the longline fleet — 10% until December 2022, increasing to 15% in 2023 and 20% in 2024 — this regulation is not exclusive to the Ecuadorian fleet, and the team is not aware whether this commitment to increase observer coverage has been met. No new information is available for the current year (2025).
- Limited Understanding of Trophic Interactions: While considerable progress has been made in understanding the trophic structure of the pelagic food web in the EPO, there remains some uncertainty about how fishing impacts specific trophic levels, especially with regard to non-target species and lower

# 4 Report details

## 4.1 Aims and constraints of the pre-assessment

The CAB notes that a pre-assessment does not attempt to duplicate a full assessment against the MSC Fisheries Standard. This preassessment complies with a group of qualified but one more member (P1) should be needed to fulfil the team competences for a full assessment. Additionally, a full assessment includes public consultation stages and peer reviewers that are not included in a pre-assessment. It is important to note that a pre-assessment provides a provisional assessment based on a limited set of information. The sources of information consulted to prepare this report were the client and publicly available information sources.

No limitations were found during the drafting of this report.

## 4.2 Version details

The versions of the fisheries program documents used for this assessment are identified in **Table 4.2.1**.

*Table 4.2.1: Fisheries program documents versions*

| Document/Assessment Tree | Version number/Type |
|---|---|
| MSC Fisheries Certification Process | Version 2.3 |
| MSC Fisheries Standard | Version 2.01 |
| Assessment tree | *Default* |
| MSC General Certification Requirements | Version 2.6 |
| MSC Pre-Assessment Reporting Template | Version 3.4 |

# 5 Unit(s) of Assessment and Unit(s) of Certification

## 5.1 Unit(s) of Assessment

Kiwa has confirmed that the assessed fishery is within the scope of the MSC fisheries certification since:

- This is a wild-capture fishery.
- The fishery is not based on any introduced species.
- It does not target species classified as 'out-of-scope' (amphibians, reptiles, birds, mammals).
- The fishery does not make use of any kind of poisons or explosives.
- The assessed fishery takes place within international waters of the Eastern Pacific Ocean (FAO 87) and the Exclusive Economic Zones (EEZs) of Ecuador. The fishery is not conducted under any controversial unilateral exemption to an international agreement and its management regime includes mechanisms for resolving disputes. Ecuador signed the International Commission for the Conservation of Atlantic Tunas (IATTC) in 2004 and ratified the convention in 2021.
- Ecuador is member of the International Labour Organization (ILO). The country has ratified 62 conventions, including 8 Fundamental Conventions (including the Forced Labour and the minimum age Conventions) and 3 Governance Conventions. The CAB is not aware that none of the fishing operators included in the UoA have been successfully prosecuted for a forced or child labour in the last 2 years.
- The CAB is not aware that the client does not include an entity that has been convicted for a shark finning violation in the last 2 years, as required in FCP 7.4.8.5. However, in the case the client decides to proceed to full assessment, the correspondent CAB shall check this issue with relevant stakeholders and compile evidence to confirm that no conviction which confirms guilt with respect to a violation of shark finning law has occurred in the last 2 years. The intent of this requirement is that it should apply to specific vessels or groups of vessels as defined under 7.24.7.1, which are implicated in the conviction with the legal entities, e.g. individuals or companies that have been convicted for shark finning offences.
- The fishery is an enhanced fishery and conforms to the scope criteria for enhanced fisheries (MSC FCP v2.3 7.4.2.12), see **Section 5.1.1** for more information; and

- The fishery is not an introduced species-based fishery (ISBF) (MSC FCP v2.3 7.4.2.13).

Finally, following the FCP v2.3, the client prior to announcing a fishery assessment, would be required to complete and submit a Scope Declaration using the 'MSC Scope Declaration Template', to confirm that the UoA meets the scope requirements in 7.4.8 including some of the statements abovementioned and MSC's labour policy.

Besides, Kiwa has checked that:

- There are no catches of non-target species that are inseparable or practically inseparable (IPI) from target stock.
- The fishery has not previously failed an assessment and has no certificate withdrawn.
- The fishery is included in the Fishery Progress with a FIP. The FIP started in June 2021 and the projected end date was December 2024. Two pre-assessments have been performed since the entry of the fishery in the FIP. One preassessment was done in 2019 and reviewed in 2021. Both can be found in the Fishery Progress website.
- At the time of preparing this preassessment, there are several MSC fisheries, some under assessment, in the Pacific with different P1 target stocks. See **Section 8.2** for details on the harmonisation needs.

***Table 5.1.1**: Unit(s) of Assessment (UoA)*

| **UoA 1** | **Description** |
|---|---|
| Target Stock | Swordfish *(Xiphias gladius)* – South EPO stock |
| Geographical area | Exclusive Economic Zone of Ecuador and the High seas of FAO 87. |
| Fishing gear type(s) and, if relevant, vessel type(s) | Pelagic longline |
| Client group | Artisanal and industrial longline mother-ships - Nodrizas - and their towed fiber-glass skiffs – Fibras. See **Table 5.1.2** for the vessel list. |
| Other eligible fishers | No other eligible fishers have been considered. |
| Justification for choosing the Unit of Assessment | Aligned with the FIP of Fishery Source. |
| **UoA 2** | **Description** |
| Target Stock | Swordfish *(Xiphias gladius)* – EPO stock – Southeast |
| Geographical area | Exclusive Economic Zone of Ecuador and the High seas of FAO 87 |
| Fishing gear type(s) and, if relevant, vessel type(s) | Pelagic longline |
| Client group | Steel industrial longline fleet (>40m) - Aceros (4 boats). See **Table 5.1.3** for the vessel list. |
| Other eligible fishers | No other eligible fishers have been considered. |
| Justification for choosing the Unit of Assessment | Aligned with the FIP of Fishery Source. |

### 5.1.1 Vessels lists

***Table 5.1.1.2**. List of fishing companies and vessels included in UoA 1. Source: table elaborated by the team with information provided by the client.*

| Vessel name | Fishing company | Flag State | National Registration Number | Length overall (m) | Gross Tonnage (t) |
|---|---|---|---|---|---|
| BRIANA BETANIA | MURILLO TOMALA GUSTAVO DAVID | Ecuador | P-04-01090 | 18,9 | 111.43 |
| COSTA MARLIN | SOISAMAR S.A.S. | Ecuador | P-04-01049 | 23 | 175 |
| DON ANTONIO | PONCE REYES LOURDES TATIANA | Ecuador | P-04-00425 | 23,2 | 158,12 |
| DON FABIAN I | PACHAY CALDERON FRANCISCO BARTOLOME | Ecuador | P-04-00649 | 23,7 | 161,81 |
| DON JACINTO | LOPEZ FRANCO SANTA MARILI | Ecuador | P-04-01089 | 20,4 | 135,37 |
| DON JAIME | JAIME ESTEDIO MANTUANO FLORES | Ecuador | P-04-00902 | 21,5 | 115,64 |
| DON NICO III | NICOLAS BILER LUCAS | Ecuador | P-04-00688 | 22,16 | 113,15 |
| DOÑA BLANCA I | SANTA CRISTINA PACHAY | Ecuador | P-04-00648 | 21,03 | 91,21 |
| FABIAN II | PACHAY CALDERON FRANCISCO BARTOLOME | Ecuador | P-04-00797 | 21,3 | 102,15 |
| FABIAN III | PACHAY CALDERON FRANCISCO BARTOLOME | Ecuador | P-04-00910 | 25,85 | 196 |
| FER MARY II | LOPEZ ZAMBRANO EDGAR RAIMUNDI | Ecuador | P-04-00673 | 20,6 | 84,7 |
| GUSY FER | ZUNIGA MESIAS MARISOL ALEXANDRA | Ecuador | P-04-01008 | 23,1 | 192,68 |
| GUSY FER II | ZUNIGA MESIAS MARISOL ALEXANDRA | Ecuador | P-04-00938 | 23,4 | 160,03 |
| JACK MAR | ESPINOZA GARCIA HERACLITO DELFIN | Ecuador | P-04-00914 | 23,5 | 150,57 |
| LOS TRES HERMANOS | MARIN LOPEZ LIDER ENRIQUE | Ecuador | P-04-00492 | 14,5 | 27,89 |
| MAR DE AMOR | PACHAY HOLGUIN CRISTOBAL FABIAN | Ecuador | P-04-00358 | 25,5 | 192,91 |
| MARYALEX | ORMAZA PONCE GEORGEN RODOLFO | Ecuador | P-04-00674 | 23 | 169,24 |
| ODALIS | HOLGUIN ANCHUNDIA GERMAN ALCIDES | Ecuador | P-04-00550 | 15,94 | 39,07 |
| REGALO DE DIOS | LOPEZ FRANCO EVELYN JAMILET | Ecuador | P-04-01024 | 15,85 | 62,13 |
| REY ADONAY I | LADY IRENE PONCE REYES | Ecuador | P-04-01026 | 22,7 | 94,57 |
| REY FERNANDO XAVIER | ORMAZA PONCE GEORGEN RODOLFO | Ecuador | P-04-01052 | 24 | 185,69 |
| SOFIA R. | CESAR GREGORIO REYES FRANCO | Ecuador | P-04-00616 | 19,4 | 74,6 |
| SOLO ES MEJOR | SOISAMAR S.A.S. | Ecuador | P-04-00926 | 23 | 177,91 |
| SONIA MAR | CUENCA ZAMBRANO JUAN ALEXANDER | Ecuador | P-04-00861 | 21,85 | 100,27 |
| VOLGA | LOPEZ FRANCO JACINTO MAURICIO | Ecuador | P-04-00660 | 21,7 | 110,93 |
| VOLGA III | JACINTO POLIVIO LOPEZ PICO | Ecuador | P-04-00460 | 19,5 | 82,63 |
| VOLGA II | LOPEZ FRANCO JACINTO MAURICIO | Ecuador | P-04-00745 | 19,7 | 81,27 |

***Table 5.1.1.3**. List of fishing companies and vessels included in UoA 2. Source: table elaborated by the team with information provided by the client.*

| Vessel name | Fishing company | Flag State | IMO | Length overall (m) | Gross Tonnage (t) |
|---|---|---|---|---|---|
| ALTAR 21 | TRANSMARINA C.A. | Ecuador | 8301369 | 48 | 491 |
| ALTAR 10 | TRANSMARINA C.A. | Ecuador | 8803977 | 53,61 | 604 |

| | | | | | |
|---|---|---|---|---|---|
| ALTAR 11 | TRANSMARINA C.A. | Ecuador | 8904082 | 55,45 | 655 |
| ALTAR 8 | TRANSMARINA C.A. | Ecuador | 8520068 | 53,51 | 577 |

## 5.2 Fishery overview

The longline fleet is composed of two main components: the steel-hulled industrial vessels known as *Aceros*, and the *mother-ship* vessels – *Nodrizas* – which may be classified either as industrial or artisanal depending on the use of mechanised hauling systems.

The *Aceros* are steel vessels of up to 45 m in length, equipped with motorized longline gear targeting medium-depth pelagic species, including tunas and billfishes (**Figure 5.2.1**). The fishing operation typically begins in the late afternoon or evening and lasts between three to six hours. Gear deployment takes place from the stern, relying on the vessel's forward motion to maintain line tension. Hauling begins before sunrise, generally from the starboard side, using hydraulic winches operated by a crew member positioned to monitor both the line and vessel trajectory (Domingo et al., 2014). The *Aceros* fleet comprises seven vessels in total, four of which are owned by the client (UoA2).

The second segment of the fleet consists of *Nodrizas* and their associated fiber-glass skiffs (*Fibras*), operating pelagic longlines (**Figure 5.2.2**). The *Nodrizas* are vessels between 14 and 30 m in length — often converted from small purse seiners — while the *Fibras* range from 3 to 10 m (**Figure 5.2.3**), typically between 7.5 and 10 m. *Nodrizas* has an autonomy of 30 to 40 days, whereas the *Fibras* operate for 1 to 3 days. According to Ministerial Agreement No. 407 (2011), each *Nodriza* may tow up to ten *Fibras*, and the entire unit (mother-ship and skiffs) is considered a single fishing unit.

Importantly, *Nodrizas* can be classified either as industrial or artisanal depending on the presence of mechanised hauling equipment such as hydraulic winches. When such equipment is present, the vessel is categorised as industrial. Otherwise, it falls under the artisanal classification (MPCEIP, 2022a). However, Article 152 of Executive Decree No. 362 (February 2022) stipulates that, for all legal purposes, any vessel operating as a *Nodriza* is subject to the industrial legal framework. Article 183 further states that all associated *Fibras* must be registered and formally linked to their *Nodriza* within the competent authority's records. All catches from the fishing unit must be recorded in the logbook held on board the *Nodriza*.

There are currently 142 *Nodrizas* registered nationally. For the purpose of this pre-assessment, only the 27 *Nodrizas* belonging to the client were considered (UoA1). Of these, data were available for 26 vessels, as one—*Jack Mar*—had no operational data.

***Figure 5.2.1*** *– Industrial longline fishing boat – Acero – UoA 2*

***Figure 5.2.2*** *– Nodriza – UoA 2*

***Figure 5.2.3*** *– Nodrizas's towed fiber-glass skiffs - Fibras*

The Ecuadorian longline fleet operates year-round, and the species composition of its catches is strongly influenced by the seasonal dynamics of the northwesterly flow of the Humboldt Current and its associated cold water masses along the Peruvian coast. These oceanographic conditions drive significant shifts in both the fishing gear used and the target species.

According to the technical report provided by the client and developed within the framework of the FIP for the UoAs, spatial analysis indicates that fishing activity was concentrated in the eastern Pacific, between 10°S and 10°N, particularly around 100°W. Operations predominantly took place in oceanic waters adjacent to the Galápagos Islands, an area believed to have a high abundance of swordfish. The observed distribution suggests the presence of high fishing effort zones, potentially influenced by favorable oceanographic conditions.

During periods of cooler water temperatures (below 25°C), particularly offshore and in southern areas, the fleet deploys a thin longline gear configuration known as '*doradero'*, specifically designed to target dolphinfish (*Coryphaena hippurus*), which dominates the catches during this season. However, in warmer conditions, the fishery shifts to a more diverse gear setup targeting tunas, billfishes and sharks. Under these circumstances, the catch composition becomes notably more heterogeneous.

According to the client the hooks can be either J-hooks in sizes 36 and 38, or C-hooks (circle) in size 15. The typical LL-DOL J-hook known as de '*doradero*' has a smaller opening than the typical LL-TBS hook and is slightly longer.The configuration of this gear consists of a buoyed mainline with 300 – 700 branch lines, each separated by 16–25 m (3-7 branch lines between two buoys, according to Martinez-Ortiz and Zuñiga-Flores, 2012). This means that longlines are between 4,8 and 17 km long. Branch lines are 6 – 13 m in length, and according to Martinez-Ortiz and Zuñiga-Flores (2012) there are between 3 and 7 branch lines between two buoys. Each branch line holds a hook, meaning that each longline would hold between 300 and 700 hooks. However, Martinez-Ortiz and Zuñiga-Flores (2012) indicate that the number of branch-lines/hooks per longline can reach up to 900 or even 1200. The authorized hooks (Agreement 070/2011) can be either J-hooks in sizes 3, 4, 5 and 6 or C-hooks (circle) in sizes 14 and 15. However, the client confirmed that no distinction will be made between hook types used within the artisanal and industrial segment of the fleet (UoA1).

According to data provided by the client, the industrial segment—specifically the *Aceros* (UoA2)—utilizes the J10 hook model- codified as Tuna-Billfish-Shark longline (LL-TBS). The configuration of this gear consists of a mainline with 120 – 300 branch lines, each separated by 40 – 60 m. Branch lines are 11 – 34 m in length (Martinez et al., 2015).

# 6 Traceability

## 6.1 Traceability - initial review and planning

As described above, in Ecuador the longline fishery is composed by 2 segments, the steel-hulled industrial vessels known as *Aceros*, and the mother-ship vessels, *Nodrizas*, which may be classified either as industrial or artisanal depending on the use of mechanised hauling systems. Both *Aceros* and *Nodrizas* have to complete the fishing logbooks and the mechanisms to verify the type of gear that the vessels use are: i) the fishing logbook

(LODAP, article No. 162 and General Regulation, article No.225 ) that has to be completed daily and it must be delivered on the landing site or when the completion of fishing operations is achieved and ii) the Fisheries Landing Monitoring and Control Certificate (CMCDP) (Article 238, LODAP), that is issued after the inspector certifies that the vessel has the permits or documents required by law (fishing logbook, fishing permit, departure permit and landing declaration). Each vessel must possess a CMCDP to obtain the mobilization permit which allows the transportation and sale of caught fish.

***Table 6.1.1**: Traceability initial planning*

| The proposed point of change of ownership of product to any party not covered by the fishery assessment |
|---|
| The proposed point of transfer of ownership is at the port, when the fish is unloaded and legal ownership is passed from the vessel to the processing facility. Since this transfer takes place prior to the fish entering the processing plant, and if the receiving party is not included within the scope of the fishery assessment, additional traceability measures may be required to ensure the transition is adequately documented. The first sale generally occurs once the fish has been offloaded and delivered to the processing plant. Should any transactions take place between members of the client group before the first sale, these must be properly recorded to ensure full traceability. The trading process must be transparent, and records of all such transactions should be available, particularly where they involve entities not covered by the fishery assessment. |
| The proposed point from which subsequent Chain of Custody (CoC) is required |
| The CoC is required from the point of unloading at the processing plant, where the fish is handled and prepared for sale. This ensures that any party involved in further distribution, whether within the processing facility or outside, adheres to traceability standards. It is important to confirm whether CoC requirements apply before the first sale to non-assessed parties, and if so, when the responsibilities shift to these parties. |
| The plan for reviewing traceability at the initial assessment site visit |
| If the fishery decides to go for full assessment, during the initial assessment site visit, the focus will be on collecting data related to the catch logs, processing records, and ownership transfer documentation. Key personnel to consult include the vessel captain, port authorities, and processing plant managers. These individuals can provide the necessary documentation to confirm compliance with traceability requirements, including logs for each set, species caught, and the movement of the product from the vessel to the processing facility. |

## 6.2 Traceability within the fishery

***Table 6.2.1**: Traceability within the fishery*

| Statement on fishery's ability to track and trace to each Unit of Assessment |
|---|
| Systems allow the fishery client to track to trace any fish or fish products back to each individual UoA |
| Movement of fish and fish product between **harvest** and **landing**<br>*An illustration of movement of product between harvest and landing. Include when any of the following happen: Harvesting, At-Sea processing, Translocation, Transhipment, Offloading, Landing.* |
| ***Fishing Vessel → Offloading → Landing***<br>Tuna is caught on longline vessel and then offloaded directly to the landing. |
| Movement of fish and fish products between **landing** and the proposed **start of the CoC** if relevant<br>*An illustration of movement of product between landing and the proposed start of CoC. Include when any of the following is happening: Transport, Storage, Sorting/ Grading, Packing, Auction.* |

| |
|---|
| ***Landing → Transport → Storage → Sale by client group company.***<br>Fish is unloaded, transported to cold storage, then sorted and/or graded, and eventually sold by the client group company. CoC is established at or before the landing, depending on regulatory and traceability requirements |
| Description of any processing and sorting/ grading prior to change of ownership |
| Before the change of ownership, the fish may undergo sorting, grading, and packaging. These processes are critical to ensure segregation based on species and other UoA-related data. Key data elements like species and catch area are recorded and associated with each batch to ensure traceability to the correct UoA. |
| For the critical tracking events (i.e. where in the product flow this data needs to be transferred) of all fish and fish product handling and sale not covered by the proposed CoC describe:<br>- Process of segregating to each Unit of Assessment<br>- Key data elements (i.e. the data or documents to identify the UoA such as species, catch area, gear) |
| For all fish handling and sale, critical tracking events ensure the accurate transfer of data:<br>• **Segregation Process:** Fish from each UoA is segregated during processing, ensuring clear identification through tagging or separate storage areas.<br>• **Key Data Elements:** These include species, catch area, and other relevant identifiers such as vessel name and registration number, all of which are essential for maintaining traceability. |
| Where there are IPI stock(s) within the scope of certification, describe the verification of traceability systems |
| For IPI stocks, which cannot be segregated from P1 stocks, traceability systems manage this by tracking these stocks through similar critical tracking events. While segregation may not be physically possible, all data related to the catch of IPI stocks is recorded and linked to the appropriate UoA. |
| Other relevant information on the systems to track and trace to each UoA |
| Relevant regulatory controls, such as observer coverage, vessel monitoring systems (VMS), and adherence to IATTC regulations, provide robust oversight of traceability. These measures ensure that each fish or product can be traced to its respective UoA, with data cross-checked against vessel logs, observer reports, and port landing records. |

| | |
|---|---|
| Do systems allow the fishery client to trace any fish or fish products back to the individual UoA?<br><br>If yes, describe | Yes, the systems in place for the longline ishery allow the fishery client to trace fish or fish products back to the individual UoA. This is achieved through a combination of catch records and vessel monitoring systems (VMS).<br><br>The traceability systems have to ensure that every batch of fish can be linked to a particular UoA in the Eastern Pacific Ocean (EPO) region. This includes tracking fish from the moment of capture on the vessel to its unloading, processing, and eventual sale. Moreover, the use of observer coverage and adherence to IATTC regulations further supports the traceability of fish to its respective UoA.<br><br>These systems, coupled with regulatory oversight and proper documentation, ensure the integrity and traceability of the products throughout the supply chain. |

| | |
|---|---|
| Do systems allow the fishery client to trace any fish or fish products back to the individual UoA and how do they do this?<br><br>If yes, describe | Yes, the systems in place allow the fishery client to trace fish or fish products back to the individual Unit of Assessment (UoA) through several methods:<br><br>1. Catch Logs: Detailed records of each fishing set, including species, location, and gear used, are tied to a specific UoA.<br>2. Vessel Monitoring Systems (VMS): These track vessel movements and ensure the fish are caught in designated areas corresponding to the UoA.<br>3. Observer Coverage: Onboard observers verify catch data, confirming the UoA and species.<br>4. Port Documentation: Landing records tie the fish back to the UoA through species and quantity logs.<br>5. Processing Plant Sorting: Fish are tagged or assigned to a UoA during sorting and grading.<br><br>These systems ensure traceability from catch to sale, complying with regulatory standards. |
| Does transhipment occur within the fishery? | No |
| What is the type of transhipment and what the systems to track and trace to UoA? (high seas/in port/ other)<br><br>If yes:<br>• How and when does this occur?<br>• What systems allow to track and trace to UoA? | NA. |
| For high seas transhipment are the systems to support tracking and tracing to UoA verified independent from the certificate holder?<br><br>If yes, describe | No high seas transhipment |
| For high seas transhipment do the systems to verify tracking and tracing to UoA cover both fishing and receiving vessels?<br><br>If yes, describe | No high seas transhipment |
| For high seas transhipment do the systems to track and trace to UoA apply to 100% of transhipment events?<br><br>If yes, describe | No high seas transhipment |

## 6.3 Traceability risks and mitigations

***Table 6.3.1**: Traceability risks and mitigation within the fishery*

| **Factor** | **Description of the traceability risk factors and details of the risk mitigation and management**<br>*Include in each description:*<br>• *Whether each factor occurs*<br>• *When it occurs and how frequently (e.g. regularly, seasonally, rarely)*<br>• *How any potential traceability risks are mitigated and any risk management*<br>• *If covered by information provided elsewhere in the pre-assessment report, cross reference as needed.* |
|---|---|
| Will the fishery use gears that are not part of the UoA?<br>If Yes, include in the description:<br>• If this may occur on the same trip, on the same vessels, or during the same season;<br>• How any risks are mitigated. | The vessels are authorized for two different types of longlines LL-TBS (thick longlines) and LL-DOL (thin longlines). Considering that the client has included all types of longline within the UoA the risk is minimum.<br><br>There are still available mitigation measures to minimize this risk:<br>• The type/s of hooks used during the fishing trip shall be recorded in the logbook, and there is a specific field in the form for this purpose.<br>• All landings are inspected for the issuance of the CMCDP, and the inspector must detail the type of gear employed, since there is a specific filed in the form for this purpose.<br><br>However, as set out in Kiwa's PCDR, 2024, the inspectors normally fill in this field with a generic description ('palangre'/longline or 'palangre de superficie'/surface longline) which does not provide enough details to find out which type of longline was actually used.<br><br>Considering that the client decided to assess both longlines, this should not be a risk. However, in case one UoA does not achieve the certification, a risk exists. |
| Will vessels in the UoA also fish outside the UoA geographic area?<br><br>If Yes, include in the description:<br>• If this may occur on the same trip;<br>• How any risks are mitigated. | The vessels fish either in Ecuadorian EEZ waters or in international waters covered by the UoA.<br><br>The following mitigation measures have been identified:<br>- All steel and mother-ship vessels have an operating VMS on board and there are different authorities monitoring those signals. As far as the team knows, the associated fiber-glass skiffs do not have a VMS on board, but the skiffs operate close to the mother-ship vessels.<br>- Even though fiber-glass vessels do not have VMS, the sanctions for operating in a non-authorized area are considered sufficient deterrent, and the border waters between Peru and Ecuador are heavily guarded.<br><br>So, the risk that the vessels in the UoC operate outside the UoC geographic is considered to be NOT relevant for this fishery. |
| Do client group members ever handle certified and non-certified products during any of the activities covered by the UoA?<br><br>This refers to both at-sea activities and on-land activities and should reflect those listed in product movement in Table 4. It includes: | Considering that the UoA1 includes all the possible hooks (from LL-TBS together with hooks from LL-DOL), the mix onboard is not a risk. |

| Factor | Description of the traceability risk factors and details of the risk mitigation and management<br>*Include in each description:*<br>• *Whether each factor occurs*<br>• *When it occurs and how frequently (e.g. regularly, seasonally, rarely)*<br>• *How any potential traceability risks are mitigated and any risk management*<br>• *If covered by information provided elsewhere in the pre-assessment report, cross reference as needed.* |
|---|---|
| • Translocation<br>• Transhipment<br>• Transport<br>• Storage<br>• Processing<br>• Sorting/ grading<br>• Packing<br>• Landing<br>• Auction<br>If yes please describe how any risks are mitigated. | |
| Does transhipment occur within the fishery?<br><br>If Yes, please describe:<br><br>• If transhipment takes place at-sea, in port, or both;<br>• If the transhipment vessel may handle product from outside the UoA;<br>How any risks are mitigated. | Transshipment is allowed within the fishing unit comprised by the mother-ship and its associated fiber-glass skiffs. However, other transshipments are not allowed (i.e. between mother-ship vessels, from 'pata-pata' vessels to mother-ship vessels…).<br><br>The following mitigation measures to avoid illegal transshipments have been identified during the assessment:<br>• Each mother-ship vessel shall register its own fishing activities in its own logbook.<br>• All mother-ship vessels have an operating VMS on board and the Ecuadorian authorities are monitoring those signals.<br>• The sanctions for illegal transshipments are considered a sufficient deterrent.<br>These mitigation measures are considered effective to avoid this risk.<br><br>So, the risk that non-eligible MSC product could be illegally transshipped to a fishing unit included in the UoC is considered to be NOT relevant for this fishery. |
| Are there any other risks of mixing or substitution between the UoA and other non-certified product?<br>If yes, please describe how any risks are mitigated. | Yes, it is important to highlight that there is a fleet of single fiber-glass vessels, locally known as 'pata-pata', which primarily target dolphinfish but can occasionally catch swordfish.These vessels are not associated with mother-ships. The 'pata-pata' operate directly from shore, and the range at which they can work is limited, so there is no interaction with the towed 'fibras'. Furthermore, they do not have VMS or logbook on board.<br><br>There are potential risks of mixing or substitution between the UoA and other non-certified products from the 'pata-pata' fleet. These risks can arise if certified and non-certified products are not properly segregated or documented.<br><br>**Risk Mitigation**:<br>1. Traceability and Documentation: Daily catches recorded in the logbook correspond to the daily catches performed by the mother-ship vessel and its associated fiber vessels.<br>2. Detailed records are kept at every step, from catch to landing and processing. This includes species, fishing area, gear type, and the |

| Factor | Description of the traceability risk factors and details of the risk mitigation and management<br>*Include in each description:*<br>• *Whether each factor occurs*<br>• *When it occurs and how frequently (e.g. regularly, seasonally, rarely)*<br>• *How any potential traceability risks are mitigated and any risk management*<br>• *If covered by information provided elsewhere in the pre-assessment report, cross reference as needed.* |
|---|---|
| | specific UoA associated with each batch. This ensures that products are traceable and that any non-certified catch is clearly documented.<br>3. All landings are inspected for the issuance of the CMCDP. |

# 7 Pre-assessment results

## 7.1 Pre-assessment results overview

### 7.1.1 Overview

**Strengths and Weaknesses of Principle 1 for the Swordfish Longline Fishery**

**Strengths:**

Principle 1 reveals several important strengths in the sustainability and management of the swordfish stock in the eastern Pacific Ocean. The stock status is very likely to be above the point of recruitment impairment, with spawning biomass consistently above limit reference points and fishing mortality rates maintained below target thresholds, indicating no current overfishing and high stock productivity. Exploitation rates have remained below levels consistent with maximum sustainable yield (MSY), and spawning biomass fluctuates around or above MSY-consistent targets, supporting the stability and sustainability of fishing pressure in recent years.

A provisional but precautionary harvest strategy is in place, incorporating monitoring, stock assessments, harvest control rules (HCRs), and management actions, and is responsive to stock status. National monitoring efforts have been strengthened through stakeholder engagement and mandatory satellite vessel monitoring, enabling effective observation and periodic review of management measures.

The harvest control rules established under IATTC Resolution C-16-02 provide a clear framework for reducing exploitation as the stock approaches recruitment impairment, maintaining biomass at levels consistent with MSY. Complementary national regulations further support these measures by regulating gear, effort, and observer coverage.

A substantial and relevant information base supports the harvest strategy, including well-examined data on stock structure, productivity, and fleet composition. Monitoring systems are well established, with regular data collection on stock abundance and removals by the standardised longline fleet, supplemented by mandated observer coverage. Collaborative efforts such as the 2023 Memorandum of Understanding between the IATTC and the Swordfish Fishery Improvement Project (FIP) enhance data quality and monitoring.

Information on total removals is comprehensive for the commercial longline fishery, including catch data, abundance indices, observer programmes, and port sampling, which supports management implementation. The stock assessment methodology is appropriate, incorporating key biological and fishery characteristics and probabilistically accounting for uncertainties. Internal peer review by the IATTC Scientific Advisory Committee adds rigour to the assessment process.

**Weaknesses:**

A key limitation is the absence of a recent, formally adopted stock assessment and the lack of an established Total Allowable Catch (TAC), which restrict confidence in the stock status evaluation.

The harvest strategy, although provisional and responsive, has not undergone a comprehensive performance evaluation to demonstrate its consistent effectiveness in maintaining target biomass levels. National management measures remain incompletely implemented, and key components such as formal adoption of reference points and harvest control rules are pending, limiting strategy effectiveness.

While the HCRs are well defined and effective in theory, their robustness to major uncertainties has not been sufficiently demonstrated. The provisional status of reference points means they have not been rigorously tested across a broad range of biological and ecological scenarios, undermining confidence in the resilience of the harvest strategy.

There has been no regular review or implementation of alternative measures aimed specifically at minimising mortality of unwanted catch, representing a management gap.

The information base, while adequate for immediate management needs, lacks a comprehensive strategic research plan incorporating long-term ecological and environmental considerations. Monitoring meets basic requirements but lacks the frequency, coverage, and certainty required for higher confidence. Significant data gaps persist for artisanal and recreational fisheries, which contribute to total removals but are poorly documented.

Ongoing challenges in data completeness and consistency are highlighted by calls for enhanced scientific support and the forthcoming updated stock assessment, impeding monitoring improvements. The stock assessment, although methodologically sound and probabilistically robust regarding uncertainty, requires further technical refinements in CPUE standardisation, natural mortality, and selectivity modelling. Its limited robustness testing and absence of external peer review reduce confidence in the results. Finally, the provisional nature of reference points restricts their formal adoption and limits management certainty.

The main gaps identified for Principle 1 in the swordfish longline fishery are:

- Lack of Recent and Formally Adopted Stock Assessment
- Provisional and Unadopted Reference Points
- Incomplete and Uncertain Monitoring Data
- Absence of Comprehensive Strategic Research Plan
- Incomplete Implementation of Harvest Strategy
- Lack of Review and Implementation of Alternative Bycatch Measures
- Uncertainty Not Fully Addressed in Harvest Control Rules

**Strengths and Weaknesses of Principle 2 for the Swordfish Longline Fishery**

**Strengths:**

The management strategy for primary species, particularly tropical tunas, is underpinned by a coherent suite of conservation measures including seasonal closures, juvenile protection zones, full retention policies, bycatch limits, and restrictions on fishing methods such as Fish Aggregating Devices. These measures collectively support the maintenance and rebuilding of tuna stocks. Monitoring and compliance are reinforced through mandatory onboard observers, vessel monitoring systems, compulsory logbooks, port inspections, and comprehensive reporting, providing robust data for impact assessments. Low discard rates and full retention further enhance management effectiveness.

For secondary species, the strategy incorporates established measures to minimise unwanted catch mortality and facilitate stock recovery. These include daily logbook reporting, port inspections, gear restrictions such as

bans on shark lines and steel leaders, and prohibitions on shark finning at national and international levels. Expanding observer coverage and national shark conservation policies strengthen oversight. Stock assessments and risk analyses by the IATTC underpin management of key secondary species including blue marlin, swordfish, and sharks. The establishment of a dedicated working group on ecosystem and bycatch issues reflects ongoing commitment to mitigating non-target impacts. Together, these elements form a partial strategy effectively limiting bycatch for main secondary species.

The UoAs employs precautionary management measures addressing national and international obligations for ETP species. IATTC resolutions prohibit retention and mandate safe handling and release of species such as mobulid rays and sea turtles, supported nationally by legislation explicitly banning retention and trade of specified species. Progressive observer coverage and a Permanent Working Group on Ecosystem and Bycatch ensure continuous monitoring, mitigation, and adaptive management. This framework satisfies criteria for an effective partial management strategy.

The fishery operates primarily in the epipelagic habitat of the Southeastern Pacific Ocean, where physico-chemical factors such as temperature, salinity, and currents dictate ecosystem structure and function. Fishing methods involving doradero longline gear avoid seabed contact, minimising habitat disturbance. The absence of benthic habitats and Vulnerable Marine Ecosystems within the operational area further reduces habitat impact risks. Continuous vessel monitoring and detailed fishing logs enhance management oversight, supporting the prevention of serious or irreversible habitat harm.

Situated within the Eastern Tropical Pacific Ocean, the fishery operates in a well-studied ecosystem influenced by natural phenomena like El Niño and La Niña, which govern key environmental drivers. Comprehensive regional research and ecosystem modelling, alongside extensive monitoring programmes and management frameworks—including the East Tropical Pacific Marine Corridor—support the mitigation of ecosystem risks. Protective measures for vulnerable species and habitats enhance ecosystem resilience. Collectively, available evidence and management arrangements indicate that the fishery is unlikely to cause serious or irreversible harm to ecosystem structure and function.

**Weaknesses:**

Uncertainties persist regarding the status of bigeye tuna stocks, undermining confidence in the overall effectiveness of the current management strategy. The gradual increase in observer coverage for longline fleets lacks confirmed implementation data, constraining the comprehensive evaluation of management success. Additionally, incomplete species-level catch identification and low observer coverage in certain units further diminish the certainty with which the strategy's impacts can be assessed, underscoring the need for enhanced monitoring and targeted management actions.

Significant gaps remain in the strategy's comprehensiveness and reliability. Despite mandated increases, observer coverage is yet to be fully implemented, compromising data completeness and robustness. Species-level catch data, especially for minor secondary species, remain insufficient, limiting the capacity to assess fishery impacts thoroughly. Data inconsistencies and dependence on non-independent sources impede robust quantitative evaluation across secondary species. Moreover, the absence of an integrated strategy

encompassing all secondary species and the lack of systematic biennial reviews reduce confidence in achieving long-term conservation outcomes.

Although existing measures are extensive, the current management approach falls short of constituting a fully comprehensive strategy as defined by relevant standards, thereby failing to meet the highest performance benchmarks. Quantitative analyses providing high confidence in long-term efficacy are lacking, limiting assurance that impacts are mitigated beyond minimal expectations. Enforcement and compliance appear effective in the short term; however, evidence for sustained recovery of ETP populations is insufficient, indicating that the strategy mainly fulfills minimal conservation obligations without promoting comprehensive recovery.

Concerning habitat outcomes, although the risk of serious or irreversible harm appears low, there is inadequate direct evidence to conclusively confirm this. Crucially, no comprehensive management strategy addresses potential impacts from gear loss, which could affect minor benthic habitats despite limited direct contact during fishing operations. Furthermore, the spatial distribution of habitats within the operational area remains incompletely characterised, and monitoring does not specifically evaluate risks or consequences related to gear loss on benthic communities. This absence of detailed data and targeted management measures constitutes a critical gap, limiting confidence in overall habitat protection.

While the ecosystem components are generally well understood and ongoing management efforts are in place, substantial uncertainties remain. The partial management strategy does not comprehensively address all significant impacts on ecosystem structure and function, with key components, including trophic interactions and bycatch species, insufficiently characterised. Continuous monitoring is conducted; however, the complexity of ecosystem dynamics and data limitations constrain the ability to fully understand and predict long-term effects. Consequently, confidence that the fishery does not cause serious or irreversible ecosystem harm remains limited.

The main gaps identified for Principle 2 in the swordfish longline fishery are:

- Data from logbooks and Vessel Monitoring Systems (VMS) need to be made available and analysed, ensuring consistent collection across all vessels, to improve understanding of fishing effort, locations, and interactions with non-target species and habitats.
- Lack of information on bait species and quantities, which is necessary for a complete assessment under Principle 2.
- Observers' data do not report the number of interactions per number of hooks fished, nor the fate (alive/dead) of these interactions, dificultando a extrapolação do impacto total da frota e avaliação da sobrevivência pós-libertação, assim como a eficácia das práticas a bordo.
- No caso das aves marinhas, a ausência de registos de interações ao longo de cinco anos sugere falhas na recolha de dados pelos observadores.
- Necessidade de aumentar a cobertura de observadores na frota de aço (UoA2) para garantir monitorização completa do bycatch, das interações com espécies em risco e da eficácia das medidas

mitigadoras, incluindo a garantia de que todas as embarcações participem nos programas de observação e forneçam dados precisos.

These recommendations aim to fill the current gaps in information and improve the overall effectiveness of ecosystem-based management in fishery. By addressing these areas, the fishery can enhance its sustainability performance and progress toward meeting the MSC's SG80 standards.

### 7.1.2 Recommendations

Kiwa points out that a pre-assessment is not intended to duplicate a full assessment against the MSC Fisheries Standard. A full assessment involves a team that complies with the qualifications and competency requirements set out in the GCR, peer reviewers and public consultation stages that are not included in a pre-assessment. The list of key stakeholders that should be consulted during a full assessment is provided in **Section 8.1**. Stakeholder participation is encouraged. Therefore, it is important that the client cooperates to encourage key stakeholders to participate in the assessment process. The client should consider the communication strategy to be followed, in order to explain the MSC assessment process and the implications (including costs and benefits) of certification.

In addition, as stated in Section 5.1, the UoAs may include other eligible entities (e.g. first point of sale and agents) to share the certificate, before proceeding to the full assessment the client must be aware of the FCP 7.5.10 requirements.

Prior to proceeding to define the UoA and UoC in the full assessment process, the client must complete and submit to the CAB the 'MSC Client Document Checklist' and comply with the applicable MSC Labour Eligibility Requirements. The client must also complete the 'MSC Scope Declaration Template' form before the fishery is announced. Therefore, before going into the assessment, it is advisable that those responsible for the MSC certification process in the client group review these documents in detail to understand the types and extent of data and information that will need to be made available to them.

It is also important to note that the CAB should confirm that the client or client group does not include any entity that has been convicted of a shark finning violation within the last 2 years (FCP 7.4.8.5). To do so, the CAB should check with the relevant management authorities and collect any other relevant data.

All announcements of the full assessment are made on the MSC website, normally at least 30 days in advance.

## 7.2 Summary of potential conditions by Principle

***Table 7.2.1**: Summary of Principle level scores*

| Principle of the Fisheries Standard | Number of PIs with draft scoring ranges <60 |
|---|---|
| Principle 1 – Stock status | 0 |
| Principle 2 – Minimising environmental impacts | 0 |
| Principle 3 – Effective management | 0 |

## 7.3 Summary of Performance Indicator level scores

The team has completed the summary of Performance Indicator level scores in **Table 7.4.1**. The full scoring sections were also completed (**Sections 7.5.4, 7.5.2 & 7.5.3**).

When scoring the draft scoring ranges, the CAB used the following key to determine the result:

- Information suggests fishery is not likely to meet the SG60 for any scoring issue (Fail <60).
- Information suggests fishery will reach SG60 but may not meet all scoring issues at SG80, a condition may be needed (Pass with condition 60 – 79).
- Information suggests fishery is likely to exceed SG80 resulting in an unconditional pass for this Performance Indicator. Fishery may meet one or more scoring issues at SG100 level (Pass ≥80).

***Table 7.3.1*** *Summary of the Performance Indicators scoring ranges.*

| Principle | Component | Performance Indicator (PI) | | UoA1 | UoA2 |
|---|---|---|---|---|---|
| One | Outcome | 1.1.1 | Stock status | ≥80 | |
| | | 1.1.2 | Stock rebuilding | N/A | |
| | Management | 1.2.1 | Harvest strategy | ≥80 | |
| | | 1.2.2 | Harvest control rules & tools | 60-79 | |
| | | 1.2.3 | Information & monitoring | 60-79 | |
| | | 1.2.4 | Assessment of stock status | 60-79 | |
| Two | Primary species | 2.1.1 | Outcome | ≥80 | |
| | | 2.1.2 | Management strategy | ≥80 | |
| | | 2.1.3 | Information/Monitoring | ≥80 | ≥80 |
| | Secondary species | 2.2.1 | Outcome | DD | DD |
| | | 2.2.2 | Management strategy | 60-79 | |
| | | 2.2.3 | Information/Monitoring | ≥80 | ≥80 |
| | ETP species | 2.3.1 | Outcome | 60-79 | 60-79 |
| | | 2.3.2 | Management strategy | ≥80 | ≥80 |
| | | 2.3.3 | Information strategy | ≥80 | ≥80 |
| | Habitats | 2.4.1 | Outcome | ≥80 | |
| | | 2.4.2 | Management strategy | ≥80 | |
| | | 2.4.3 | Information | ≥80 | |
| | Ecosystem | 2.5.1 | Outcome | ≥80 | |
| | | 2.5.2 | Management | ≥80 | |
| | | 2.5.3 | Information | ≥80 | |
| Three | Governance and policy | 3.1.1 | Legal &/or customary framework | ≥80 | |
| | | 3.1.2 | Consultation, roles & responsibilities | ≥80 | |
| | | 3.1.3 | Long term objectives | ≥80 | |
| | Fishery specific management system | 3.2.1 | Fishery specific objectives | 60-79 | |
| | | 3.2.2 | Decision making processes | ≥80 | |
| | | 3.2.3 | Compliance & enforcement | 60-79 | |
| | | 3.2.4 | Monitoring & management performance evaluation | ≥80 | |

*Table 7.3.2: Summary of Performance Indicator level scores*

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **1.1.1 – Stock status –** | ≥80 | No |
| Rationale or key points | | |
| Results from Minte-Vera et al. (2022) indicate that, regardless of the model employed, the spawning biomass remains above the limit reference point. Specifically, the spawning biomass ratio estimates consistently exceed the limit reference point set at 30% of the unexploited level, with values approaching or surpassing the target reference point of approximately 40% spawning biomass. Furthermore, fishing mortality rates in most models remain below the target reference point, supporting the conclusion that the stock is not overfished nor subject to overfishing. Average annual catches over the period 2013–2022 have been relatively low, averaging 90 tonnes, with a maximum of 362 tonnes recorded in 2018.<br>The current assessment indicates that the swordfish stock is likely above the point of recruitment impairment (PRI), thereby meeting the criteria for a score of SG 60. Furthermore, the available data support the conclusion that it is highly likely the stock remains above the PRI, consistent with a score of SG 80. However, the score of SG 100, which requires a high degree of certainty that the stock is above the PRI, cannot be achieved. This is due to the absence of a more recent stock assessment and the lack of an established Total Allowable Catch (TAC) for swordfish. Instead, management is implemented through measures adopted by the IATTC, including effort controls, seasonal closures, and restrictions on floating-object purse seine fishing. For these reasons, the team considers that SG 60 and SG 80 are met, and SG 100 is not achieved | | |
| **Performance Indicator** | **Draft scoring range** | **Data deficient?** |
| **1.1.2 – Stock rebuilding –** | N/A | No |
| Rationale or key points | | |
| N/A | | |
| **Performance Indicator** | **Draft scoring range** | **Data deficient?** |
| **1.2.1 – Harvest Strategy** | ≥80 | No |
| Rationale or key points | | |
| The Harvest strategy is a combination of monitoring, stock assessment, harvest control rules (HCRs) and management actions.<br>South EPO Swordfish Benchmark Assessment in 2019. A new southern swordfish stock assessment will then be developed and presented in 2025.<br>All industrial and mother-ship vessels must have a fishing logbook that can be physical or electronic, and it shall be filled out daily in a complete, reliable and timely manner, to be delivered at the time of landing or completion of fishing operations. The logbook must include the estimated catches by species or group of species in tons, kilograms or number of specimens. No landed catches can be mobilized unless they have been inspected by the SRP and a CMCDP has been issued.<br>Conservation measures for swordfish stocks in the eastern Pacific Ocean are managed under the jurisdiction of the Inter-American Tropical Tuna Commission (IATTC), as swordfish is a highly migratory species requiring international coordination through Regional Fisheries Management Organisations (RFMO). The IATTC's recommendation, outlined in SAC-14-15, includes the adoption of objective and limit reference points, together with a harvest control rule specifically for the southern EPO swordfish stock. These provisional reference points are currently under consideration for formal adoption pending management strategy evaluation.<br>At the national level, a stakeholder committee was established in March 2024 to develop the National Swordfish Action Plan (NAP). In May 2024, a workshop was held in collaboration with WWF Ecuador and the Ministry of Production, Investment and Fisheries to present the Proposed National Action Plan for the Conservation and Sustainable Management of the Swordfish Fishery in Ecuador (PAN Pez Espada 2024-2029). The workshop's main objectives included reviewing, analysing, adjusting, and validating the strategic framework of the plan, ensuring the active participation of all key stakeholders involved in the swordfish fishery. However, as of March 2023, a comprehensive evaluation of the management system was not feasible due to the incomplete implementation of the new fisheries law within the management structure. Additional time was therefore considered | | |

| |
|---|
| necessary to support full implementation, with a reformulation of planned actions anticipated during the upcoming revision of the action plan. As of September 2024, no further progress had been recorded. |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **1.2.2 – Harvest control rules and tools –** | 60 – 79 | No |
| Rationale or key points | | |
| IATTC Resolution C-16-02 outlines the HCR for tropical tunas in the IATTC Commission Area<br>At the national level, general management measures affecting all non-target species caught by the UoA are the technical gear specifications, dolphinfish closed season (which means that the fleet changes its gear from LL-DOL to LL-TBS to target tunas, billfishes and sharks), closed census, data reporting obligations (mandatory logbooks, and Article 225 of the Ex.Decree 362/2022 states that all interactions shall be recorded), observer program in place, and inspections at port to obtain the landing certificate<br>Agreement 407 of October 12, 2011, which in its articles 1 and 3, defines the characteristics of longline fishing vessels, and establishes a maximum number of up to 10 smaller fiber-glass vessels that can be towed by mother ships during the Dorado fishing season. It also sets that at least 10% of the mother-ships shall have observers on board | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **1.2.3 – Information and monitoring** | 60-79 | No |
| Rationale or key points | | |
| The available information on stock structure, productivity, and fleet composition is sufficient to support the design and implementation of the harvest strategy for swordfish in the southeastern Pacific Ocean. Multiple hypotheses regarding stock boundaries have been explicitly tested, and fleet composition is well characterised through spatial and temporal distribution data. However, despite the inclusion of abundance indices and catch data, the overall dataset does not yet constitute a comprehensive strategic research plan that extends beyond immediate management needs. Therefore, while SG 60 and SG 80 are met.<br>despite these efforts, significant gaps remain in data completeness and certainty, particularly concerning artisanal and recreational fisheries, which contribute to the total removals but are poorly documented. Furthermore, during the 15th IATTC meeting, CPCs were urged to provide enhanced scientific support for data provision in the southern Pacific swordfish fishery to enable an updated stock assessment for presentation at the 2026 Commission meeting (IATTC-102-03). This highlights ongoing challenges in achieving consistent and comprehensive data collection. Consequently, although monitoring meets the requirements to met SG 60, the current limitations in data resolution, coverage, and uncertainty characterisation prevent the attainment of higher scoring, which demands high-frequency, high-certainty monitoring fully supporting the harvest strategy. Thus, SG80 and SG 100 and not met. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **1.2.4 – Assessment of stock status** | 60-79 | No |
| Rationale or key points | | |
| The stock assessment for swordfish in the southeastern Pacific employs reference points relevant and tailored to the biology and exploitation characteristics of the stock. Although formal limit and target reference points have not yet been officially adopted by the IATTC for swordfish, the assessment uses provisional benchmarks aligned with those applied to tropical tunas under Resolution C-16-02 and those adopted by the WCPFC, including spawning biomass limit reference points (e.g., 20–30% of unexploited spawning biomass) and target reference points around 40–50%. These reference points are evaluated dynamically, considering recruitment variability and biological uncertainty. The assessment framework integrates multiple models reflecting different hypotheses on stock structure and productivity, thereby capturing key uncertainties relevant to the stock. The assessment estimates stock status relative to reference points that, although appropriate for the stock, are provisional in nature. This methodology fulfils the criteria for SG60 by providing a relevant basis for evaluation; however, the provisional status of these reference points limits the confidence in the assessment's robustness and SG80 is not met. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.1.1 – Primary species outcome -** | ≥80 | |
| Rationale or key points | | |
| **BET**: The combined distribution of Fcur/FLIMIT from the 44 models tested is bimodal, due to the substantial differences in the estimates between the "short-term models" which are more pessimistic (Fcur/FMSY mostly above 1), and the "medium-term" models that do not assume the recruitment shift (R) is real, which are more optimistic (Fcur/FMSY mostly below 1). For the combined distribution, Fcur is at about 60% of FLIMIT and the probability of (Fcur > FLIMIT is 5%. The probability distribution for Scur/SLIMIT is also bimodal. The combined ratio of Scur/SLIMIT is estimated at approximately 3.07 and the probability of Scur < SLIMIT = 6%. (Xu et al., 2020).<br>In the pessimistic scenario, the estimated probability of the bigeye stock falling below the limit reference point was approximately 10%. Consequently, the fishery meets the SG80 requirement that it is highly likely the stock is above the PRI (with a probability equal to or greater than 80%). | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.1.2 – Primary species management strategy** | ≥80 | |
| Rationale or key points | | |
| The skipjack tuna (Katsuwonus pelamis) was the only species identified as "Primary Minor" occurring exclusively within UoA1, whereas the yellowfin tuna (Thunnus albacares) was present in both UoA1 and UoA2. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.1.3 – Primary species information** | ≥80 | No |
| Rationale or key points | | |
| The stock assessment of primary species relies on robust data sources, including observer data, logbooks, cannery data, and port sampling. These provide sufficient information to meet SG60.<br><br>The skippers of both mother-ship and steel vessels have the obligation to record all catches in their logbooks. All landings shall be inspected by inspectors to get the Fisheries Landing Monitoring and Control Certificate (CMCDP). All potential primary species impacted by both UoAs would have commercial value and there is no incentive for underreporting or discarding at sea. Thus, the team considers that the available data sources are adequate to assess with a high degree of certainty that the UoA is not impacting on any main primary component. SG60 and SG80 are met. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.2.1 – Secondary species outcome – UoA1** | | Yes |
| Rationale or key points | | |
| Within the UoA1, the species classified as **Secondary - Main** and exclusively present in this unit are the Mahi-mahi (*Coryphaena hippurus*), the Pelagic thresher (*Alopias pelagicus*), and the Blue shark (*Prionace glauca*). Official catch data provided by the client (source a), spanning the period from 2019 to 2024, indicate that the industrial and artisanal fleet of Nodrizas and associated fibres in UoA1 landed a total of 2,569,574 kg.<br>According to these official records, Mahi-mahi accounted for 0.87% of the total landings (53,290.3 kg), the Pelagic thresher represented 0.61% (31,185.79 kg), and the Blue shark comprised 0.05% (245,528.5 kg) of the catches.<br>**Common Main Secondary – Main species in UoA1and UoA2**<br>**Pacific blue marlin**<br>**Data deficient species: Bony fish (3 species)**<br>• LEC (Escolar / Lepidocybium flavobrunneum)<br>• LAG (Opah / Lampris guttatus) | | |

- MLS (Striped marlin / Kajikia audax)

**Common Secondary species – minor species in UoA1and UoA2**
**Data deficient species: Bony fish (11 species)**
**Shark species (3 species and 1 group)**

- *See the extended Tables for more details* -

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.2.1 – Secondary species outcome – UoA2** | | Yes |

Rationale or key points

Within the UoA2, the species classified as Secondary - **Main and exclusively present in this unit** is BLM (Black marlin / Marlín negro / Istiompax indica) - DD
All the other species, were also encountered in UoA1 (see PI 2.2.1 UoA1), and there are no biologically based limits established and the status remain unknown for the following species:

- MLS (Striped marlin / Kajikia audax)
- BUM (Blue marlin / Makaira nigricans)
- LEC (Escolar / Lepidocybium flavobrunneum)
- LAG (Opah / Lampris guttatus)
- BTH (Bigeye thresher / Alopias superciliosus)
- WAH (Wahoo / Acanthocybium solandri)

**Common Secondary species – minor species in UoA1and UoA2**
**Data deficient species: Bony fish (12 species) and ray species (2 species)**
**Shark species: Tiger shark, Crocodile shark, Thresher shark, Galapagos shark, Porbeagle, Spiny dogfish, and Spotted houndshark**

- *See the extended Tables for more details* -

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.2.2 – Secondary species management strategy** | 60-79 | |

Rationale or key points

This Scoring Issue addresses only the measures or strategies in place to manage main secondary species.
All mother-ship vessels are required to maintain a fishing logbook, either physical or electronic, which must be completed daily in a comprehensive, reliable, and timely manner, and submitted upon landing or at the conclusion of fishing operations. The logbook must record estimated catches by species or species group, expressed in tonnes, kilograms, or number of individuals. No landed catch may be moved from the port unless inspected by the SRP and accompanied by a CMCDP
At the national level, general management measures applying to all non-target species caught by the UoA include technical gear specifications, a dolphinfish closed season (during which the fleet switches from LL-DOL to LL-TBS to target tunas, billfishes, and sharks), closed census periods, mandatory data reporting (logbooks and, under Article 225 of Executive Decree 362/2022, the recording of all interactions), an observer programme, and port inspections to issue landing certificates. Article 225 of the same Decree further requires that all catches and incidental interactions be recorded.
Shark finning is prohibited at both international and national levels. Ecuador implemented its first National Action Plan for the management and conservation of sharks (PAN-EC) in 2013 for a five-year period, formalised as national policy through Executive Decree Nº486/2007. The updated 2020–2024 PAN-EC has also been adopted as national policy under Agreement MPCEIP-SRP 2022-0068-A. Furthermore, in 2022, the IATTC formally established a Permanent Working Group on Ecosystem and Bycatch (EBWG) through Resolution C-22-06.
The IATTC conducts analytical stock assessments for species such as blue marlin and swordfish, sometimes in collaboration with other RFMOs, and has undertaken a comprehensive risk assessment for 32 shark species, including blue shark and pelagic thresher shark.

Although these measures help limit bycatch levels, the limited observer coverage and lack of data on post-capture survival rates prevent the fishery from meeting the requirements of SG80.

Shark finning SI is applicable to both UoA, since there are 14 shark species identified as secondary components, 2 of them classified as 'main', and the other 12 as 'minor'.
Shark finning is prohibited both at international and national level. Resolution C-24-05 adopted by the IATTC in 2024 consolidates previous Resolutions (C-05-03, C-16-04, C-16-05) and sets the details for retain and utilization.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.2.3 – Secondary species information** | ≥80 | No |
| Rationale or key points | | |

UoA1
Sufficient quantitative information is available to assess mortality related to UoA1 and its impact on Secondary, thereby enabling evaluation of whether this UoA poses a risk to their conservation and recovery. The primary sources of data for this UoA comprise official landing records provided by the client, based on administrative databases, detailing catch composition from both the industrial and artisanal fleets (Nodrizas and associated fibreglass skiffs), alongside national observer data applicable exclusively to UoA1.
It is important to highlight that observer coverage for mothership vessels was initially established at 10% of fishing trips under Agreement 407 dated 12 October 2011. This was subsequently amended by Agreement MPCEIP-SRP-2021-0208-A in September 2021, progressively increasing observer coverage targets to 15% in 2023 and 20% in 2024. In 2021, observer coverage for the longline fleet was 6.4% (MPCEIP, 2022d), with the majority of observations focusing on the LL-TBS component and only 25% on the LL-DOL component. Observers are exclusively deployed on mothership vessels, while fishing activities carried out from associated fibreglass skiffs remain unmonitored.
UoA2
Adequate quantitative and qualitative information is available to assess mortality associated with UoA2 and its potential impact on secondary species, thereby supporting evaluation of whether this UoA poses a risk to their conservation and recovery. For UoA2, key data sources include official landing records provided by the client, based on administrative records detailing catch composition from the industrial Aceros fleet, and a technical report prepared under the scope of a Fishery Improvement Project targeting the longline swordfish fishery. This report relies on data from a private observer programme implemented aboard the TRANSMARINA C.A. industrial fleet, initiated on 27 June 2022, which by December 2024 had recorded 82,880 individual organisms interacting with fishing gear, regardless of their fate.
Additional data sources include catch reports submitted to the IATTC, encompassing both UoA1 and UoA2. National observer data pertain solely to UoA1, as the steel fleet lacks systematic national observer coverage; according to the client, observers were present only during a single trip in 2024, which was excluded from this analysis.

- *See the extended Tables for more details* -

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.3.1 – ETP species information – UoA1** | ≥80 | No |
| Rationale or key points | | |

The proportion of **silky shark** in UoA1 catches — 0.33% in official landings and 1.52% in observer records — remains well below the regulatory limit of 20% established for individuals under 100 cm TL. These results indicate that the combined effects of the UoA on the silky shark population are highly likely to be within the applicable national and international limits, thereby **meeting the SG 80** requirements
Although the UoA demonstrates that the known direct effects on **sea turtles, mobulid rays**, and **dolphins** are likely to not hinder the recovery of these ETP species—meeting the SG 60 criterion—and that the direct effects are highly likely to not hinder recovery of dolphins, thereby fulfilling SG 80 and SG 100 for this group, the same high degree of confidence is not achieved for sea turtles and

mobulid rays. Due to data limitations, observer coverage, and inconsistencies, the assessment team cannot conclude with high confidence that there are no significant detrimental direct effects of the UoA on sea turtles and mobulid rays. Consequently, while SG 60 is met for all groups and SG 80 is met for sea turtles and mobulid rays, SG 100 is only met for dolphins.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.3.1 – ETP species information – UoA2** | ≥80 | No |

Rationale or key points

A total of 19 ETP species were found to interact with the UoA2 based on information sources consulted (see Table 7.5.1.1.2.1): 5 sharks, 4 marine turtles, and 6 ray species and 2 marine mammals. The silky shark (*Carcharhinus falciformis*) was already assessed in SI(a), while all the other species are assessed in this SI, i.e: Oceanic whitetip shark (*Carcharhinus longimanus*), Scalloped hammerhead shark (*Sphyrna lewini*), Hammerhead sharks (*Sphyrna spp*.),Smooth hammerhead shark (*Sphyrna zygaena*), Devil fish (*Mobula mobular*), Chilean devil ray (*Mobula tarapacana*), Smoothtail mobula (*Mobula thurstoni*), Giant manta ray (*Mobula birostris*), Munk's devil ray (*Mobula munkiana*), Mobula rays (*Mobula spp*.), False killer whale (*Pseudorca crassidens*), Spotted dolphin (*Stenella attenuata*).

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.3.2 – ETP species management strategy** | ≥80 | No |

Rationale or key points

IATTC has developed several measures to protect ETPs species, the most relevant that apply to this fishery are listed below.

Resolution C-15-04, adopted by the Inter-American Tropical Tuna Commission (IATTC) in 2015, focuses on the conservation of **mobulid rays** (family Mobulidae) within the IATTC Convention Area. At the national level, Ministerial Agreement MPCEIP-SRP-2022-0078-A prohibits the retention on board, transshipment, landing, storage, transportation, sale, or offering for sale of whole or partial carcasses of the following mobulid ray species.
As of November 2024, the IATTC has implemented several resolutions aimed at the conservation of silky sharks (*Carcharhinus falciformis*) and other **shark species** within its convention area
Resolution C-19-04, adopted by the Inter-American Tropical Tuna Commission (IATTC) in 2019, focuses on mitigating the impacts of tuna fishing on sea turtles within the Eastern Pacific Ocean (EPO).
Finally, a Permanent Working Group on Ecosystem and Bycatch (EBWG) was formally created in 2022 through the adoption of Resolution Resolution C-22-06. Among the objectives of this WG is to evaluate and recommend measures and best practices to avoid, reduce and minimize catch and mortality of non-target species, effective methods for safe handling practices and release of non-target species, and the effects of fishing on endangered species.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.3.3 – ETP species information – UoA1** | ≥80 | No |

Rationale or key points

Adequate quantitative information is available to assess UoA1-related mortality and its impact on ETP species, thereby supporting the evaluation of whether the UoA poses a risk to their protection and recovery. For this UoA, the primary sources of information include official landing records provided by the client, based on administrative data, which detail the catch composition of both the industrial and artisanal fleets (Nodrizas and associated fibras), and national observer data, which apply exclusively to this UoA. It should be noted that observer coverage for mother-ship vessels was initially set at 10% of fishing trips under Agreement 407 of 12 October 2011, later revised by Agreement MPCEIP-SRP-2021-0208-A in September 2021, which progressively increased targets to 15% in 2023 and 20% in 2024. In 2021, observer coverage for the longline fleet was 6.4% (MPCEIP, 2022d), with the majority of observations focusing on the LL-TBS component and only 25% on the LL-DOL. Observers are deployed exclusively on mother-ship vessels, with fishing operations conducted from associated fibre-glass skiffs remaining unobserved. While observer

coverage on mother-ship vessels was limited in earlier years, the data available (although incomplete for the associated fibre-glass skiffs) provides sufficient qualitative basis to meet SG60, as it allows a reasonable estimation of UoA-related mortality on ETP species. Furthermore, the availability of some quantitative information, derived from the landing records and observer datasets, enables the assessment of whether the UoA may pose a threat to the protection and recovery of these species, thereby meeting SG80.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.3.3 – ETP species information – UoA2** | ≥80 | No |

Rationale or key points

Adequate quantitative and qualitative information is available to assess UoA2-related mortality and its potential impact on ETP species, thereby supporting the evaluation of whether this UoA poses a risk to their protection and recovery. For UoA2, the primary sources of information include official landing records provided by the client, based on administrative data, which detail the catch composition of the industrial Aceros fleet, and a technical report produced within the framework of a Fishery Improvement Project for the longline swordfish fishery. The latter is based on data from a private observer programme implemented on board the TRANSMARINA C.A. industrial fleet, initiated on 27 June 2022, which by December 2024 had recorded 82,880 individuals, encompassing all organisms interacting with the fishing gear, irrespective of their fate. Additional data sources include catch reports submitted to the IATTC, which cover both UoA1 and UoA2. National observer data apply exclusively to UoA1, as the steel fleet has no systematic national observer coverage; according to the client, observers were present only during a single trip in 2024, which was therefore excluded from the analysis. While the absence of consistent national observer coverage limits the comprehensiveness of the dataset, the combined information from landing records, IATTC reports, and the private observer programme provides a sufficient qualitative basis to meet SG60, as it allows a reasonable estimation of UoA2-related mortality on ETP species. Furthermore, the availability of quantitative data from the private observer programme supports an assessment of whether UoA2 may pose a threat to the protection and recovery of these species, thereby meeting SG80.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.4.1 – Habitats outcome** | ≥80 | No |

Rationale or key points

Commonly encountered habitats are defined by MSC Requirements (FCR GSA3.13.3.1) as those preferred by the target species, that the UoA's gear is designed to exploit, and/or make up a reasonable portion of the UoA's fishing area.
The mahi mahi fishery with doradero (thin surface longline) takes place at around 6-13 m depth (Martínez-Ortíz & Zúñiga-Flores, 2012; Martínez-Ortiz et al., 2015) in oceanic waters as far as 100o W, west of the Galapagos Islands therefore, the epipelagic habitat in the Southeastern Pacific Ocean is considered as the commonly encountered habitat for the purpose of this assessment.

Pelagic habitats function is mostly determined by their physico-chemical properties (Raymond, 2011). The status of pelagic habitats is affected by human induced pressures such as eutrophication and hazardous substances, as well as by natural and human-induced changes in climate (HELCOM, 2018). The fishery, however, will not change the characteristics of the water column (for example, the temperature, salinity, currents) and it does not come into contact with benthic habitats. Besides, the characteristics of the fishing gear used makes very unlikely the gear loss. The fiber glass vessels set a line and then they remain close to it, sailing from one point to the other checking the hooks, getting the catches on board and re-baiting when necessary. Then, at the end of the day they haul the line before sailing back to the mother-ship.

Therefore, it is highly unlikely that the fishery will reduce the structure and function of the pelagic habitat to a point where there is serious or irreversible damage. Hence, meeting SG80.

Due to the operational procedures of this type of fishing, neither the seabed nor any VMEs are encountered.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|

| | | |
|---|---|---|
| **2.4.2 – Habitats management strategy** | ≥80 | No |
| Rationale or key points | | |
| MSC FCR Table SA8, states that "the term “if necessary” is used in the management strategy PIs at SG60and SG80 for the primary species, secondary species, habitats and ecosystems components. This is to exclude the assessment of UoAs that do not impact the relevant component at these SG levels”.<br><br>Bearing in mind that the present fishery is highly unlikely to impact benthic habitats, the term “if necessary” does apply here and no measures or partial strategy are required. Hence, **SG60 and SG80 are met.** | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.4.3 – Habitats information** | ≥80 | No |
| Rationale or key points | | |
| The fishery activity lays between two of the world’s Large Marine Ecosystems (LMEs), the Pacific Central-American Coast LME and the Humboldt Current LME. Both are broadly characterized in Heileman, 2009 and Heileman et al., 2009, respectively.<br><br>In addition, one of the functions of the IATTC under the 2003 Antigua Convention is to “adopt, as necessary, conservation and management measures and recommendations for species belonging to the same ecosystem and that are affected by fishing for, or dependent on or associated with, the fish stocks covered by this Convention, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened”. Therefore, among other issues, a description of the offshore pelagic ecosystem of the tropical and subtropical Pacific Ocean, and the oceanographic conditions in the Eastern Pacific Ocean mostly regarding their effects on tuna fisheries are available (IATTC, 2013; 2015; 2019b).<br><br>Jiménez – Santistevan (2008) has also characterized the equatorial Pacific Ocean between the Galapagos Islands and continental Ecuador.<br><br>All this shows that the main habitat is broadly understood, hence, meeting SG60.<br><br>The characteristics of each of these areas can be consulted in websites such as the MPAtlas website (http://mpatlas.org/explore/) or the protected planet website (http://www.protectedplanet.net/). Nevertheless, these protected marine areas are outside the spatial range of the fishery, therefore, they are not relevant here.<br><br>Moreover, as there are no vulnerable habitats in the pelagic ecosystem that could be damaged or impacted by the use of the doradero gear, SG80 is also met. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.5.1 – Ecosystem outcome** | ≥80 | No |
| Rationale or key points | | |
| As already mentioned in PI 2.4.1, the assessed fishery does not impact abiotic elements, therefore no measures or partial strategy are required for the abiotic elements of the ecosystem.<br><br>Ecuador is part of the East Tropical Pacific Marine Corridor (CMAR), a regional initiative led by the governments of Costa Rica, Panama, Colombia and Ecuador. The CMAR has among its objectives, to promote the management and conservation of marine resources, improve and consolidate the management of Marine Protected Areas that make up the corridor, and establish a regional framework that facilitates the development and integral management of the corridor compatible with national policies and laws (León Cabrera, 2018; https://www.iucn.org/es/content/corredor-marino-del-pac%C3%ADfico-este-tropical-cmar). A new protected area in Galapagos called the Hermandad Marine Reserve constitutes the most recent achievement in this regard. The creation of the new protected area with an area of 60,000 km2 | | |

was adopted in 2022 through Executive Decree 319. This MPA complements the existing Galapagos Marine Reserve and connects it with the Cocos Island MPA in Costa Rica. This corridor aims to ensure a safe migratory route for many threatened marine species such as sharks, manta rays, turtles and whales. The new marine reserve is located northeast of the Galapagos archipelago. Of the 60,000 km2, 50% corresponds to strict protection where no type of extractive activity will be allowed, while the remaining 50% will allow fishing, excluding the use of longlines.

The marine protected areas in the South Eastern Pacific Ocean in the area where the UoA fishery operates. The characteristics of each of these areas can be consulted in websites such as the MPAtlas website (http://mpatlas.org/explore/) or the protected planet website (http://www.protectedplanet.net/).

Agreement 031 from October 8, 2004 states that only thin surface longline (doradero) with hook type “J” of size number 4 or 5, or circular hook of size number 14 or 15 is allowed to prevent incidental catches as much as possible.

In addition, Ecuador has specific legislation and management measures to protect sea turtles: (i) Ministerial Agreement 212 which considers all species of sea turtles in Ecuadorian territorial waters protected by the State; (ii) the National Plan for the Conservation of Sea Turtles, whose general objective is to identify the necessary actions to ensure the conservation of sea turtles in Ecuador; and (iii) the Sea Turtle Bycatch Reduction Program.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.5.2 – Ecosystem management strategy** | ≥80 | No |
| Rationale or key points | | |
| There is evidence that the measures and partial strategies are being successfully implemented. The IATTC’s comprehensive management measures, including those for tuna species like yellowfin and bigeye, have demonstrated success in regulating fishing efforts to sustain healthy stock levels. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **2.5.3 – Ecosystem information** | ≥80 | No |
| Rationale or key points | | |
| The ecosystem information collected is robust, covering key aspects of the marine environment and its interaction with the fishery. | | |

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **3.1.1 – Legal and/or customary framework** | ≥80 | No |
| Rationale or key points | | |
| The Antigua Convention of 2003 governs fishing for tuna and tuna like species on the high seas and in zones of national jurisdiction (Medley et al. 2021). The objective of the Antigua Convention is to ensure the long-term conservation and sustainable use of the fish stocks in the Convention area in accordance with the relevant rules of international law. The Antigua Convention explicitly recognizes the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the Rio Declaration on Environment and Development and Agenda 21, the Johannesburg Declaration and Plan of Implementation adopted by the World Summit on Sustainable Development (2002), the FAO Code of Conduct for Responsible Fisheries (1995), including the 1993 FAO Compliance Agreement and International Plans of Action adopted by FAO within the framework of the Code of Conduct, and the 1995 UN Fish Stocks Agreement (UNFSA). This promotes the implementation of these international agreements within its area of jurisdiction to deliver management outcomes consistent with MSC Principles 1 and 2. SG60 and SG80 are met. SG100 is not met because the agreements between countries is by consensus and therefore co-operation is effectively not binding. | | |

Ecuador ratified the UN Convention on the Law of the Sea (2012), the UN Fish Stocks agreement (2016), and the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2019).
The 1974 law was replaced in April 2020 by the Organic Law for the Development of Aquaculture and Fishing which consolidated and updated national law to ensure compliance with the international and regional rules applying to the conservation and management of fishing resources. The Resolutions and Recommendations made by the IATTC for the conservation of tunas are formally adopted by the Ecuadorian government (MPCEIP-SRP-2019-0027-A). Resolutions are translated into regulations through Ministerial agreements issued by the Under Secretariat for Fishery Resources. Ecuador's national legal framework for fisheries and the management of fisheries subject to international cooperation meets SG 80.

The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes arising within the system which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.

Both the international and national management systems have a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **3.1.2 – Consultation, roles, and responsibilities** | ≥80 | No |

Rationale or key points

Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.

The IATTC management system demonstrates consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained demonstrates consideration of the information obtained. In Ecuador the LODAP, includes the Advisory Council of Aquaculture and Fisheries as part of the fisheries management system (Article 11). This Council is a forum for dialogue, consultation and agreement between the public and private sectors, and its objective is to advise the fishing sector on monitoring and compliance with internal agreements to facilitate efficient relations between the different actors in the production chain. With the approval of the LODAP and its regulations, it is established that the spaces for dialogue and participation for the NAPs are provided through dialogue roundtables. Ecuador's government adopted as public policy the National Tuna Action Plan in December 2019. The National Tuna Action Plan was developed with stakeholder input and consultative meetings. Stakeholders are invited to participate in meetings that inform the Ecuadorian position on mater being discussed at IATTC meetings.

Finally, consultation occurs at several levels within the IATTC management system. The opportunity to become a Contracting Party or Co-operating Non-contracting Party is open to all, including non-states. Membership has increased over time and there is a high level of participation. There is insufficient evidence to concluded that Ecuador facilitates the effective engagement of all interested and affected parties.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|
| **3.1.3 – Long term objectives** | ≥80 | No |

Rationale or key points

Considering that the Antigua Convention is the overarching management policy for the UoAs, it is demonstrate that clear long-term objectives guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are explicit within and required by management policy for all UoAs.

| Performance Indicator | Draft scoring range | Data deficient? |
|---|---|---|

| | | |
|---|---|---|
| **3.2.1 – Fishery-specific objectives** | ≥80 | No |
| Rationale or key points | | |
| There is a long-term management plan to limit fishing capacity to sustainable levels (C-02-03). Short-term objectives are clearly laid out and are measurable for purse seine at least. IATTC now has a closed vessel registry which should help prevent increases in capacity, if not reduce it. Each resolution has short-term objective which are explicit and well defined. However, explicit long and short-term objectives are not necessarily always well-defined or precisely measurable, particularly in relation to achieving MSC Principle 1. | | |
| **Performance Indicator** | **Draft scoring range** | **Data deficient?** |
| **3.2.2 – Decision-making processes** | ≥80 | No |
| Rationale or key points | | |
| Clear evidence of the established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives is provided by a record evolving IATTC resolutions and recommendations.<br><br>The decision-making is adaptive in that decisions are evaluated by the various specialist meetings and feedback is provided to the Commission. The Commission responds appropriately by approving new resolutions addressing serious and other important issues.<br><br>The precautionary approach is included through Article IV of the IATTC Antigua Convention Specifically, the Convention requires that Commission be more cautious when information is uncertain, unreliable, or inadequate and does not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures. Article 4 of the Ecuador's LODAP states that the precautionary approach and the fishing ecosystem approach must be observed, without prejudice to those established in the Constitution of the Republic. Besides, Article No. 96 of the LODAP sets that fishery management measures will be adopted after a scientific technical report from the IPIAP, and socialization with the fishing sector based on the best scientific evidence available and ancestral knowledge in accordance with the population conditions of the resources and the state of the fisheries.<br><br>There is no evidence that other entities flout the law, with the notable exception of particular fishing companies and fishing vessels, which are listed on the IUU fishing list. Therefore, excluding these, IATTC and its Parties. Given that there are no current outstanding judicial disputes and that so far members have avoided resorting to using international law to settle disputes (SCS, 2022), the management system is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges. | | |
| **Performance Indicator** | **Draft scoring range** | **Data deficient?** |
| **3.2.3 – Compliance and enforcement** | 60 – 79 | No |
| Rationale or key points | | |
| The team concludes that Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective. The monitoring, control and surveillance system has been implemented in the fishery and Ecuador is now demonstrating an ability to enforce relevant management measures, strategies and/or rules.<br><br>In 2019 Ecuador received a yellow card from the European Union over shortcomings in the mechanisms that the country has put in place to ensure compliance with its international obligations as a flag, port and market state. After the notification of the yellow card, Ecuador established a two-year action plan with three priority areas: IUU fishing, coercive measures and the promotion of the application of international standards. Taking into account that the overlapped fisheries (Equatorian UoAs) have a condition raised against the SG 3.2.3b) this pre-assessment raised the same scoring to the fishery under assessment.<br><br>Non-compliance with conservation measures is likely opportunistic or possibly down to ignorance of the resolutions and/or the lack of sanctions. Non-compliance does not appear to be systematic | | |

| | | |
|---|---|---|
| and does not threaten the sustainability of the fishery. However, this SG should be assessed in detailed during a full assessment. | | |
| **Performance Indicator** | **Draft scoring range** | **Data deficient?** |
| **3.2.4 – Monitoring and management performance evaluation** | ≥80 | No |
| Rationale or key points | | |
| There are mechanisms in place to evaluate key parts of the fishery-specific management system.<br><br>The IATTC is subject to regular internal review. In relation to external review, IATTC carried out an external performance review in 2016 but management system is not subject to regular internal and external review. | | |

## 7.4 Principle 1

### 7.4.1 Principle 1 background

The Swordfish (*Xiphias gladius*) is a highly migratory, oceanodromous teleost inhabiting tropical, temperate, and occasionally cold waters of the Atlantic, Indian, and Pacific Oceans, including the Mediterranean, the Sea of Marmara, the Black Sea, and the Sea of Azov. Its distribution spans from 69°N to 50°S(Figure 7.4.1.1.1), generally occurring from the surface to 550 m depth, although recorded down to 2,878 m (Collete, 2011). Genetic analyses reveal significant differentiation between Mediterranean and tropical Atlantic populations, indicating limited genetic exchange.

Biologically, swordfish are pelagic-oceanic predators that prefer temperatures between 18 °C and 22 °C, with larvae found in waters above 24 °C (Fromodt, 1995). Seasonal migrations lead adults to temperate or cold waters in summer and warmer waters in autumn. They are opportunistic feeders, preying mainly on fish, but also on crustaceans and cephalopods, using their elongated, flattened bill to strike and disable prey. Large individuals may accumulate high levels of mercury.

Reproduction is external, with spawning occurring in upper water layers (0–75 m) in warm waters, generally above 23–24 °C (Nishikawa, 1974). Spawning is year-round in equatorial regions but restricted to spring and summer at higher latitudes. Females are faster-growing and capable of producing between 1 million and 29 million eggs per season (Palko, 1981). Pelagic eggs measure 1.6–1.8 mm, with larvae hatching at 4 mm and rapidly developing predatory behaviour (Wilson, 1984).

Swordfish grow at a rapid rate, reaching maturity at around two years of age, with lengths ranging from 150 to 170 cm (Palko, 1981). . Several specific spawning areas are known, and analyses of fishery and genetic data suggest that there is limited exchange of swordfish between different regions, including between the eastern and western, as well as the northern and southern Pacific Ocean (Nakamura, 1985).

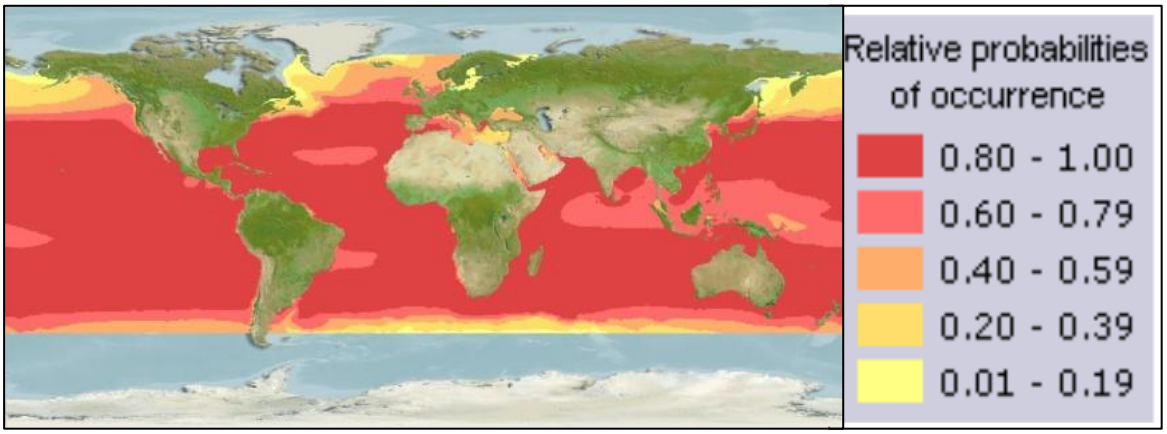



***Figure: 7.4.1.1.1****. Currently known distribution of Xiphias gladius: Atlantic, Indian and Pacific: tropical and temperate and sometimes cold waters, including the Mediterranean Sea, the Sea of Marmara, the Black Sea, and the Sea of Azov. Source: AquaMaps (2019, October). Computer generated distribution maps for Xiphias gladius (Swordfish), with modelled year 2050 native range map based on IPCC RCP8.5 emissions scenario. Retrieved from https://www.aquamaps.org.*

### 7.4.1.1 Fisheries

Given the highly migratory nature of the species, Swordfish (along with other billfishes, tunas, and tuna-like species) are managed in the Eastern Pacific Ocean (EPO) by the Inter-American Tropical Tuna Commission (IATTC).

In the EPO, swordfish are captured using both large-scale and artisanal longlines, gillnets, harpoons, and occasionally recreational gear. Annual catches south of 10°N averaged approximately 15,000 tonnes between 2000 and 2009, increasing to around 29,000 tonnes in 2010–2019, and peaking at about 34,000 tonnes between 2017 and 2019 (Minte-Vera et al., 2023).

The data processed by the IATTC includes catches from the purse-seine and longline fleets. However, the pole-and-line fleet, along with various artisanal and recreational fisheries, contributes only a small proportion of the total catch. Furthermore, the data for longline, artisanal, and recreational fisheries is generally incomplete.

### 7.4.1.2 Stock Identity

Swordfish (*Xiphias gladius*) occur throughout the Pacific Ocean (PO) between about 50°N and 50°S. There is strong evidence that swordfish in the Pacific comprise multiple stocks. As many as six stocks may exist in the Pacific Ocean, but the exact boundaries of these stocks, as well as their exchange rates—for the purposes of stock assessment, is currently uncertain. Following the uncertainty in stock structure, three hypotheses for stock structure were considered in the most recent assessment with data up to 2019 (Minte-Vera et al. 2022):

- H1: The stock is distributed south of 5°S and east of 150°W, as it was assumed in the previous assessment performed in 2011.
- H2: The stock is distributed south of 10°N and east of 150°W. This hypothesis was considered as the reference case.

- H3: The stock is distributed south of 10°N and east of 170°W.

The modelling applied an “areas as fleets” approach, dividing the region into four zones based on fleet composition and spatial–temporal distribution (Figure 7.4.1.3).

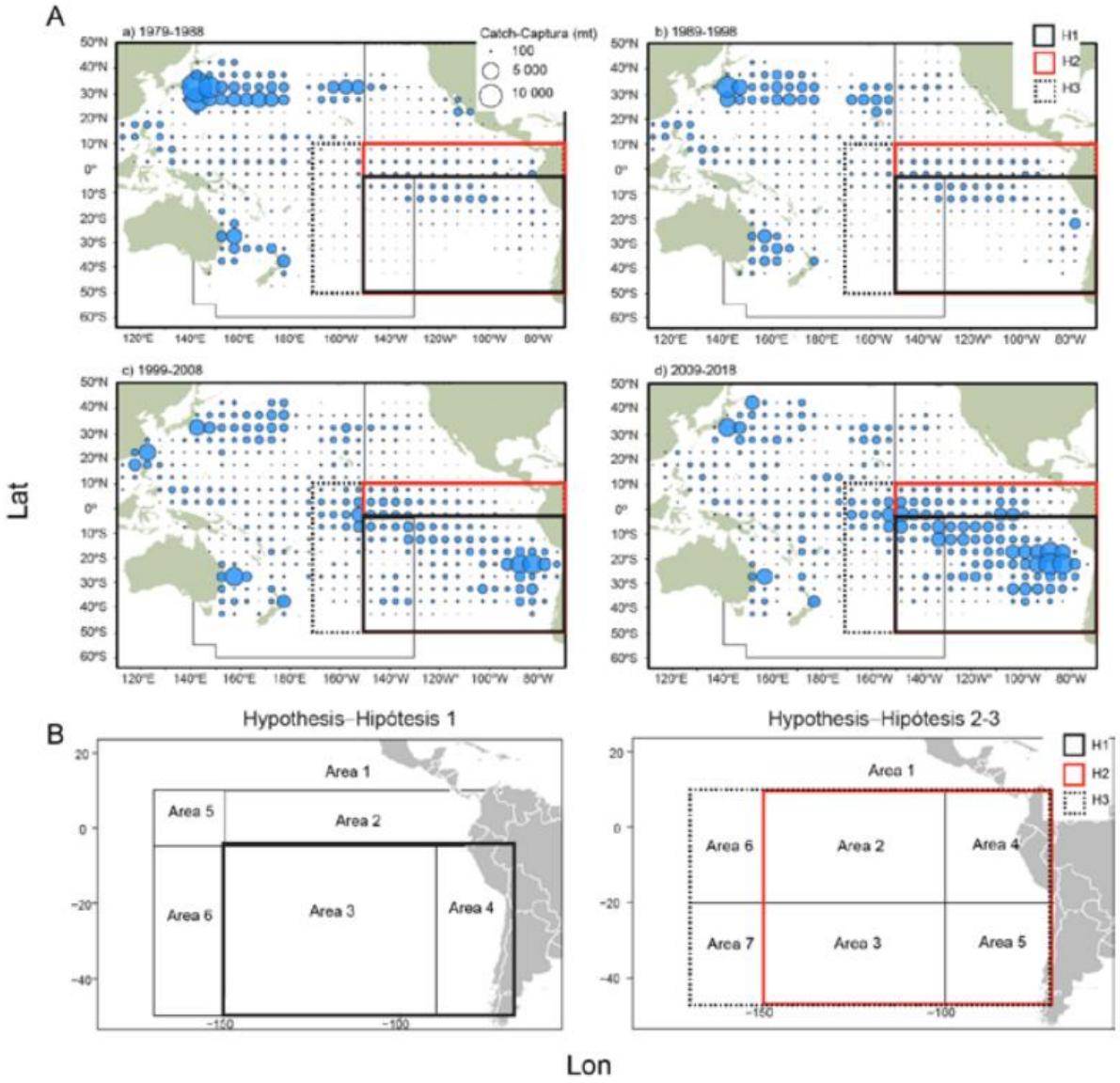



***Figure 7.4.1.3.*** *Map of distant water longline catches (t) of swordfish, Xiphias gladius, by decade and 5° square from the Pacific Ocean, a) 1979–1988, b) 1989–1998, c) 1999–2008, d) 2009–2018 compiled by Moore (2021) overlayed with the regions corresponding to the three stock structure assumptions. B: Areas used for fishery definitions for each stock structure hypothesis. The areas for H1 are the same as in the 2011 assessment. The areas for H2 are based on tree analyses of the length frequencies, which are extended into the WCPO for H3. Source: SAC-14-15 – Evaluación de referencia del pez espada en el OPO sur en 2019*

### 7.4.1.2.1 Stock assessment & reference points

A baseline stock assessment for swordfish (*Xiphias gladius*) in the southeastern Pacific Ocean was submitted by the Inter-American Tropical Tuna Commission (IATTC) in 2022, incorporating data up to 2019. The results

indicated no evidence of overfishing in this region; however, the report emphasised the need to continue improving data collection and analytical inputs for future assessments.

Reference points for swordfish in the southeastern Pacific have not yet been formally adopted by the IATTC. For comparative purposes, Minte-Vera et al. (2022) applied both equilibrium reference points—such as those used by the IATTC for tropical tunas under Resolution C-16-02—and dynamic reference points consistent with those adopted by the Western and Central Pacific Fisheries Commission (WCPFC). The WCPFC's limit reference point is defined as 20% of the spawning biomass in the absence of fishing (20% SSB<sub>F=0</sub>), evaluated dynamically over time to account for recruitment variability. Two target reference points were also considered for comparative analysis: 40% SSB<sub>F=0</sub>(t) and 50% SSB<sub>F=0</sub>(t).

The 2019 assessment of the South Eastern Pacific swordfish established the following biological reference points and current stock indicators. The spawning biomass ratio (SBR) relative to the unexploited level was estimated at 0.38 in 2018, with the limit reference point ($SBR_{msy}$) set at 0.30. The fishing mortality rate in 2018 (F2018) was estimated at 0.22, below the target reference point $F_{msy}$ of 0.28. The maximum sustainable yield (MSY) was calculated at 13,023 tonnes, while the catch in 2018 was 7,646 tonnes, well below the MSY level. The current spawning biomass is above the limit reference point, and fishing mortality is below the target, indicating that the stock is neither overfished nor subject to overfishing. Projections suggest that, under current fishing mortality levels, the spawning biomass will remain above the limit reference point with a high probability over the next decade (Figure 7.4.1.3.1).

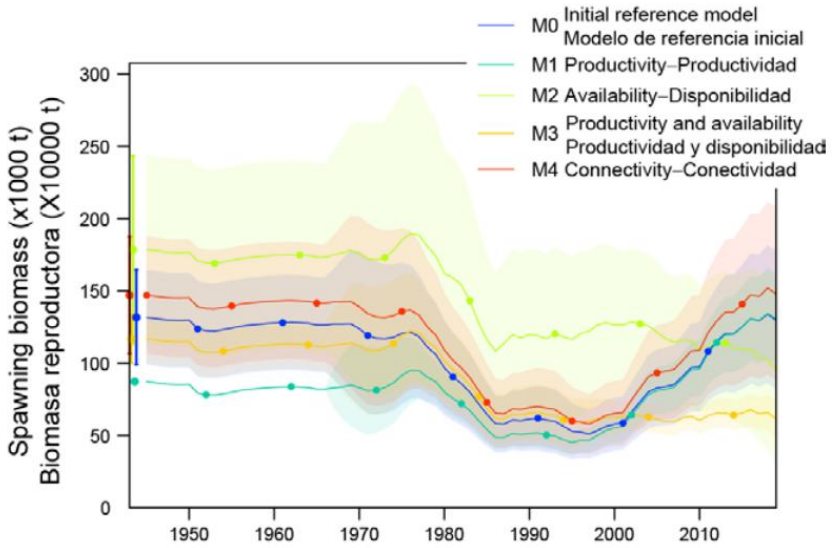



***Figure 7.4.1.3.1.*** *Spawning biomass for the initial reference model M0 and the models corresponding to the four hypotheses that explain the simultaneous increase in indices of abundance and catches. Source: SAC-14-15 – Evaluación de referencia del pez espada en el OPO sur en 2019*

Across all modelled scenarios in the 2022 assessment, the spawning biomass remained above the limit reference point and close to the lower target reference point of 40% SSB<sub>F=0</sub>(t). Under the model combining increased productivity and availability (Model 3), the estimated spawning biomass ratio was 0.42,

slightly above the TRP; in other models, the ratio exceeded 0.50. Fishing mortality in 2018 was below the TRP in all models except Model 3, where it was marginally above it (Table 7.4.1.3.1).

***Table 7.4.1.3.1*** *Summary of Stock Status Indicators and Reference Points for 2018. Source: Made by team according to SAC-14-15 – Evaluación de referencia del pez espada en el OPO sur en 2019*

| Indicator / Reference Point | Symbol | Reference Value | 2018 Estimate | Stock Status Relative to RP |
|---|---|---|---|---|
| Limit Reference Point (spawning biomass ratio) | $SBR_{msy}$ | 0.30 | 0.38 | Above limit |
| Target Reference Point (spawning biomass ratio) | – | 0.40 | 0.38 | Slightly below TRP in some models; above in others |
| Fishing Mortality Target | $F_{msy}$ | 0.28 | 0.22 | Below target |
| Maximum Sustainable Yield | MSY | 13,023 t | – | Catches below MSY |
| Current Catch | $C_{(2018)}$ | – | 7,646 t | Well below MSY |
| Biomass Status | – | – | Above LRP | Not overfished |
| Fishing Mortality Status | – | – | Below TRP | No overfishing |
| WCPFC Limit Reference Point | 20% SSBF=0 | 0.20 | >0.20 in all models | Above limit |
| WCPFC Target Reference Point (lower) | 40% SSBF=0(t) | 0.40 | Approaching in some models | Close to target in certain runs |
| WCPFC Target Reference Point (upper) | 50% SSBF=0(t) | 0.50 | ≥0.50 in several models | Above target in most runs |

The assessment relied on estimated catches aggregated by area and quarter, with missing or inconsistently formatted data adjusted according to predefined rules. Key data sources included abundance indices from standardised longline fleet data (Japan, Korea, Spain, Chile) and Chilean gillnet data. Although no single index was considered ideal, all exhibited upward trends similar to those observed in the 2011 assessment (see Figures 7.4.1.3.2 and 7.4.1.3.3). Length composition data were the most frequently available, supplemented by weight and age composition data, which were weighted to minimise their influence on abundance estimates while maintaining accurate fishery-specific selectivity characterisation.

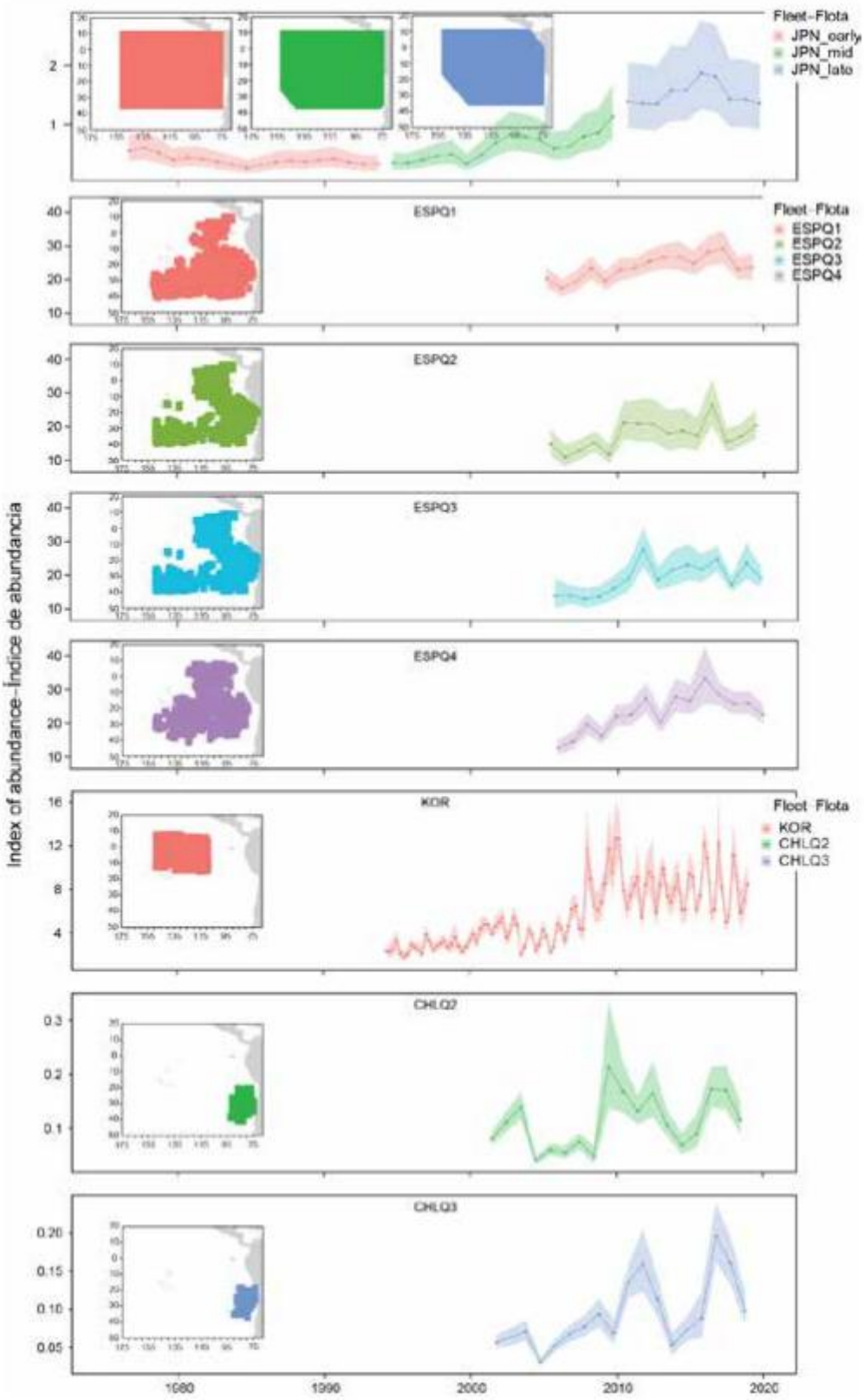



***Figure 7.4.1.3.2**. Spatial domains maps (area corresponding to the indices) and estimated indices (and 95% confidence interval) included in the assessment models. Source: SAC-14-15 – Evaluación de referencia del pez espada en el OPO sur en 2019*

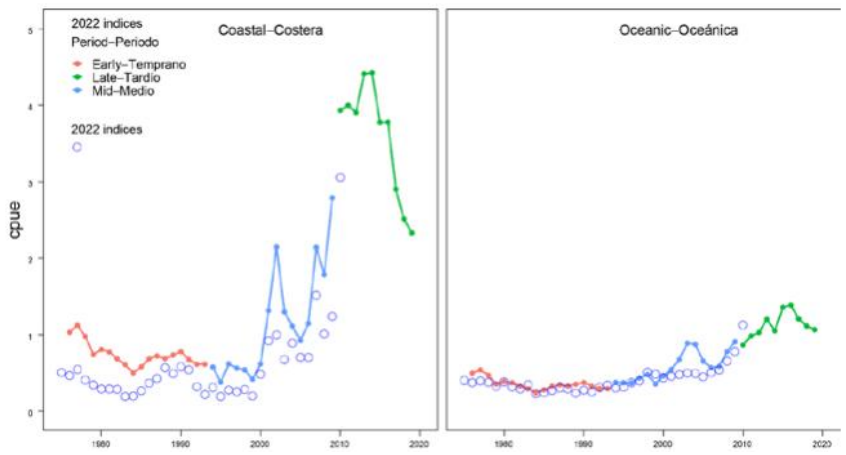



***Figure 7.4.1.3.3.*** *Comparison of the Japanese indices from the 2011 assessment and from SAC-13-INF-M, aggregated into the coastal and offshore area. Source: SAC-14-15 – Evaluación de referencia del pez espada en el OPO sur en 2019*

Catches south of 10°N increased markedly from the mid-2000s, with annual averages rising from about 15,000 t in 2000–2009 to roughly 29,000 t in 2010–2019, peaking at around 34,000 t between 2017 and 2019. The principal fleets in recent years were the Spanish longline fleet (≈30% of total catch by weight), the Chilean gillnet fleet (≈22%), and the Ecuadorian longline fleet (≈20%) (Figure 7.4.1.3.4).

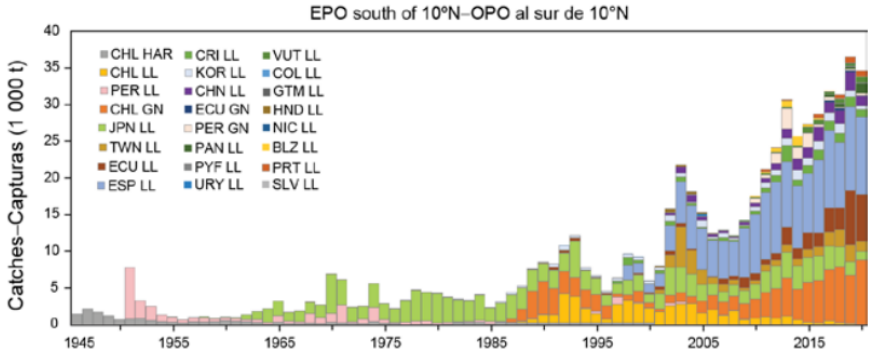



***Figure 7.4.1.3.4.*** *Annual catches (in weight) of swordfish in the EPO south of 10°N by fishing gear and corresponding CPC included in the stock assessment of swordfish for the South EPO.. The CPC abbreviations are: BLZ – Belize, CHL – Chile, CHN – China, COL - Colombia, CRI – Costa Rica, ECU – Ecuador, ESP – Spain, GTM – Guatemala, HND – Honduras, JPN – Japan, KOR – Korea, NIC – Nicaragua, PAN – Panamá, PER – Perú, PRT – Portugal, PYF – French Polynesia, SLV – El Salvador, TWN – Chinese Taipei, URY – Uruguay, VUT – Vanuatu. The gear abbreviations are HAR – Harpoon, LL – Longline, GN – Gillnet*.

An initial reference model (Model 0) linked the concurrent increase in catches and abundance indices to a gradual rise in recruitment, though recruitment deviations violated the statistical assumption of independence and identical distribution, suggesting possible model mis-specification. Four alternative hypotheses were tested to explain the trends: (1) a genuine increase in productivity; (2) increased stock availability unrelated to fishing strategy changes; (3) a combination of productivity and availability increases; and (4) greater connectivity between equatorial and southern subtropical EPO areas, possibly extending to the western and central Pacific. External evidence, notably the substantial rise in jumbo squid (*Dosidicus gigas*) abundance—a key prey species for swordfish—supports the possibility of increased productivity. However, the assessment cautioned that declines in jumbo squid could negatively affect swordfish productivity, necessitating adaptive management.

Despite the uncertainties, all models concluded that the spawning biomass is above the limit reference points and that fishing mortality is below the corresponding limits. The stock is therefore not considered overfished and is not subject to overfishing, although biomass levels in some models are approaching the lower target reference point, warranting close monitoring.

Future research priorities include refining stock structure through electronic tagging and genomic studies, improving standardisation of abundance indices, enhancing catch reporting (by gear, quarter, area, and original units), and incorporating predator–prey dynamics into ecosystem-based models. Adoption of formal target and limit reference points, along with a harvest control rule, is recommended, using the provisional benchmarks proposed in this and previous assessments as the foundation for management strategy evaluation.

#### 7.4.1.3 Harvest Strategy and Harvest Control Rules

As swordfish is a highly migratory species, its management should be considered at international level at Regional Fisheries Management Organisations (RFMO). Therefore, The IATTC has jurisdiction over the eastern Pacific Ocean. The recommendation set out in SAC-14-15, consist in the adoption of objective and limit reference points, along with a harvest control rule for the southern EPO swordfish stock. The provisional reference points should be considered for formal adoption while undergoing management strategy evaluation.

At national level, in March 2024 a stakeholder committee was established for the development of the National Swordfish Action Plan (NAP). A workshop was held on 1 May 2024 in collaboration with WWF Ecuador and the Ministry of Production, Investment and Fisheries. The objective of this workshop was to present the Proposed National Action Plan for the Conservation and Sustainable Management of the Swordfish Fishery in Ecuador (PAN Pez Espada 2024-2029). One of the main objectives of the workshop was to review, analyse, adjust, and validate the proposed strategic framework for the plan, ensuring the participation of all key stakeholders involved in the capture of this species. However, as of March 2023, it was not yet possible to carry out a comprehensive evaluation of the management system, given that the new fisheries law had not been fully implemented within the management structure. It was therefore deemed necessary to allow additional time to support and verify its full application, and a reformulation of the planned actions was anticipated as part of the upcoming revision of the action plan. As of September 2024, no progress had been made on this matter.

### 7.4.2 Catch profiles

The catch profiles used in this report correspond to the period 2019-2024 for the all the vessels integrating both UoA 1 and UoA2, except for one vessel from UoA 1 - *Jack Mar* – from which no data were available, as detailed in various sections of this document.

***Table 7.4.2.1.*** *Annual catch volume in kilograms of swordfish from 2019 to 2023. Source: Table prepared by the assessment team with data provided by the client.*

| **Swordfish** ***Xiphias gladius*** | **2019** **Weight in** tons | **2020** **Weight in** tons | **2021** **Weight in** tons | **2022** **Weight in** tons | **2023** **Weight in** tons | **2024** **Weight in** tons |
|---|---|---|---|---|---|---|
| **UoA1** | 311,103 | 287,944 | 863,983 | 940,064 | 1 843,511 | 1 168,795 |
| **UoA2** | 134,252 | 491,563 | 742,563 | 742,947 | 1 123,93 | 927,058 |

### 7.4.3 Total Allowable Catch (TAC) and catch data

The following table (Table 7.4.3.1) summarises the Total Allowable Catch (TAC) and catch data for UoA (1 and 2) for the years 2023 and 2024. It is important to note that no formal TACs are established for swordfish; instead, management is governed by the Inter-American Tropical Tuna Commission (IATTC) through alternative regulatory measures.

***Table 7.4.3.1*** *Total Allowable Catch (TAC) and catch data of Swordfish for both UoAs*

| **TAC / Catch Data UoA1** | **Year** | **Amount** |
|---|---|---|
| TAC* | Year | NA |
| UoA share of TAC | Year | NA |
| Total catch by UoA (most recent year) | 2024 | 1 168,795 |
| Total catch by UoA (second most recent year) | 2023 | 1 843,511 |
| **TAC / Catch Data UoA2** | **Year** | **Amount** |
| TAC* | Year | NA |
| UoA share of TAC | Year | NA |
| Total catch by UoA (most recent year) | 2024 | 927,058 |
| Total catch by UoA (second most recent year) | 2023 | 1 123,93 |

** There are no strict Total Allowable Catches (TACs) set for swordfish. Instead, the Inter-American Tropical Tuna Commission (IATTC) implements management measures such as effort controls, seasonal closures, and restrictions on floating-object purse seine fishing*.

**References for P1**


Comisión Interamericana del Atún Tropical, Comité Científico Asesor. (2023, 15–19 de mayo). Evaluación de referencia del pez espada en el OPO sur en 2019 (Documento SAC-14-15). 14ª Reunión, La Jolla, California, EE. UU. Carolina Minte-Vera, Mark N. Maunder, Haikun Xu, Juan Valero, & Alexandre Aires-da-Silva.

Collette, B.B., A. Di Natale, W. Fox, J. Graves, M. Juan Jorda, B. Pohlot, V. Restrepo and J. Schratwieser, 2011. Xiphias gladius. The IUCN Red List of Threatened Species 2011: e.T23148A88828055. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T23148A9422329.en

Frimodt, C., 1995. Multilingual illustrated guide to the world's commercial warmwater fish. Fishing News Books, Osney Mead, Oxford, England. 215 p.

Nakamura, I., 1985. FAO species catalogue. Vol. 5. Billfishes of the world. An annotated and illustrated catalogue of marlins, sailfishes, spearfishes and swordfishes known to date. FAO Fish. Synop. 125(5):65p. Rome: FAO. (Ref. 43)

Nishikawa, Y. and S. Ueyanagi, 1974. The distribution of the larvae of swordfish, Xiphias gladius, in the Indian and Pacific oceans. p. 261-264. In Proceedings of the international billfish symposium, Kailua-Kona, Hawaii, 9-12 August, 1972. Part. 2. Review and contributed papers. US Department of Commerce, NOAA Technical Report, NMFS SSRF 675.

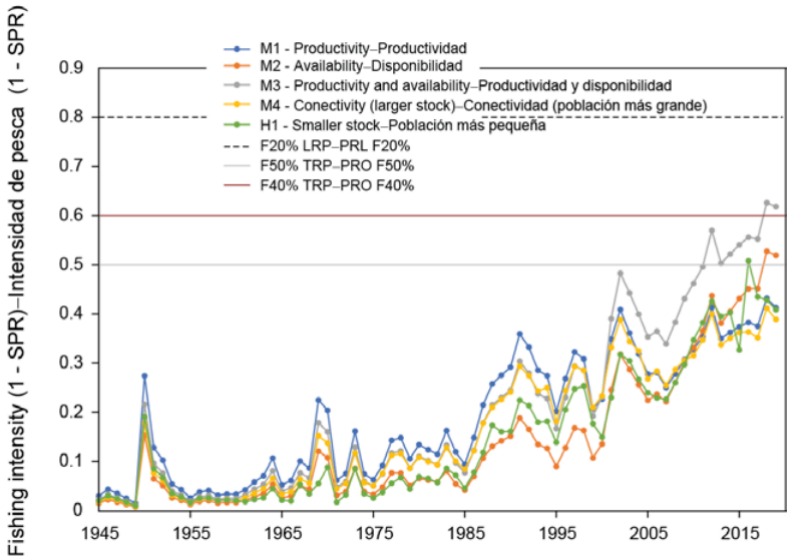
Palko, B.J., G.L. Beardsley and W.J. Richards, 1981. Synopsis of the biology of the swordfish, Xiphias gladius Linnaeus. NOAA Technical Report NMFS Circular 441/FAO Fisheries Synopsis No. 127.

Wilson, C.A. III, 1984. Age and growth aspects of the life history of billfishes. University of South Carolina. 180 p. Ph.D. dissertation

### 7.4.4 Principle 1 Performance Indicator scores and rationales

#### PI 1.1.1 – Stock status

| PI 1.1.1 | | The stock is at a level that maintains high productivity and has a low probability of recruitment overfishing | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Stock status relative to recruitment impairment** | | | |
| | Guidepost | It is **likely** that the stock is above the point of recruitment impairment (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** | **No** |
| Rationale | | A baseline stock assessment for swordfish was submitted by the IATTC during 2022 (SAC-14-15). It was determined that there is no evidence of overfishing of this species in the EPO, but it was recommended to continue improving the information for future assessment work.<br><br>The IATTC has not yet adopted reference points for swordfish in the southern EPO. However, Resolution C-16-02 defines target and limit reference points, expressed in terms of spawning biomass (B) and fishing mortality (F), for tropical tunas. The spawning biomass limit reference point (BLIM) is the threshold value of B that should be avoided because further depletion could endanger the sustainability of the stock. The interim BLIM adopted by the IATTC in 2014 is the spawning biomass that produces 50% of the unexploited recruitment (R0) if the stock recruitment relationship follows the Beverton-Holt function with a steepness (h) of 0.75 (SAC-05-14). These are defaults chosen by the Commission; in the absence of adopted objective reference points, the same conservative assumption could be applied to define objective reference points for highly productive species caught in the tuna fisheries of the EPO, as is the case for swordfish.<br>The assessment of the South EPO swordfish stock employs a set of five reference models, incorporating different hypotheses regarding population structure and potential explanations for the simultaneous increase in catches and abundance indices observed over the past 20 years. Due to the uncertainty surrounding the process that generated this distinctive pattern, the estimated MSY with h = 1 is considered inappropriate.<br>The SRMS/S0 ratio for South EPO swordfish, calculated using the fishery mix from the last three years of the assessment (2017–2019) and a steepness parameter of 0.75, averages 0.25. Therefore, for the South EPO stock, a target reference point of 0.3S0 would be more precautionary and should be adopted. Given the absence of evidence suggesting that recruitment declines when SRMS/S0 ≥ 0.3 in highly fecund, pelagic teleost species, the IATTC considers the proposed reference points to be conservative for these species (SAC-14-15).<br>Results from Minte-Vera et al. (2022) indicate that, regardless of the model employed, the spawning biomass remains above the limit reference point. Specifically, the spawning biomass ratio estimates consistently exceed the limit reference point set at 30% of the unexploited level, with values approaching or surpassing the target reference point of approximately 40% spawning biomass. Furthermore, fishing mortality rates in most models remain below the target reference point, supporting the conclusion that the stock is not overfished nor subject to overfishing. Average annual catches over the period 2013–2022 have been relatively low, averaging 90 tonnes, with a maximum of 362 tonnes recorded in 2018.<br>The current assessment indicates that the swordfish stock is likely above the point of recruitment impairment (PRI), thereby meeting the criteria for a score of SG 60. Furthermore, the available data support the conclusion that it is highly likely the stock remains above the PRI, consistent with a score of SG 80. However, the score of SG 100, which requires a high degree of certainty that the stock is above the PRI, cannot be achieved. This is due to the absence of a more recent stock assessment and the lack of an established Total Allowable Catch (TAC) for swordfish. Instead, management is implemented through measures adopted by the IATTC, including effort controls, seasonal closures, and restrictions on floating-object purse seine fishing. For these reasons, the team considers that **SG 60 and SG 80 are met**, and **SG 100 is not achieved**. | | |
| **b** | **Stock status in relation to achievement of maximum sustainable yield (MSY)** | | | |

| | | | | |
|---|---|---|---|---|
| | Guidepost | | The stock is at or fluctuating around a level consistent with MSY. | There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years. |
| | Met? | | **Yes** | **No** |
| Rationale | Scoring Issue b requires at the SG80 level that the stock is fluctuating around a level consistent with MSY, whereas, at the SG100 level, there must be a high degree of certainty that the stock has been fluctuating around that level or has been above that level over recent years.<br><br>The exploitation rate, expressed as fishing intensity (1 - SPR), has remained consistently below the target reference point corresponding to F40%SPR. This target relates to a spawning biomass per recruit (SPR) of 40%, which is considered a sustainable level to maintain stock productivity. In this context, large SPR values indicate low fishing mortality, and fishing intensity serves as a proxy for fishing mortality. (**Figure PI 1.1.1.1 e Figure PI 1.1.1.2**).<br><br>  <br><br>***Figure PI 1.1.1.1**. Fishing intensity (1-SPR) for the models corresponding to the four hypotheses that explain the simultaneous increase in indices of abundance and catches and the model corresponding to the stock structure hypothesis H1 (north boundary at 5°S). Note that M4 corresponds to the stock structure hypothesis H3 (western boundary at 170°W). Fishing intensity is a proxy for fishing mortality, based on SPR (proportion of the spawning biomass produced by each recruit with fishing relative to biomass per recruit in the unfished condition, Goodyear 1993). Large SPR are indicative of low fishing mortality, thus a proxy for fishing mortality is 1-SPR*. | | | |

Rationale

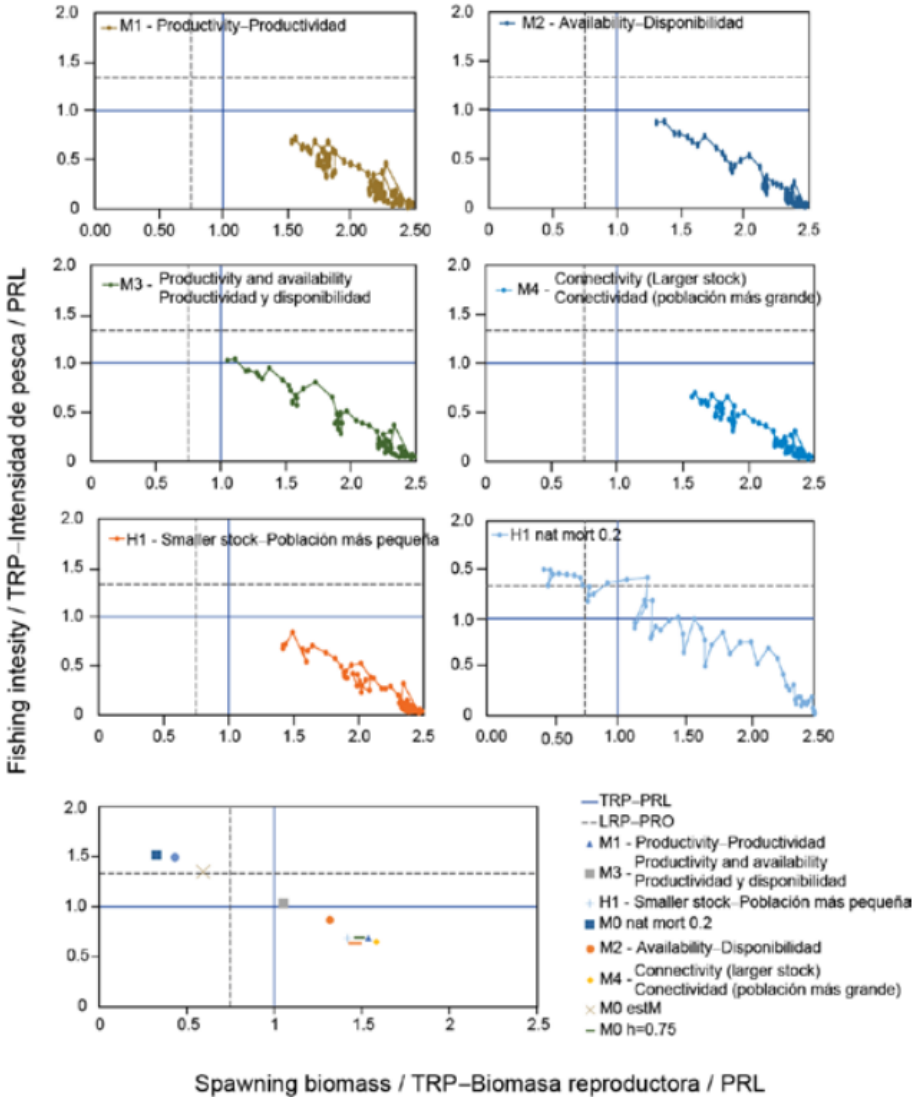



***Figure PI 1.1.1.2**. Phase plots: Estimated spawning biomass relative to the biomass target reference point (40%SSBF=0) versus fishing intensity relative to the suggested target reference point (F40%SPR) for the models corresponding to the four hypotheses that explain the simultaneous increase in indices of abundance and catches and the model corresponding to the stock structure hypothesis H1 (north boundary at 5°S). Note that M4 corresponds to the stock structure hypothesis H3 (western boundary at 170°W). The dashed lines correspond to the LRP of F20% and 20% SSBF=0*

The models analysed, including those based on different stock structure hypotheses, show that fishing intensity has stayed below this threshold, supporting the maintenance of spawning biomass near or above the biomass target reference point. This suggests that current fishing pressure has not exceeded levels associated with recruitment impairment, contributing to a stable or increasing stock status.

The limitations and uncertainties of the current model prevent the confirmation of a score of 100.

**References:**

Maunder et al. (2022); Bi et al. 2024
SAC-05-14

| | | | |
|---|---|---|---|
| Comisión Interamericana del Atún Tropical, Comité Científico Asesor. (2023, 15–19 de mayo). Evaluación de referencia del pez espada en el OPO sur en 2019 (Documento SAC-14-15). 14ª Reunión, La Jolla, California, EE. UU. Carolina Minte-Vera, Mark N. Maunder, Haikun Xu, Juan Valero, & Alexandre Aires-da-Silva. | | | |
| **Stock status relative to reference points** | | | |
| Reference point used in scoring stock relative to PRI (SIa) | | | |
| Reference point used in scoring stock relative to MSY (SIb) | $SBR_{TARGET} = B_{CURRENT} / B$MSY $F_{TARGET}$ | $SBR_{TARGET} = 0.3$ | |
| Draft scoring range | **≥80** | | |
| Information gap indicator | **Information sufficient to score PI** | | |
| Data-deficient? (Risk-Based Framework needed) | **No** | | |

## PI 1.1.2 – Stock rebuilding – UoA

| PI 1.1.2 | | Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Rebuilding timeframes** | | | |
| | Guide post | A rebuilding timeframe is specified for the stock that is the **shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years. | | The shortest practicable rebuilding timeframe is specified that does not exceed **1 generation time** for the stock. |
| | Met? | | | |
| Rationale | | N/A | | |
| **b** | **Rebuilding evaluation** | | | |
| | Guide post | Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe. | There is **evidence** that the rebuilding strategies are rebuilding stocks, or it is **likely** based on simulation modelling, exploitation rates, or previous performance that they will be able to rebuild the stock within the **specified timeframe**. | There is **strong evidence** that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates, or previous performance that they will be able to rebuild the stock within the **specified timeframe**. |
| | Met? | | | |
| Rationale | | N/A | | |
| Draft scoring range | | | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 1.2.1 – Harvest strategy – UoA

| 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/PI 1.1.1A 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/PI 1.1.1A 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/PI 1.1.1A SG80. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The Harvest strategy is a combination of monitoring, stock assessment, harvest control rules (HCRs) and management actions.<br><br>South EPO Swordfish Benchmark Assessment in 2019. A new southern swordfish stock assessment will then be developed and presented in 2025.<br><br>All industrial and mother-ship vessels must have a fishing logbook that can be physical or electronic, and it shall be filled out daily in a complete, reliable and timely manner, to be delivered at the time of landing or completion of fishing operations. The logbook must include the estimated catches by species or group of species in tons, kilograms or number of specimens. No landed catches can be mobilized unless they have been inspected by the SRP and a CMCDP has been issued.<br><br>Conservation measures for swordfish stocks in the eastern Pacific Ocean are managed under the jurisdiction of the Inter-American Tropical Tuna Commission (IATTC), as swordfish is a highly migratory species requiring international coordination through Regional Fisheries Management Organisations (RFMO). The IATTC's recommendation, outlined in SAC-14-15, includes the adoption of objective and limit reference points, together with a harvest control rule specifically for the southern EPO swordfish stock. These provisional reference points are currently under consideration for formal adoption pending management strategy evaluation.<br><br>At the national level, a stakeholder committee was established in March 2024 to develop the National Swordfish Action Plan (NAP). In May 2024, a workshop was held in collaboration with WWF Ecuador and the Ministry of Production, Investment and Fisheries to present the Proposed National Action Plan for the Conservation and Sustainable Management of the Swordfish Fishery in Ecuador (PAN Pez Espada 2024-2029). The workshop's main objectives included reviewing, analysing, adjusting, and validating the strategic framework of the plan, ensuring the active participation of all key stakeholders involved in the swordfish fishery. However, as of March 2023, a comprehensive evaluation of the management system was not feasible due to the incomplete implementation of the new fisheries law within the management structure. Additional time was therefore considered necessary to support full implementation, with a reformulation of planned actions anticipated during the upcoming revision of the action plan. As of September 2024, no further progress had been recorded.<br><br>Agreement MPCEIP-SRP-2022-0150-A approved on July 13, 2022, establishes the installation and operation of the Satellite Monitoring Device (Dispositivo de Monitoreo Satelital – DMS) for all industrial fishing vessels and mother-ship vessels, regardless of gross registered tonnage (TRB). | | |

| PI 1.2.1 | | There is a robust and precautionary harvest strategy in place | | |
|---|---|---|---|---|
| | | The harvest strategy for swordfish **meets SG 60** as it is expected to achieve the stock management objectives and also **meets SG 80** due to the fact that it appears to be responsive to the stock status and its components seems to work together towards these objectives. However, **SG 100 is not met** since the strategy is still provisional, with reference points and control rules under evaluation, and full implementation of national management measures remains incomplete. | | |
| **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 | | The harvest strategy for swordfish is considered likely to be effective based on prior experience and plausible reasoning, thereby **meeting the SG 60**. Additionally, although the strategy has not been fully tested, there is evidence that it is achieving its objectives, which **meets the SG 80** requirement. However, **SG 100 is not met**, as a comprehensive evaluation of the strategy's performance has yet to be completed, and conclusive evidence demonstrating its consistent success in maintaining the stock at target levels is still lacking. | | |
| **c** | **Harvest strategy monitoring** | | | |
| | Guide post | Monitoring is in place that is expected to determine whether the harvest strategy is working. | | |
| | Met? | **Yes** | | |
| Rationale | | At the national level, monitoring frameworks have been strengthened through stakeholder engagement in the development of the National Swordfish Action Plan (NAP). Additionally, the Agreement MPCEIP-SRP-2022-0150-A, approved in July 2022, mandates the installation and operation of Satellite Monitoring Devices (DMS) on all industrial fishing and mother ships, irrespective of vessel size. These monitoring measures provide essential data expected to assess whether the harvest strategy is functioning as intended. Consequently, the requirements for **SG 60 are met**. | | |
| **d** | **Harvest strategy review** | | | |
| | Guidepost | | | The harvest strategy is periodically reviewed and improved as necessary. |
| | Met? | | | **Yes** |
| Rationale | | The harvest strategy for the swordfish stock in the eastern Pacific Ocean is subject to periodic review and continuous improvement. This is evidenced by the establishment of provisional reference points and harvest control rules under IATTC recommendation SAC-14-15, alongside ongoing management strategy evaluations. At the national level, the development and planned revision of the National Swordfish Action Plan (NAP), with active stakeholder involvement, further demonstrate commitment to adapt and refine management measures. Therefore, the criterion for **SG 100 is fully met**. | | |
| | **Shark finning** | | | |

| PI 1.2.1 | | There is a robust and precautionary harvest strategy in place | | |
|---|---|---|---|---|
| **e** | Guide post | There is a **high degree of certainty** that shark finning is not taking place. | It is **highly likely** that shark finning is not taking place. | There is a **high degree of certainty** that shark finning is not taking place. |
| | Met? | **NA** | **NA** | **NA** |
| Rationale | | The target stock 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? | **N/A** | **N/A** | **N/A** |
| Rationale | | The term 'unwanted catch' is defined as the part of the catch that a fisher did not intent to catch but could not avoid.<br>Swordfish is the target species and there are no requirements such as minimum or maximum landing sizes or quotas which could lead to any of the catch being unwanted. Furthermore, the IATTC stock assessments consulted for the swordfish population do not include significant references to juvenile individuals. Therefore, available information indicates that this scoring issue is not relevant to the UoA. | | |
| References: | | | | |
| IATTC, 2016; Control Union, 2024; C-13-01 | | | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI but it would be interesting to confirm the information on unwanted catches.** | | |

## PI 1.2.2 – Harvest control rules and tools

| PI 1.2.2 | | There are well-defined and effective 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 | | IATTC Resolution C-16-02 outlines the HCR for tropical tunas in the IATTC Commission Area as:<br><br>• 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.<br><br>• 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.<br><br>Therefore, the IATTC staff propose provisional limit and target reference points that may be used for tunas, billfishes, and other highly productive fish species in the EPO.<br><br>At the national level, general management measures affecting all non-target species caught by the UoA are the technical gear specifications, dolphinfish closed season (which means that the fleet changes its gear from LL-DOL to LL-TBS to target tunas, billfishes and sharks), closed census, data reporting obligations (mandatory logbooks, and Article 225 of the Ex.Decree 362/2022 states that all interactions shall be recorded), observer program in place, and inspections at port to obtain the landing certificate.<br><br>Agreement 407 of October 12, 2011, which in its articles 1 and 3, defines the characteristics of longline fishing vessels, and establishes a maximum number of up to 10 smaller fiber-glass vessels that can be towed by mother ships during the Dorado fishing season. It also sets that at least 10% of the mother-ships shall have observers on board.<br><br>IATTC Resolution C-16-02 sets clear HCRs with provisional reference points and management measures to reduce exploitation as the PRI is approached, ensuring biomass recovery or maintenance at MSY levels, supported nationally by complementary regulatory and operational measures. Therefore, the HCRs are well defined and effective in reducing exploitation rates and maintaining the stock around target levels consistent with MSY, **meeting the requirements for SG 60 and SG 80**. However, they do not yet demonstrate the capacity to ensure that the stock remains above the MSY-consistent target level most of the time, and thus **do not achieve SG 100**. | | |
| **b** | **The robustness of HCRs to uncertainty** | | | |

| | | | | |
|---|---|---|---|---|
| | Guide post | | The HCRs are likely to be robust to the main uncertainties. | The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties. |
| | Met? | | **No** | **No** |
| Rationale | | Given that the reference points currently applied to swordfish in the EPO are provisional and not formally adopted by the IATTC for this species, there is no certainty that the existing HCRs are robust to the main uncertainties. While these interim reference points are based on conservative assumptions and informed by assessment results suggesting the stock is above the PRI, their provisional nature means they have not been tested or validated across a wide range of plausible scenarios, nor do they fully account for uncertainties related to the ecological role of the stock or the specific population dynamics of swordfish. Consequently, there is insufficient evidence to demonstrate that the HCRs take account of a wide range of uncertainties or that they are robust to the main uncertainties, meaning that the requirements for **SG 80 is not met.** | | |
| **c** | **Evaluation of HCRs** | | | |
| | 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 | | Assessment results indicate that the stock is in good condition, with spawning biomass consistently above the limit reference point and close to or exceeding the target level, and fishing mortality rates remaining below target reference points. This provides evidence that the tools used to implement the HCRs are appropriate and effective in achieving exploitation levels consistent with the HCR requirements, thereby **meeting SG 60 and SG 80.** However, as some uncertainty remains regarding the robustness of the HCRs, given the provisional nature of the reference points and the absence of their formal adoption for swordfish, there is insufficient evidence to clearly demonstrate that these tools are effective in achieving the required exploitation levels under all plausible scenarios, meaning **SG 100 is not met**. | | |
| References: | | | | |
| Resolution C-16-02; Resolution C-19-01 (IATTC 2019).<br>Comisión Interamericana del Atún Tropical, Comité Científico Asesor. (2023, 15–19 de mayo). Evaluación de referencia del pez espada en el OPO sur en 2019 (Documento SAC-14-15). 14ª Reunión, La Jolla, California, EE. UU. Carolina Minte-Vera, Mark N. Maunder, Haikun Xu, Juan Valero, & Alexandre Aires-da-Silva. | | | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 1.2.3 – Information and monitoring

| 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 available information on stock structure, productivity, and fleet composition is sufficient to support the design and implementation of the harvest strategy for swordfish in the southeastern Pacific Ocean. Multiple hypotheses regarding stock boundaries have been explicitly tested, and fleet composition is well characterised through spatial and temporal distribution data. However, despite the inclusion of abundance indices and catch data, the overall dataset does not yet constitute a comprehensive strategic research plan that extends beyond immediate management needs. Therefore, while **SG 60 and SG 80 are met**, the criterion for **SG 100 is not fulfilled**, which requires a comprehensive range of information covering long-term management and ecosystem considerations. | | |
| b | **Monitoring** | | | |
| | Guide post | Stock abundance and UoA removals are monitored and **at least 1 indicator** is available and monitored with sufficient frequency to support the harvest strategy. | Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest strategy**, and **1 or more indicators** are available and monitored with sufficient frequency to support the harvest strategy. | **All information** required by the harvest strategy is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent **uncertainties** in the information (data) and the robustness of assessment and management in dealing with this uncertainty. |
| | Met? | **Yes** | **No** | **No** |

| | | | | |
|---|---|---|---|---|
| Rationale | | Stock abundance and removals by units of assessment are monitored regularly, with data derived from standardised longline fleet indices and aggregated catch information. Monitoring frequency and coverage are sufficient to inform the harvest strategy and track key indicators such as spawning biomass and fishing mortality. The IATTC Resolution-19-08 mandates that each CPC ensure at least 5% observer coverage on longline vessels over 20 metres, while national regulations require a minimum of 10% observer coverage on mother-ships, increasing progressively to 20% by 2024. Observers' data are systematically reported to the Scientific Review Panel (SRP), enhancing data quality and fishery monitoring. Moreover, a 2023 Memorandum of Understanding between the IATTC and the Swordfish Fishery Improvement Project (FIP) aims to strengthen data collection, promote good on-board practices, and improve information availability for stock assessment and management strategy development.<br>However, despite these efforts, significant gaps remain in data completeness and certainty, particularly concerning artisanal and recreational fisheries, which contribute to the total removals but are poorly documented. Furthermore, during the 15th IATTC meeting, CPCs were urged to provide enhanced scientific support for data provision in the southern Pacific swordfish fishery to enable an updated stock assessment for presentation at the 2026 Commission meeting (IATTC-102-03). This highlights ongoing challenges in achieving consistent and comprehensive data collection. Consequently, although monitoring meets the requirements to **met SG 60**, the current limitations in data resolution, coverage, and uncertainty characterisation prevent the attainment of higher scoring, which demands high-frequency, high-certainty monitoring fully supporting the harvest strategy. Thus, **SG80 and SG 100 and not met.** | | |
| **c** | **Comprehensiveness of information** | | | |
| | Guide post | | There is good information on all other fishery removals from the stock. | |
| | Met? | | **Yes** | |
| Rationale | | The information used to estimate total swordfish removals by species and fishing gear is compiled from multiple sources, including catch data aggregated by area and quarter, abundance indices derived from standardised longline fleets of Japan, Korea, Spain, and Chile, as well as data from Chilean gillnet fisheries. Additional data come from vessel logbooks, observer programmes mandated under national and IATTC regulations, and port sampling conducted by IATTC staff and national authorities. The commercial longline fleet, representing the majority of removals, is well monitored. Despite some gaps in data from artisanal and recreational fisheries, the information available is sufficient and relevant to support the harvest strategy and meets SG 80. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 1.2.4 – Assessment of stock status

| PI 1.2.4 | | There is an 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 strategy. | 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 | | The stock assessment for swordfish in the southeastern Pacific Ocean is considered appropriate for the stock and the harvest strategy. The most recent benchmark assessment, presented in 2019 and reviewed by the IATTC Scientific Advisory Committee, incorporates key biological and fishery-related features relevant to the species and the UoA. Notwithstanding, some aspects such as standardisation of longline CPUE, natural mortality estimation, and selectivity require further refinement to enhance the robustness of the assessment outcomes. The ongoing request for additional data to update the baseline assessment by 2026 reflects the recognized need to improve assessment reliability. Consequently, the current stock assessment **meets the requirements for SG 80**, demonstrating sufficient consideration of major stock characteristics, but **does not fulfil the more stringent criteria for SG 100** due to existing uncertainties and methodological limitations. | | |
| **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** | **No** | |
| Rationale | | The stock assessment for swordfish in the southeastern Pacific employs reference points relevant and tailored to the biology and exploitation characteristics of the stock. Although formal limit and target reference points have not yet been officially adopted by the IATTC for swordfish, the assessment uses provisional benchmarks aligned with those applied to tropical tunas under Resolution C-16-02 and those adopted by the WCPFC, including spawning biomass limit reference points (e.g., 20–30% of unexploited spawning biomass) and target reference points around 40–50%. These reference points are evaluated dynamically, considering recruitment variability and biological uncertainty. The assessment framework integrates multiple models reflecting different hypotheses on stock structure and productivity, thereby capturing key uncertainties relevant to the stock. The assessment estimates stock status relative to reference points that, although appropriate for the stock, are provisional in nature. This methodology **fulfils the criteria for SG60** by providing a relevant basis for evaluation; however, the provisional status of these reference points limits the confidence in the assessment's robustness and **SG80 is not met**. It is anticipated that the forthcoming stock assessment in 2026 will provide refined reference points, which may enable a more definitive evaluation and potentially achieve a higher scoring level. | | |
| **c** | **Uncertainty in the assessment** | | | |
| | Guide post | The assessment **identifies major sources** of uncertainty. | The assessment **takes uncertainty into account**. | The assessment evaluates stock status relative to reference points in a **probabilistic** way. |
| | Met? | **Yes** | **Yes** | **Yes** |

| | | | | |
|---|---|---|---|---|
| Rationale | | The stock assessment estimates parameters accounting for different types of uncertainties that have been identified in the biology, fishery and model specification. Stock status is presented as the probability of being beyond the IATTC's reference points. To ensure that management choices meet the requirements of the HCR as described in Resolution C-16-02 (IATTC 2016), the results of the stock assessment are presented in probabilistic terms so that the HCR can be evaluated. The fishery meets the requirements at **SG60, SG80 and SG100**. | | |
| **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 assessment has undergone some level of evaluation; however, it has not been subjected to comprehensive testing to fully demonstrate robustness. While alternative hypotheses and approaches have been considered, they have not been rigorously explored to the extent required for a higher confidence level. Consequently, the **SG100 level 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** | **No** |
| Rationale | | The IATTC's stock assessments are routinely subjected to internal review by the Scientific Advisory Committee (SAC), where staff recommendations are thoroughly discussed. These reviews address model inputs, output uncertainties, stock structure, and data limitations (e.g., IATTC 2022b). Regarding the swordfish stock assessment, while it has been reviewed internally within the IATTC framework, it has not yet undergone a comprehensive external peer review process. The assessment **meets the criteria for SG60 and SG80**, but **does not meet the SG100** peer review standard. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

## 7.5 Principle 2

### 7.5.1 Principle 2 background

Ecuador lies at the intersection of two major marine ecosystems: the Pacific Central-American Coastal and the Humboldt Current systems. The country's coastline can be broadly divided into two oceanographic zones — a tropical northern zone influenced by the warm Panama Current, and a central-southern zone shaped by the convergence of warm northern waters and cold southern waters, forming a coastal frontal system of mixed waters. This interface experiences significant seasonal variability in water temperature and current dynamics (see **Figure 7.5.1.1**). Within this complex and dynamic ecological context, the swordfish longline fishery operates across a region influenced by key oceanographic features, including the North and South Equatorial Currents, the North Equatorial Counter-current, the Humboldt Current, and the Cromwell Current. These currents play a fundamental role in determining the spatial and temporal distribution of species throughout the marine territories of Ecuador, Colombia, and Panama.

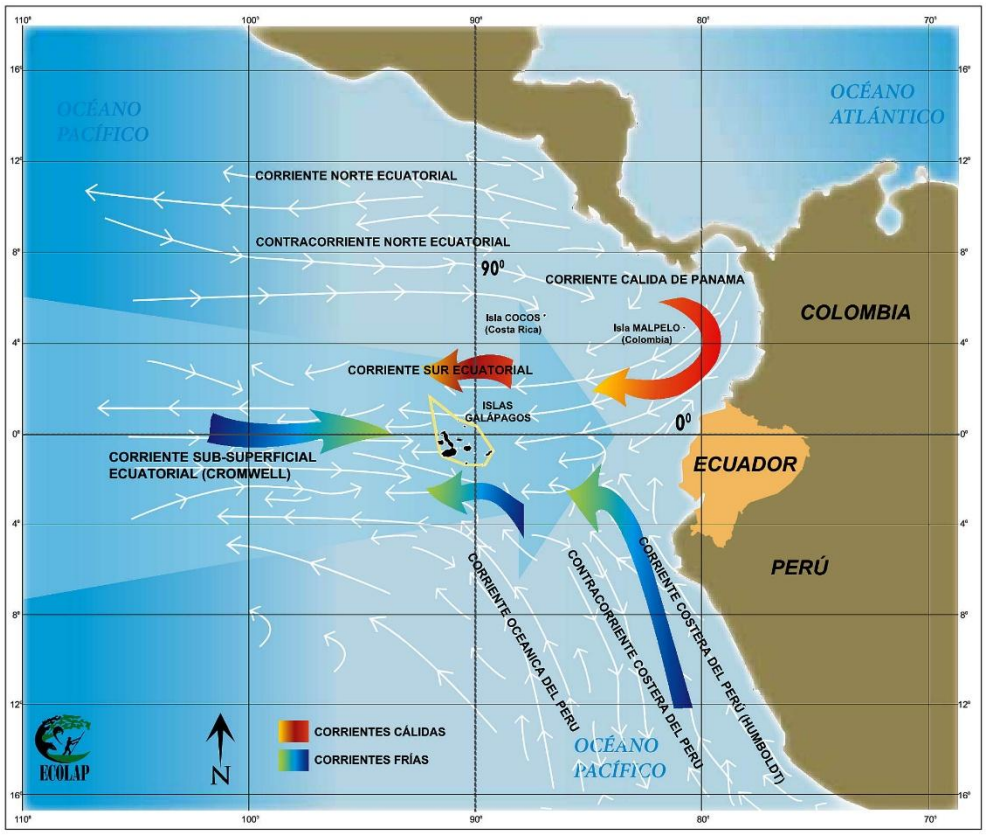



***Figure 7.5.1.1**. System of currents in the Southeast Pacific.*

In the Eastern Pacific Ocean (EPO) this fishery is sensitive to changes, mainly in the presence of the ENSO event, which they affect the trophic levels of the sea, generating abundance in some species and decrease in others. In the case of swordfish that corresponds to the tertiary trophic level (fish), the availability of fishing in the affected coastal areas decreases, redistributing in more oceanic waters outside the EEZ.

ENSO cycles alternate between El Niño and La Niña phases, producing marked changes in sea surface temperature (SST), thermocline depth, and trade wind intensity (see **Figure 7.5.1.1.2)** . These shifts significantly influence marine productivity and biological processes such as feeding, reproduction, and recruitment of key commercial species, including tunas and billfishes. For instance:

- During La Niña episodes, the thermocline is typically shallower, concentrating tuna closer to the surface and thereby enhancing catch rates.
- Conversely, El Niño events lead to a deeper thermocline and warmer waters, reducing catch rates and requiring fishers to intensify their efforts and adapt their fishing strategies accordingly.

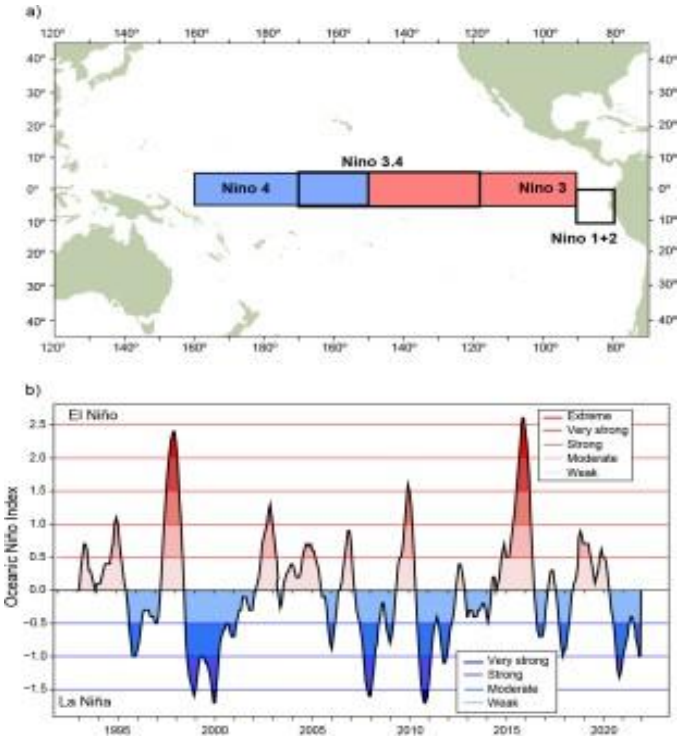



***Figure 7.5.1.1.2.*** *El Niño regions used as indicators of El Niño Southern Oscillation (ENSO) events in the Pacific Ocean (top panel), and the Oceanic Niño Index (ONI) used to monitor ENSO conditions in Niño region 3.4 from 5°N to 5°S and 120°W to 170°W (bottom panel). Time series shows the running 3-month mean ONI values from the start of the IATTC observer program through December 2021.*
*(Source: http://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.ph)*

To monitor ENSO conditions, two principal tools are employed: the classification of El Niño regions and the Oceanic Niño Index (ONI). The ONI focuses specifically on SST anomalies in the Niño 3.4 region (5°N–5°S, 120°W–170°W) and is the primary metric used by the National Oceanic and Atmospheric Administration (NOAA) to identify and classify ENSO phases (see **Figure 7.5.1.1.3**). ENSO events are defined by SST anomalies exceeding ±0.5ºC over a running five-month mean and are classified according to intensity — ranging from “weak” to “extreme.”

Key events include:

- The “extreme” El Niño of 1997–1998, followed by a “very strong” La Niña (1998–2000)
- “Strong” La Niña events in 2007–2008, 2010–2011, and late 2020
- The record-breaking El Niño of 2015–2016, during which ONI values surpassed 2.5 During 2020, ENSO-neutral conditions persisted for much of the year before transitioning to moderate-to-strong La Niña conditions by August. These indices are critical in tracking inter-annual oceanographic variability and understanding its cascading effects on Pacific marine ecosystems.

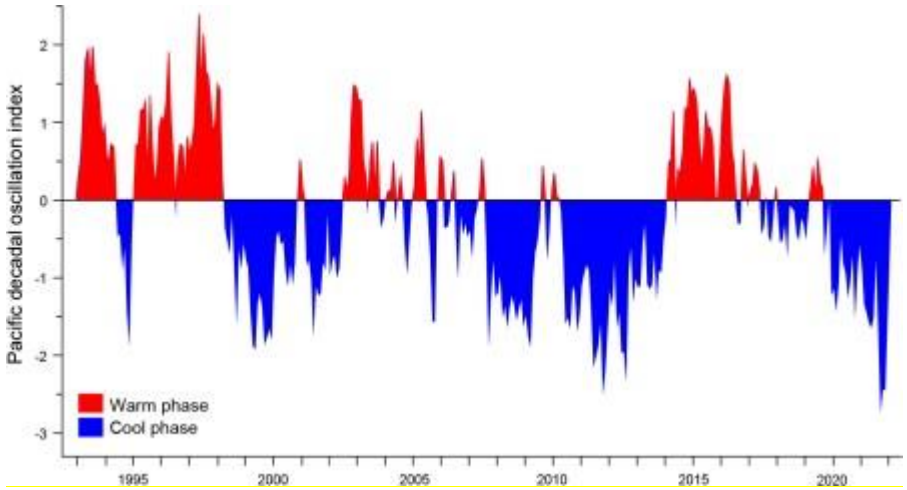



***Figure 7.5.1.1.3.*** *Monthly values of the Pacific Decadal Oscillation (PDO) Index, January 1993–December 2021. ERSST V5 PDO. (Source: Time Series data obtained from: https://psl.noaa.gov/pdo/ & SAC 13-10,2022).*

Beyond ENSO, the Pacific Decadal Oscillation (PDO) also plays a key role in shaping long-term climate variability. Although the PDO’s primary influence is observed in the North Pacific, it exerts secondary effects across the tropical Pacific, often running counter to ENSO trends. The PDO index captures these long-term fluctuations and categorises them as either “warm” or “cool” phases, which can last two to three decades. This index has been used to investigate factors influencing species vulnerability. For example, PDO phases have been linked to variations in silky shark susceptibility in EPO fisheries (Lennert-Cody et al., 2018). Notable peaks, such as in August 1997 (2.79) and April 2016 (2.62), coincided with strong El Niño events. Since early 2020, the PDO has entered a sustained cool phase, reaching a peak intensity of –2.70 in October 2021—the strongest cool phase observed since September 2012 (–2.31).

### 7.5.1.1 Catch composition of the Units of Assessment

The species to be assessed under P2 are those coming on board which are not covered under P1. MSC FCP SA3.1.2 sets that the team shall consider each P2 species within only one of the primary species, secondary species or ETP species components, following SA3.1.3-3.1.5 and SA3.4.4-3.4.5.

**Primary** species (MSC Component 2.1) are defined as follows:

- Species in the catch that are not covered under P1.

- Species that are within scope of the MSC program, i.e. no amphibians, reptiles, birds or mammals.

- Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit (LRP) or target reference points (TRP). Primary species can therefore also be referred to as 'managed species.

**Secondary** species (MSC Component 2.2) are defined as follows:

- Species in the catch that are not covered under P1.

- Species that are not managed in accordance with limit or target reference points, i.e. donot meet the primary species criteria.

- Species that are out of scope of the programme, but where the definition of ETP species is not applicable (see below)

**ETP (Endangered, Threatened or Protected)** species (MSC Component 2.3) are assigned as follows:

- Species that are recognised by national ETP legislation.

- Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)

- Species classified as 'Out-of-Scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Red list as vulnerable (VU), endangered (EN) or critically endangered (CE).

Both primary and secondary species are defined as '**main'** if they meet the following criteria:

- The catch comprises 5% or more by weight of the total catch of all species by the UoC.

- The species is classified as 'Less resilient' and comprises 2% or more by weight of the totalcatch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life-history.

- The species is out of scope but is not considered an ETP species (secondary species only);

- Exceptions to the rule may apply in the case of exceptionally large catches of bycatch species.

#### 7.5.1.1.1 Sources of information and P2 terminology in relation to species composition

Before categorising the P2 species, it is important to highlight that four distinct data sources were used to identify and classify the species affected by the fishery. These include: a) official landing records provided by the client

and obtained from the administration; b) technical reports from the industrial fleet (UoA2); c) national observer data, which apply exclusively to UoA1 (artisanal and industrial), as the steel fleet does not benefit from national observer coverage—according to the client, observers were only present during a single trip in 2024, and as such, that year was excluded from the analysis; and d) catch data reported to the IATTC, covering both UoA1 and UoA2. Collectively, these sources form the basis for defining the species components and subcomponents to be assessed under Principle 2.

**Source a) – Official landing records provided by the client, obtained from the administration**

The first data source consists of official landing records provided by the client, based on data obtained from the administration, detail the catch composition of both the UoA1 (industrial and artisanal fleet – *Nodrizas* and associated *fibras*) and UoA2 (industrial *Aceros* fleet), as presented in **Table 7.5.1.1.**

As expected, Swordfish (*Xiphias gladius*) is the dominant species in both units of assessment, representing 45,49% of total catches in UoA1 and 58,20% in UoA2 between 2019 and 2024. In UoA1, other species with a notable presence (above 5%) include blue marlin (*Makaira nigricans*), striped marlin (*Kajikia audax*), black marlin (*Istiompax indica*), and escolar (*Lepidocybium flavobrunneum*), the latter representing 15,26% of total catches. Among shark species, blue shark (*Prionace glauca*) exceeds the 2% threshold. In UoA2, blue shark (11,38%) and bigeye tuna (*Thunnus obesus*, 8,97%) stand out, followed by opah (*Lampris guttatus*), pelagic thresher (*Alopias pelagicus*) and bigeye thresher (*A. superciliosus*), each representing more than 3% of total volume.

***Table 7.5.1.1.1.1** – Catch composition of the UoA1 industrial and artisanal fleet (Nodrizas and associated fibras).*

| FAO | Common names | | | Catches Volume 2019-2024 | |
|---|---|---|---|---|---|
| | English | Spanish | Nombre científico | Kg | % |
| **SWO** | **Swordfish** | **Pez espada** | ***Xiphias gladius*** | **1168797** | **45,49%** |
| WAH | Wahoo | Peje sierra | *Acanthocybium solandri* | 10585,01 | 0,41% |
| MLS | Striped marlin | Merlín rayado | *Kajikia audax* | 59380,07 | 12,14% |
| DOL | Mahi-mahi | Dorado común | *Coryphaena hippurus* | 53290,3 | 0,87% |
| SFA | Indo-Pacific sailfish | Pez vela del Indo-Pacífico | *Istiophorus platypterus* | 15581,01 | 2,31% |
| LEC | Escolar | Escolar | *Lepidocybium flavobrunneum* | 3189,003 | 15,26% |
| BUM | Blue marlin | Merlín azul | *Makaira nigricans* | 392240,4 | 9,56% |
| BLM | Black marlin | Merlín negro | *Istiompax indica* | 1350,004 | 7,96% |
| YFT | Yellowfin tuna | Atún aleta amarilla | *Thunnus albacares* | 204543,3 | 2,63% |
| BET | Bigeye tuna | Atún de ojo grande | *Thunnus obesus* | 67685,14 | 2,07% |
| TUS | Tunas nep | Atunes | *Thunnus spp* | 2912 | 0,06% |
| PTH | Pelagic thresher | Tiburón rabón bueno | *Alopias pelagicus* | 311857,9 | 0,61% |
| FAL | Silky shark | Tiburón mico | *Carcharhinus falciformis* | 22430,1 | 0,33% |
| BSH | Blue shark | Tiburón azul | *Prionace glauca* | 245528,5 | 0,05% |
| SMA | Shortfin mako | Tiburón marrajo | *Isurus oxyrinchus* | 1641,008 | 0,12% |
| BTH | Bigeye thresher | Tiburón Zorro ojón | *Alopias superciliosus* | 8525,041 | 0,11% |
| CAR | Blacktip shark | Tiburón manchado | *Carcharhinus limbatus* | 0,001081 | 0,00% |
| LMA | Longfin mako | Marrajo carite | *Isurus paucus* | 38 | 0,00% |
| DUS | Dusky shark | Cazón | *Carcharhinus obscurus* | 0,000396 | 0,00% |

| | | |
|---|---|---|
| **TOTAL** | **2569574** | **100%** |

***Table 7.5.1.1.1.2*** *– Catch composition of the UoA2 industrial fleet (Aceros) based on official data provided by the client*

| FAO | Common names | | Nombre científico | Catches Volume 2019-2024 | |
|---|---|---|---|---|---|
| | English | Spanish | | Kg | % |
| **SWO** | **Swordfish** | **Pez espada** | ***Xiphias gladius*** | **198872,9** | **58,20%** |
| LAG | Opah | Pez luna | *Lampris guttatus* | 16772,04 | 4,91% |
| LEC | Escolar | Escolar | *Lepidocybium flavobrunneum* | 4282,25 | 1,25% |
| DOL | Mahi-mahi | Dorado común | *Coryphaena hippurus* | 144,2917 | 0,04% |
| WAH | Wahoo | Wahoo | *Acanthocybium solandri* | 1,541667 | 0,00% |
| BUM | Blue marlin | Marlín azul | *Makaira nigricans* | 218,9583 | 0,06% |
| MLS | Striped marlin | Picudo gacho | *Kajikia audax* | 2226,333 | 0,65% |
| YFT | Yellowfin tuna | Atún aleta amarilla | *Thunnus albacares* | 11911,88 | 3,49% |
| BET | Bigeye tuna | Atún de ojo grande | *Thunnus obesus* | 30664,21 | 8,97% |
| ALB | Albacore | Atún sierra | *Thunnus alalunga* | 5663,958 | 1,66% |
| PTH | Pelagic thresher | Tiburón rabón bueno | *Alopias pelagicus* | 15728,21 | 4,60% |
| BTH | Bigeye thresher | Tiburón rabón amargo | *Alopias superciliosus* | 11742,83 | 3,44% |
| FAL | Silky shark | Tiburón mico | *Carcharhinus falciformis* | 10306,29 | 3,02% |
| SMA | Shortfin mako | Tiburón marrajo | *Isurus oxyrinchus* | 1915,875 | 0,56% |
| BSH | Blue shark | Tiburón azul | *Prionace glauca* | 38884,96 | 11,38% |
| | | | **Total** | **341698,1** | **100%** |

**Source b) Technical report from the industrial fleet (UoA 2)**

The data presented in this section are based on a technical report provided by FRIGOLAB “SAN MATEO”, PROPEMAR S.A. and TRANSMARINA C.A., within the framework of a Fishery Improvement Project (FIP) aiming to obtain Marine Stewardship Council (MSC) certification for the longline swordfish (*Xiphias gladius*) fishery. The report is grounded in information collected through the private observer programme implemented on board the TRANSMARINA C.A. industrial fleet (*Aceros*), which commenced on 27 June 2022. As of December 2024, the programme had recorded 82,880 individuals, encompassing all organisms that interacted with the fishing gear, regardless of their final condition or fate.

The catch composition confirms Swordfish as the predominant species, representing 69.5% of all recorded individuals. Blue shark (*Prionace glauca*) was the most significant bycatch species, accounting for 15.46% of the total, thereby corroborating the summary data provided in the report. Among other species, silky shark (*Carcharhinus falciformis*) exceeded the 5% threshold (5.14%), while pelagic thresher (*Alopias pelagicus*) reached 4.97%, slightly below the reference level but still noteworthy. No other shark species surpassed the 2% threshold, and non-shark bycatch remained below 1%. The results highlight a relatively narrow composition dominated by swordfish and a few elasmobranch species, which are consistently present in significant proportions.

***Table 7.5.1.1.1.3 –*** *Catch composition of the UoA2 industrial fleet (Aceros) based on the technical report from the industrial fleet.*

| FAO | Common names | | Scientific name | Numb. Ind. | % |
|---|---|---|---|---|---|
| **SWO** | **Swordfish** | **Pez Espada** | ***Xiphias gladius*** | **57602** | **69,50%** |
| BLM | Black marlin | Marlín Negro | *Istiompax indica* | 9 | 0,01% |
| BUM | Blue marlin | Marlín Azul | *Makaira nigricans* | 63 | 0,08% |
| MLS | Striped marlin | Picudo Gacho | *Kajikia audax* | 249 | 0,30% |
| SFA | Indo-Pacific sailfish | Pez Vela | *Istiophorus platypterus* | 6 | 0,01% |
| SSP | Shortbill spearfish | Marlín Trompa corta | *Tetrapturus angustirostris* | 7 | 0,01% |
| BSH | Blue shark | T. Azul | *Prionace glauca* | 12813 | 15,46% |
| PSK | Crodile shark | T. Cocodrilo | *Pseudocarcharias kamoharai* | 15 | 0,02% |
| PTH | Pelagic thresher | T. Zorro pelágico | *Alopias pelagicus* | 4121 | 4,97% |
| | Thresher sharks | T. Zorro no identificado | *Alopias spp.* | 5 | 0,01% |
| BTH | Bigeye thresher | T. Zorro ojón | *Alopias superciliosus* | 1489 | 1,80% |
| ALV | Thresher shark | T. Zorro Común | *Alopias vulpinus* | 58 | 0,07% |
| FAL | Silky shark | T. Sedoso | *Carcharhinus falciformis* | 4261 | 5,14% |
| CCG | Galapagos shark | T. de Galápagos | *Carcharhinus galapagensis* | 2 | 0,00% |
| OCS | Oceanic whitetip shark | T. Oceánico | *Carcharhinus longimanus* | 339 | 0,41% |
| SMA | Shortfin mako | T. Mako | *Isurus oxyrinchus* | 470 | 0,57% |
| LMA | Longfin mako | T. Mako Aleton | *Isurus paucus* | 76 | 0,09% |
| POR | Porbeagle | T. Sardinero | *Lamna nasus* | 1 | 0,00% |
| TIG | Tiger shark | T. Tigre | *Galeocerdo cuvier* | 1 | 0,00% |
| SPL | Scalloped hammerhead shark | T. Martillo | *Sphyrna lewini* | 57 | 0,07% |
| SPN | Hammerhead sharks | Martillo no identificado | *Sphyrna spp.* | 5 | 0,01% |
| SPZ | Smooth hammerhead shark | T. Martillo | *Sphyrna zygaena* | 127 | 0,15% |
| DGS | Spiny dogfish | T. Cazón Espinoso | *Squalus acanthias* | 2 | 0,00% |
| TTM | Spotted houndshark | T. Tollo Pintado | *Triakis maculata* | 1 | 0,00% |
| WAH | Wahoo | Wahoo | *Acanthocybium solandri* | 21 | 0,03% |
| DOL | Mahi-mahi | Dorado-comum | *Coryphaena hippurus* | 66 | 0,08% |
| YFT | Yellowfin tuna | Aleta Amarilla | *Thunnus albacares* | 22 | 0,03% |
| BET | Bigeye tuna | Patudo | *Thunnus obesus* | 13 | 0,02% |
| LEC | Escolar | Miramelindo | *Lepidocybium flavobrunneum* | 8 | 0,01% |
| TTL | Loggerhead sea turtle | T. Cabezona | *Caretta caretta* | 1 | 0,00% |
| TUG | Green turtle | T. Verde | *Chelonia mydas* | 5 | 0,01% |
| DKK | Leatherback turtle | T. Laud | *Dermochelys coriacea* | 59 | 0,07% |
| TTH | Hawksbill turtle | T. Carey | *Eretmochelys imbricata* | 1 | 0,00% |
| LKV | Olive Ridley sea turtle | T. Olivacea | *Lepidochelys olivacea* | 5 | 0,01% |
| RMV | Giant manta ray | Mantarraya Gigante | *Mobula birostris* | 3 | 0,00% |
| RMB | Devil fish | Manta Arpón | *Mobula mobular* | 86 | 0,10% |

| | | | | | |
|---|---|---|---|---|---|
| RMU | Munk's devil ray | Manta Diablo | *Mobula munkiana* | 21 | 0,03% |
| RMM | Mobulas nei | Mobula no identificada | *Mobula spp.* | 30 | 0,04% |
| RMT | Chilean devil ray | Manta Cornuda | *Mobula tarapacana* | 14 | 0,02% |
| RMO | Smoothtail mobula | Manta Espinosa | *Mobula thurstoni* | 4 | 0,00% |
| PLS | Pelagic stingray | Raya Pelágica | *Pteroplatytrygon violacea* | 678 | 0,82% |
| DSI | Longnose stringray | Raya Látigo | *Dasyatis longa* | 41 | 0,05% |
| RJC | Thornback ray | Raya de clavos | *Raja clavata* | 3 | 0,00% |
| FAW | False killer whale | Falsa Orca | *Pseudorca crassidens* | 3 | 0,00% |
| PDN | Spotted dolphin | Delfin Moteado | *Stenella attenuata* | 2 | 0,00% |
| ALE | | Lanzón Nariz Corta | *Alepisaurus brevirostris* | 1 | 0,00% |
| ALX | Short snouted lancetfish | Lanzón Picudo | *Alepisaurus ferox* | 1 | 0,00% |
| ASF | Razorback scabbardfish | Sable Aserrado | *Assurger anzac* | 8 | 0,01% |
| GES | Snake mackerel | Caballa Serpiente | *Gempylus serpens* | 3 | 0,00% |
| WPM | Pacific harvestfish | Pámpano | *Peprilus medius* | 1 | 0,00% |
| | | Pez Luna Gigante | *Mola alexandrini* | 1 | 0,00% |
| **TOTAL** | | | | **82880** | **100,00%** |

### c) National observer data only for UoA1

The minimum observer coverage for mother-ship vessels was initially set at 10% of fishing trips through Agreement 407, enacted on 12 October 2011. This requirement was revised by Agreement MPCEIP-SRP-2021-0208-A in September 2021, which introduced progressively higher coverage targets for the longline fleet: 10% until December 2022, increasing to 15% in 2023 and 20% in 2024. According to MPCEIP (2022d), the observer coverage for the longline fleet in 2021 was 6.4%. The majority of this effort focused on the LL-TBS component, with only 25% allocated to the LL-DOL. Observers are stationed exclusively on mother-ship vessels, limiting data collection to fishing activities conducted directly from these vessels; operations involving the associated fibre-glass skiffs are not observed.

Based on national observer data collected aboard *nodriza* vessels operating under UoA1 between 2018 and 2023, *Coryphaena hippurus* (dolphinfish) was the most frequently recorded species, comprising 68.90% of the total catch and thus meeting the criteria to be classified as a main species. Although *Xiphias gladius* (Swordfish) is considered the target species in this pre-assessment, it represented only 8.67% of the observed catch. The predominance of *Coryphaena hippurus* (mahi-mahi) in the catch is likely due to the fact that the observed fishing trips predominantly employed the LL-DOL longline gear, which is more selective for this species.. Among elasmobranchs, two shark species exceeded the 2% threshold required for main species classification: *Prionace glauca* (Blue shark), with 9.83%, and *Alopias pelagicus* (Pelagic thresher), with 5.53%. All other shark species, as well as other taxa such as tunas, billfishes, and bycatch species, individually accounted for less than the respective thresholds and are therefore not considered main species in this assessment. Data from 2024 were excluded from the analysis, as sampling that year

began to include *Acero* vessels without distinguishing them from *Nodrizas*, rendering the dataset incomparable with previous years. For this reason, the assessment team decided not to include 2024.

***Table 7.5.1.1.1.4 –*** *Catch composition of the UoA1 Nodrizas based on the national observer data.*

| COD. FAO | Common name | | Scientific name | Numb. Ind | % |
|---|---|---|---|---|---|
| | English | Spanish | | | |
| **SWO** | **Swordfish** | **Pez espada** | ***Xiphias gladius*** | **47197** | **8,67%** |
| WAH | Wahoo | Wahoo | *Acanthocybium solandri* | 1755 | 0,32% |
| EPO | | Dorado | *Coryphaena equiselis* | 106 | 0,02% |
| DOL | Mahi-mahi | Dorado común | *Coryphaena hippurus* | 375100 | 68,90% |
| BLM | Black marlin | Marlín negro | *Istiompax indica* | 523 | 0,10% |
| SFA | Indo-Pacific sailfish | Pez vela | *Istiophorus platypterus* | 285 | 0,05% |
| MLS | Striped marlin | Marlín rayado | *Kajikia audax* | 6947 | 1,28% |
| SKJ | Skipjack tuna | Atún barrilete | *Katsuwonus pelamis* | 385 | 0,07% |
| BUM | Blue marlin | Marlín azul | *Makaira nigricans* | 4409 | 0,81% |
| SSP | Shortbill spearfish | Marlín trompa corta | *Tetrapturus angustirostris* | 125 | 0,02% |
| YFT | Yellowfin tuna | Atún aleta amarilla | *Thunnus albacares* | 9230 | 1,70% |
| SBT | | Atún rojo del sur | *Thunnus maccoyii* | 0 | 0,00% |
| BET | Bigeye tuna | Atún de ojo grande | *Thunnus obesus* | 2739 | 0,50% |
| BRU | Southern Rays Bream | Pez hacha | *Brama australis* | 0 | 0,00% |
| RRU | Rainbow runner | Salmonete | *Elagatis bipinnulata* | 0 | 0,00% |
| BUK | Butterfly kingfish | Atún chauchera | *Gasterochisma melampus* | 0 | 0,00% |
| LAG | Opah | Pez luna | *Lampris guttatus* | 1 | 0,00% |
| LFL | Oceanic puffer | Pez globo | *Lagocephalus lagocephalus* | 1 | 0,00% |
| LEC | Escolar | Escolar | *Lepidocybium flavobrunneum* | 523 | 0,10% |
| MSL | Sharptail mola | Mola coliaguda | *Masturus lanceolatus* | 5 | 0,00% |
| MOX | Sunfish | Pez sol | *Mola mola* | 6 | 0,00% |
| NAU | Pilot fish | Pez Piloto | *Naucrates ductor* | 1 | 0,00% |
| OIL | Oilfish | Escolar raposo | *Ruvettus pretiosus* | 2 | 0,00% |
| BLL | Atlantic rubyfish | Japuta negra | *Taractes rubescens* | 2 | 0,00% |
| RBT | Ribbontail | Rey de los salmones | *Trachipterus altivelis* | 0 | 0,00% |
| SNK | Snoek | La sierra | *Thyrsites atun* | 3 | 0,00% |
| PTH | Pelagic thresher | Tiburón rabón bueno | *Alopias pelagicus* | 30097 | 5,53% |
| BTH | Bigeye thresher | Tiburón rabón amargo | *Alopias superciliosus* | 1657 | 0,30% |
| ALV | Thresher shark | Tiburón rabón vaca | *Alopias vulpinus* | 9 | 0,00% |
| FAL | Silky shark | Tiburón mico | *Carcharhinus falciformis* | 8282 | 1,52% |
| CCG | Galapagos shark | Tiburón galápagos | *Carcharhinus galapagensis* | 10 | 0,00% |
| CAR | Blacktip shark | Tiburón punta negra | *Carcharhinus limbatus* | 28 | 0,01% |
| OCS | Oceanic whitetip shark | Tiburón aletón | *Carcharhinus lomgimanus* | 13 | 0,00% |
| DUS | Dusky shark | Tiburón baboso | *Carcharhinus obscurus* | 1 | 0,00% |
| TIG | Tiger shark | Tiburón tigre | *Galeocerdo cuvier* | 2 | 0,00% |
| SMA | Shortfin mako | Tiburón tinto | *Isurus oxyrinchus* | 866 | 0,16% |
| LMA | Longfin mako | Tiburón marrajo | *Isurus paucus* | 13 | 0,00% |

| | | | | | |
|---|---|---|---|---|---|
| BSH | Blue shark | Tiburón azul | *Prionace glauca* | 53536 | 9,83% |
| PSK | Crodile shark | Tiburón cocodrilo | *Pseudocarcharias kamoharai* | 7 | 0,00% |
| SPL | Scalloped hammerhead shark | Tiburón cachuda roja | *Sphyrna lewini* | 2 | 0,00% |
| SPN | Hammerhead sharks | Tiburón cachuda | *Sphyrna* sp. | 1 | 0,00% |
| SPZ | Smooth hammerhead shark | Tiburón cachuda blanca | *Sphyrna zygaena* | 14 | 0,00% |
| TTL | Loggerhead sea turtle | Tortuga cabezona | *Caretta caretta* | 0 | 0,00% |
| TUG | Green turtle | Tortuga verde | *Chelonia mydas* | 119 | 0,02% |
| DKK | Leatherback turtle | Tortuga laud | *Dermochelys coriacea* | 5 | 0,00% |
| TTH | Hawksbill turtle | Tortuga carey | *Eretmochelys imbricata* | 17 | 0,00% |
| LKV | Olive Ridley sea turtle | Tortuga golfina | *Lepidochelys olivacea* | 102 | 0,02% |
| DLP | Dolphins | Delfin | *Delphinidae* | 2 | 0,00% |
| DBO | Bottlenose dolphin | Delfin nariz de botella común | *Tursiops truncatus* | 1 | 0,00% |
| RMV | Giant manta ray | Manta gigante | *Mobula birostris* | 2 | 0,00% |
| RMU | Munk's devil ray | Manta | *Mobula munkiana* | 0 | 0,00% |
| RMM | Mobulas nei | Mantas | *Mobula sp.* | 7 | 0,00% |
| PLS | Pelagic stingray | Raya lático | *Pteroplatytrygon violacea* | 308 | 0,06% |
| | | | **Total** | **544446** | **100,00 %** |

### d) Catch data reported to IATTC (both UoA1 and UoA2)

The IATTC provides public domain data for download (click here to access the website). The tables below shows all longline landings reported by Ecuador to the IATTC between 2007 and 2023. **Table 7.5.1.1.1.5** presents the catch composition of longline (LL) gear, while **Table 7.5.1.1.1.6** presents the catch composition of the fleet using LL-DOL and LL-TBS. The team has interpreted that LL gear corresponds to steel-hull vessels (UoA1), whereas LL-DOL and LL-TBS refer to gear used by both artisanal and industrial fleets (UoA2).

It is important to note that the data from this source were used as a cross-reference to validate the species presented in the previously mentioned sources.

***Table 7.4.5.1.1.5*** *landings by species of the Ecuadorian longline fleet (LL). Data reported by Ecuador to the IATTC. Table prepared by the team based on data retrieved from the IATTC dataset:* EPO total estimated catch by year, flag, gear,

species.

| Spp | ASFIS Code | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | TOTAL | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albacore | ALB | | | | | | | | 219 | 191 | 261 | 93 | 42 | 62 | 25 | 16 | | **909** | 0,49 |
| Bigeye tuna | BET | 8 | 372 | 723 | 852 | 529 | 472 | 330 | 159 | 483 | 184 | 82 | 152 | 213 | 87 | 144 | 42 | **4832** | 2,60 |
| Billfishes | BIL | 1064 | 1511 | 1771 | 2492 | 2336 | 2090 | 2666 | | | | | | 245 | 4 | | | **14179** | 7,64 |
| Black skipjack | BKJ | 2 | | 2 | 8 | 6 | 5 | 10 | | | | | | | | | | **33** | 0,02 |
| Blue marlin | BUM | | | | | | | | 21 | 98 | 71 | 73 | 98 | | 48 | 40 | 39 | **488** | 0,26 |
| | BXQ | | | | | | | | | | | | | 2 | 1 | | | **3** | 0,00 |
| Bonitos nei | BZX | 2 | 6 | 8 | 2 | 10 | 1 | 13 | | | | | | | | | | **42** | 0,02 |
| Dolphinfishes nei | DOX | 3925 | 11030 | 12235 | 7226 | 10210 | 14464 | 9297 | 16 | 3 | 259 | 385 | 314 | 1612 | 456 | 523 | 261 | **72216** | 38,89 |
| Striped marlin | MLS | 262 | 280 | 315 | 424 | 339 | 261 | 422 | 24 | 21 | 16 | 19 | 38 | | 49 | 38 | 37 | **2545** | 1,37 |
| Unidentified fishes | MZZ | 54 | 171 | 433 | 320 | 195 | 291 | 161 | | 396 | 62 | 97 | 84 | | 87 | 33 | 17 | **2401** | 1,29 |
| Indo-Pacific sailfish | SFA | 102 | 141 | 133 | 337 | 329 | 311 | 307 | 3 | 3 | 1 | 0 | 2 | | 5 | 1 | 1 | **1676** | 0,90 |
| Various sharks nei | SKH | 1656 | 6815 | 7389 | 10927 | 10811 | | | | 735 | | | | | | | | **38333** | 20,64 |
| Skipjack tuna | SKJ | 131 | 1131 | 1405 | 1682 | 1253 | 2200 | 1847 | 0 | 7 | 15 | 0 | 9 | | 0 | | | **9680** | 5,21 |
| Rays, Skates, nei | SRX | 2 | 2 | 14 | 121 | 0 | | | | | | | | 9 | | | | **148** | 0,08 |
| Shortbill spearfish | SSP | | | 2 | | | 0 | | | 2 | | | | | | | | **4** | 0,00 |
| Swordfish | SWO | 49 | 630 | 1165 | 595 | 1072 | 1656 | 1401 | 1083 | 1462 | 854 | 1532 | 1793 | 3144 | 2246 | 2578 | 3233 | **24493** | 13,19 |
| Tunas nei | TUN | | | | | | | | | | | | | 2 | | | | **2** | 0,00 |
| Yellowfin tuna | YFT | 288 | 1750 | 2189 | 1937 | 1830 | 2581 | 1945 | 102 | 212 | 163 | 111 | 158 | 216 | 93 | 101 | 42 | **13718** | 7,39 |
| **TOTAL** | | **7545** | **23839** | **27784** | **26923** | **28920** | **24332** | **18399** | **1627** | **3613** | **1886** | **2392** | **2690** | **5505** | **3101** | **3474** | **3672** | **185702** | 100% |

***Table 7.4.5.1.1.6*** *landings by species of the Ecuadorian longline fleet (LL-DOL and LL-TBS). Data reported by Ecuador to the IATTC. Table prepared by the team based on data retrieved from the IATTC dataset:* EPO total estimated catch by year, flag, gear, species

| Spp | ASFIS Code | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2015 | 2016 | 2020 | 2021 | 2022 | 2023 | TOTAL | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albacore | ALB | | | | | | | | 219 | 191 | 62 | | 16 | | **488** | **0,27%** |
| Bigeye tuna | BET | 8 | 372 | 723 | 852 | 529 | 472 | 330 | 159 | 483 | 213 | 87 | 144 | | **4372** | **2,44%** |
| Billfishes | BIL | 1064 | 1511 | 1771 | 2492 | 2336 | 2090 | 2666 | 51 | 98 | 245 | 4 | | | **14328** | **8,00%** |
| Black skipjack | BKJ | 2 | | 2 | 8 | 6 | 5 | 10 | | | | | | | **33** | **0,02%** |
| Blue marlin | BUM | | | | | | | | | | | 48 | 40 | 39 | **127** | **0,07%** |
| Bonitos nei | BZX | 2 | 6 | 8 | 2 | 10 | 1 | 13 | | | | | | | **42** | **0,02%** |
| Dolphinfishes nei | DOX | 3925 | 11030 | 12235 | 7226 | 10210 | 14464 | 9297 | 16 | 3 | 1612 | 456 | 523 | 261 | **71258** | **39,80%** |
| Striped marlin | MILS | 262 | 280 | 315 | 424 | 339 | 261 | 422 | 24 | 21 | | 49 | 38 | 37 | **2472** | **1,38%** |
| Unidentified fishes | MZZ | 54 | 171 | 433 | 320 | 195 | 291 | 161 | 136 | 396 | 144 | 87 | 33 | 17 | **2438** | **1,36%** |
| Indo-Pacific sailfish | SFA | 102 | 141 | 133 | 337 | 329 | 311 | 307 | 3 | 3 | | 5 | 1 | 1 | **1673** | **0,93%** |
| Various sharks nei | SKH | 1656 | 6815 | 7389 | 10927 | 10811 | | | | 735 | | | | | **38333** | **21,41%** |
| Skipjack tuna | SKJ | 131 | 1131 | 1405 | 1682 | 1253 | 2200 | 1874 | 0 | 7 | | 0 | | | **9683** | **5,41%** |
| Rays, Skates, nei | SRX | 2 | 2 | 14 | 121 | 0 | | | | | 9 | | | | **148** | **0,08%** |
| Shortbill spearfish | SSP | | | 2 | | | 0 | | 4 | 2 | | | | | **8** | **0,00%** |
| Swordfish | SWO | 49 | 630 | 1165 | 595 | 1072 | 1656 | 1401 | 1083 | 1462 | 3144 | 2246 | 2578 | 3233 | **20314** | **11,35%** |
| Tunas nei | TUN | | | | | | | | | | | 25 | | | **25** | **0,01%** |
| Yellowfin tuna | YFT | 288 | 1750 | 2189 | 1937 | 1830 | 2581 | 1945 | 102 | 212 | 216 | 93 | 101 | 42 | **13286** | **7,42%** |
| TOTAL | | **7545** | **23839** | **27784** | **26923** | **28920** | **24332** | **18426** | **1797** | **3613** | **5645** | **3100** | **3474** | **3630** | **179028** | 100% |

## 7.5.1.1.2 P2 Species classification according to MSC requirements

Catch composition for the two Units of Assessment (UoA1 and UoA2) was determined using four distinct data sources: a) official landing records provided by the client and obtained from the administration; b) a technical report produced within the framework of a Fishery Improvement Project for the industrial fleet (UoA2); c) national observer data covering only UoA1; and d) catch data reported to the IATTC, which includes both UoA1 and UoA2.

Across these sources, *Xiphias gladius* (Swordfish) consistently emerges as the dominant species, particularly in UoA2, where it can represent up to 69.5% of the catch. In UoA1, swordfish is still the main target but often

represents a lower share, as seen in the observer data (8.67%). Other main species vary by source and fleet component. Dolphinfish (*Coryphaena hippurus*) dominates observer data (68.90%) and IATTC landings (38.88%), while *Prionace glauca* (Blue shark) is a recurrent bycatch species, reaching significant proportions in all sources, particularly in UoA2. Additional species identified as main in at least one source include *Thunnus obesus* (Bigeye tuna), *Makaira nigricans* (Blue marlin), *Kajikia audax* (Striped marlin), *Istiompax indica* (Black marlin), and *Lepidocybium flavobrunneum* (Escolar). Pelagic and silky sharks also reach notable proportions in some datasets. Species composition is generally narrower in UoA2 and broader in UoA1, especially when considering the artisanal component. Some limitations in the data remain, including incomplete gear differentiation in source d and underrepresentation of the artisanal fleet in observer data. ETP species impacted by the fishery include several shark species (e.g., Hammerhead, Silky, and Oceanic whitetip), sea turtles (Green, Hawksbill, Loggerhead, Olive ridley) and marine mammals (dolphins). Conservation measures are implemented under IATTC resolutions, CITES, CMS, and national regulations, supported by mitigation strategies such as safe handling and release protocols for turtles and rays, and VMS monitoring of the fleet. The following table (**Table 7.5.1.1.2.1**) presents the P2 species classified as primary, secondary, and/or ETP, and further indicates whether each species is considered Main or Minor. The species were classified as main if they appeared in at least one of the data sources with more than 5% of the total catch volume.

***Table 7.5.1.1.2.1**. Classification of P2 Species by Category: Primary, Secondary, ETP and Main/Minor Status*

| FAO | Common names | | | Primary/ Secondary/ ETP | Main / Minor | UoA 1/ UoA 2 | Source |
|---|---|---|---|---|---|---|---|
| | English | Spanish | Scientific name | | | | |
| **Billfish** | | | | | | | |
| MLS | Striped marlin | Marlín rayado | *Kajikia audax* | Secondary | Main | 1 and 2 | a) b) c) d) |
| BUM | Blue marlin | Marlín azul | *Makaira nigricans* | Secondary | Main | 1 and 2 | a) b) c) d) |
| BLM | Black marlin | Marlín negro | *Istiompax indica* | Secondary | Main | 1 and 2 | a) b) c) |
| SSP | Shortbill spearfish | Marlín trompa corta | *Tetrapturus angustirostris* | Secondary | Minor | 2 | b) c) d) |
| SFA | Indo-Pacific sailfish | Pez vela del Indo-Pacífico | *Istiophorus platypterus* | Secondary | Minor | 1 and 2 | a) b) c) d) |
| **Tunas** | | | | | | | |
| YFT | Yellowfin tuna | Atún aleta amarilla | *Thunnus albacares* | Primary | Minor | 1 and 2 | a) b) c) d) |
| BET | Bigeye tuna | Atún de ojo grande | *Thunnus obesus* | Primary | Main | 1 and 2 | a) b) c) d) |
| TUS | Tunas nei | Atunes | *Thunnus spp* | n.a. | Minor | 1 | a) d) |
| ALB | Albacore | Atún sierra | *Thunnus alalunga* | Primary | Minor | 2 | a) d) |
| SBT | Southern bluefin tuna | Atún rojo del sur | *Thunnus maccoyii* | Secundary | Minor | 1 | c) |
| BUK | Butterfly kingfish | Atún chauchera | *Gasterochisma melampus* | Secundary | Minor | 1 | c) |
| SKJ | Skipjack tuna | Bonito | *Katsuwonus pelami* | Primary | Minor | 1 | c) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Other bony fish species** | | | | | | | |
| WAH | Wahoo | Wahoo | *Acanthocybium solandri* | Secondary | Minor | 1 and 2 | a) b) c) |
| DOL | Mahi-mahi | Dorado común | *Coryphaena hippurus* | Secondary | Main | 1 and 2 | a) b) c) |
| EPO | Dolphinfish | Dorado | *Coryphaena equiselis* | Secondary | Minor | 1 | a) b) c) |
| LEC | Escolar | Escolar | *Lepidocybium flavobrunneum* | Secondary | Main | 1 and 2 | a) b) c) |
| LAG | Opah | Pez luna | *Lampris guttatus* | Secondary | Main | 1 and 2 | a) |
| BRU | Southern Rays Bream | Pez hacha | *Brama australis* | Secondary | Minor | 1 | c) |
| RRU | Rainbow runner | Salmonete | *Elagatis bipinnulata* | Secondary | Minor | 1 | c) |
| LFL | Oceanic puffer | Pez globo | *Lagocephalus lagocephalus* | Secondary | Minor | 1 | c) |
| MSL | Sharptail mola | Mola coliaguda | *Masturus lanceolatus* | Secondary | Minor | 1 | c) |
| MOX | Sunfish | Pez sol | *Mola mola* | Secondary | Minor | 1 | c) |
| | | Pez Luna Gigante | *Mola alexandrini* | Secondary | Minor | 2 | b) |
| NAU | Pilot fish | Pez Piloto | *Naucrates ductor* | Secondary | Minor | 1 | c) |
| OIL | Oilfish | Escolar raposo | *Ruvettus pretiosus* | Secondary | Minor | 1 | c) |
| BLL | Atlantic rubyfish | Japuta negra | *Taractes rubescens* | Secondary | Minor | 1 | c) |
| RBT | Ribbontail | Rey de los salmones | *Trachipterus altivelis* | Secondary | Minor | 1 | c) |
| ALE | | Lanzón Nariz Corta | *Alepisaurus brevirostris* | Secondary | Minor | 2 | b) |
| ALX | Short snouted lancetfish | Lanzón Picudo | *Alepisaurus ferox* | Secondary | Minor | 2 | b) |
| ASF | Razorback scabbardfish | Sable Aserrado | *Assurger anzac* | Secondary | Minor | 2 | b) |
| GES | Snake mackerel | Caballa Serpiente | *Gempylus serpens* | Secondary | Minor | 2 | b) |
| WPM | Pacific harvestfish | Pámpano | *Peprilus medius* | Secondary | Minor | 2 | b) |
| SNK | Snoek | La sierra | *Thyrsites atun* | Secondary | Minor | 1 | c) |
| **Sharks** | | | | | | | |
| PTH | Pelagic thresher | Tiburón rabón bueno | *Alopias pelagicus* | Secondary | Main | 1 and 2 | a) b) c) |
| FAL | Silky shark | Tiburón mico | *Carcharhinus falciformis* | ETP | n.a. | 1 and 2 | a) b) c) |
| BSH | Blue shark | Tiburón azul | *Prionace glauca* | Secondary | Main | 1 and 2 | a) b) c) |
| SMA | Shortfin mako | Tiburón marrajo | *Isurus oxyrinchus* | Secondary | Minor | 1 and 2 | a) b) c) |
| BTH | Bigeye thresher | Tiburón rabón amargo | *Alopias superciliosus* | Secondary | Main | 1 and 2 | a) b) c) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CAR | Blacktip shark | Tiburón manchado | *Carcharhinus limbatus* | Secondary | Minor | 1 | a) c) |
| LMA | Longfin mako | Marrajo carite | *Isurus paucus* | Secondary | Minor | 1 and 2 | a) b) c) |
| DUS | Dusky shark | Cazón | *Carcharhinus obscurus* | Secondary | Minor | 1 | a) c) |
| ALV | Thresher shark | Tiburón rabón vaca | *Alopias vulpinus* | Secondary | Minor | 2 | b) c) |
| CCG | Galapagos shark | Tiburón galápagos | *Carcharhinus galapagensis* | Secondary | Minor | 2 | b) c) |
| OSC | Oceanic whitetip shark | Tiburón aletón | *Carcharhinus longimanus* | ETP | n.a. | 2 | b) c) |
| TIG | Tiger shark | Tiburón tigre | *Galeocerdo cuvier* | Secondary | Minor | 2 | b) c) |
| PSK | Crodile shark | Tiburón cocodrilo | *Pseudocarcharias kamoharai* | Secondary | Minor | 2 | b) c) |
| SPL | Scalloped hammerhead shark | Tiburón cachuda roja | *Sphyrna lewini* | ETP | n.a. | 2 | b) c) |
| SPN | Hammerhead sharks | Tiburón cachuda | *Sphyrna spp.* | ETP | n.a. | 2 | b) c) |
| SPZ | Smooth hammerhead shark | Tiburón cachuda blanca | *Sphyrna zygaena* | ETP | n.a. | 2 | b) c) |
| ALV | Thresher sharks | T. Zorro no identificado | *Alopias spp.* | Secondary | Minor | 1 | b) |
| POR | Porbeagle | T. Sardinero | *Lamna nasus* | Secondary | Minor | 2 | b) |
| DGS | Spiny dogfish | T. Cazón Espinoso | *Squalus acanthias* | Secondary | Minor | 2 | b) |
| TTM | Spotted houndshark | T. Tollo Pintado | *Triakis maculata* | Secondary | Minor | 2 | b) |
| **Mantas and Rays** | | | | | | | |
| RMB | Giant manta ray | Manta gigante | *Mobula birostris* | ETP | n.a. | 1 and 2 | b) c) |
| RMU | Munk's devil ray | Manta Diablo | *Mobula munkiana* | ETP | n.a. | 1 and 2 | b) c) |
| RMM | Mobula rays | Mantas | *Mobula spp.* | ETP | n.a. | 1 and 2 | b) c) |
| RMM | Devil fish | Manta Arpón | *Mobula mobular* | ETP | n.a. | 2 | b) |
| RMT | Chilean devil ray | Manta Cornuda | *Mobula tarapacana* | ETP | n.a. | 2 | b) |
| RMO | Smoothtail mobula | Manta Espinosa | *Mobula thurstoni* | ETP | n.a. | 2 | b) |
| PLS | Pelagic stingray | Raya Pelágica | *Pteroplatytrygon violacea* | Secondary | Minor | 1 and 2 | b) c) |
| DSI | Longnose stringray | Raya Látigo | *Dasyatis longa* | Secondary | Minor | 2 | b) |
| RJC | Thornback ray | Raya de clavos | *Raja clavata* | Secondary | Minor | 2 | b) |
| **Turtles** | | | | | | | |
| TTL | Loggerhead sea turtle | Tortuga cabezona | *Caretta caretta* | ETP | n.a. | 1 and 2 | b) c) |
| TUG | Green turtle | Tortuga verde | *Chelonia mydas* | ETP | n.a. | 1 and 2 | b) c) |
| DKK | Leatherback turtle | Tortuga laud | *Dermochelys coriacea* | ETP | n.a. | 1 and 2 | b) c) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| TTH | Hawksbill turtle | Tortuga carey | *Eretmochelys imbricata* | ETP | n.a. | 1 and 2 | b) c) |
| LKV | Olive Ridley sea turtle | Tortuga golfina | *Lepidochelys olivacea* | ETP | n.a. | 1 and 2 | b) c) |
| **Marine mammals** | | | | | | | |
| DLP | Dolphins | Delfins | *Delphinidae* | ETP | n.a. | 1 | c) |
| DBO | Bottlenose dolphin | Delfin nariz de botella común | *Tursiops truncatus* | ETP | n.a. | 1 | c) |
| FAW | False killer whale | Falsa Orca | *Pseudorca crassidens* | ETP | n.a. | 2 | b) |
| DPN | Spotted dolphin | Delfin Moteado | *Stenella attenuata* | ETP | n.a. | 2 | b) |

### 7.5.1.2 Primary species impacted by the UoA

As outlined above, the assessment team has evaluated the classification of primary species within each UoA, based on their relative contribution to total catches and their management context. Within the longline fishery targeting swordfish (*Xiphias gladius*), the primary tuna species identified include bigeye (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*), and yellowfin (*Thunnus albacares*). Skipjack and yellowfin are considered minor primary species in both UoAs, not having exceeded the 5% threshold of total catch in the corresponding datasets. Although bigeye tuna did not consistently surpass this threshold throughout the assessment period (2019–2024), it exceeded it in at least one year and is therefore classified as a main primary species in line with the precautionary approach.

#### i. Information of primary species

The primary species identified in the fishery, including skipjack, yellowfin, and bigeye tuna, are closely monitored by IATTC. The IATTC's observer program is key in collecting data on these species, with countries submitting catch reports as part of the program's structure.

The IATTC's data collection program serves several critical functions to ensure high-quality data for these key tuna species. These tasks include:

1. Obtaining Statistical Records: The program collects detailed data on tuna fisheries directly from the fishing fleets and processing plants, ensuring comprehensive coverage of catch and effort data.
2. Processing Data and Reporting: The collected data is processed, and reports are prepared for use by IATTC. These reports are also provided in response to requests from Contracting Parties and Cooperating Parties (CPCs).
3. Providing Data for Stock Assessment: Data collected is crucial for assessing the impact of fishing activities on tuna stock abundance. This information is shared with the IATTC's Stock Assessment Program and other research activities, enabling informed decisions on conservation and management strategies.
4. Activities related to the IATTC Regional Register of Vessels and its maintenance, including thelists and categories established in different resolutions.

This system helps support the sustainable management of tuna stocks in the Eastern Pacific Ocean (EPO), allowing IATTC to evaluate the effects of fishing on these species accurately and take timely, data-driven management actions.

The following tables summarise the most recent stock assessment results (**Table 7.5.1.2.1**) and the key management regulations (**Table 7.5.1.2.2**) applicable to these tuna stocks. Detailed scoring of each primary species subcomponent is provided in section 7.5.2 under PIs 2.1.1, 2.1.2 and 2.1.3.

***Table 7.5.1.2.1.*** *Summary of the latest assessments available for the 3 stocks assessed as primary P2-components. Source: Elaborated by the team based on information extracted from the IATTC website.*

| Stock | Assessment report | Limit reference points | Target Reference Points |
|---|---|---|---|
| EPO BET | Xu et al. 2024[1] | **Res. C-16-02 superseded by C-23-06:** $S_{0,5R0}$ *(equivalent to 0077 $S_0$)* $F_{0,5R0}$ | **Res. C-16-02 superseded by C-23-06:** $S_B=0.5R_0$ $F_{current}/F_{MSY}=1$ |
| EPO YFT | Minte-Vera et al. 2024[2] | | |
| EPO SKJ | Bi et al. 2024[3] | | Conservative proxies^: $S_{MSY}/S_0=0,30.$ $F_{target}=F_{0,3}$ |

***Table 7.5.1.2.2*** *Key management regulations and measures adopted by the IATTC for the 3 stocks assessed as primary P2-components. Source: Elaborated by the team based on information extracted from the IATTC website.*

| Stock | Key IATTC Resolutions | TAC/Catch limit | HCR |
|---|---|---|---|
| EPO BET | Res. C-03-01; Res. C-16-02; C-22-05, C-23-06, C-24-01 | C-21-04: Catch limits for LL-fleets from China, Japan, Korea, Taiwan EEEUU. All other CPCs 550t/year or limit their catches to the 2001 levels | Yes (C-16-02) |
| EPO YFT | Res. C-16-02; C-22-05; C-23-06; C-24-01 | No | Yes (C-16-02) |
| EPO SKJ | Res. C-16-02; C-22-05; C-23-06; C-24-01 | No | Yes (C-16-02) |

### ii. Key Regulatory Framework for the Management of Primary Tuna Species in the EPO

The conservation and sustainable management of primary tuna species in the Eastern Pacific Ocean (EPO) is governed by a combination of international and national instruments. At the international level, the Inter-American Tropical Tuna Commission (IATTC) has adopted binding resolutions addressing fishing effort, capacity limits, and monitoring requirements, particularly for tropical tunas such as *Thunnus albacares* (yellowfin), *Thunnus obesus* (bigeye), and *Katsuwonus pelamis* (skipjack). These species are considered primary species in the context of this assessment and are often captured as part of the operational dynamics of longline fisheries targeting swordfish (*Xiphias gladius*).

Nationally, Ecuador enforces its obligations under the IATTC framework through ministerial agreements issued by the Subsecretaría de Recursos Pesqueros (SRP). Notably, Ministerial Agreement No. MPCEIP-SRP-2022-0028-A formalises fishery management measures applicable to vessels authorised to operate within the IATTC Convention Area, aligning with Resolution C-21-04. Moreover, SRP-2024-0282-A provides an updated regulatory framework and includes, as annexes, the full body of applicable IATTC resolutions and technical provisions.

The table below (**Table 7.5.1.2.3**) summarises the key IATTC resolutions that are currently in force and directly relevant to the conservation and management of these primary tuna species, as referenced in the national legislation.

***Table 7.5.1.2.3*** *Key IATTC Resolutions Relevant to the Management of Primary Tuna Species in the EPO.*

| Resolution | Title | Year | Key Provisions | Notes |
|---|---|---|---|---|

[1] Xu, H., Maunder, M.N., Minte-Vera, C., Valero, J.L., Lennert-Cody, C., and Aires-da-Silva, A. 2020. Bigeye tuna in the Eastern Pacific Ocean, 2019: Benchmark assessment. Document SAC-11-06 REV. 11th SAC Meeting. 11-15 May 20201. La Jolla, California (USA). https://www.iattc.org/GetAttachment/1eb798ce-29b8-49c9-8473-14d68638afb5/SAC-11-06_Bigeye-tuna-benchmark-assessment-2019.pdf

[2] Bi, R., M. Maunder, H. Xu, C. Minte-Vera, J. Valero, A. Aires-da-Silva. 2024. Stock assessment of skipjack tuna in the Eastern Pacific Ocean: 2024 benchmark assessment.

[3] Minte-Vera, C. M.N. Maunder, H. Xu, J.L. Valero, R. Bi, D. Fuller, A. Aires-da-Silva. 2024 Exploratory assessment and stock status indicators for yellowfin tuna in the EPO. IATTC Document SAC-15-03 REV. https://www.iattc.org/GetAttachment/4118dd7c-747d-473c-add0-235441348c5d/SAC-15-03_Exploratory-assessment-and-stock-indicators-for-YFT.pdf

| | | | | |
|---|---|---|---|---|
| C-19-01 | Management of Fish Aggregating Devices (FADs) | 2019 | Limits on active FADs per vessel, FAD design requirements, marking and tracking obligations, data reporting. | Reinforces provisions under C-21-04. |
| C-24-07 | Regional Vessel Register | 2018 | Requires authorisation of vessels to fish in the EPO and their inclusion in the IATTC Regional Vessel Register. | Linked to flag State responsibilities.<br>Amends Regulation C-18-06 |
| C-21-03 | Vessel Monitoring System (VMS) | 2019 | Mandates the use of satellite-based VMS for real-time position reporting. | Strengthens compliance and surveillance. |
| C-19-08 | Requirements for Longline Observer Coverage | 2021 | Encourages the development of regional observer programmes; recommends minimum 5% coverage for longline vessels. | Observer data may be used for bycatch estimates. |
| C-23-06 | Harvest Control Rules for tropical tunas | 2023 | Amendment to Resolution C-16-02 on harvest control rules for tropical tunas (yellowfin, bigeye and skipjack). | |
| C-24-01 | Conservation Measures for Tropical Tunas | 2024 | Establishes annual fishing closures (veda), limits on fishing effort and capacity, FAD management measures, observer coverage requirements. | Main regulation transposed into Ecuadorian legislation (MPCEIP-SRP-2022-0028-A). |

### iii. Management of tuna in Ecuador

Ministerial Agreement No. MPCEIP-SRP-2019-0184-A , signed on 3 December 2019, formally established Ecuador's National Action Plan for the Sustainable Management of the Tuna Fishery (PAN-ATUN) as a strategic instrument to guide the conservation, management, and potential eco-certification of the national tuna fishery.

Rooted in the Ecuadorian Constitution, which prioritises environmental preservation and the sustainable use of natural resources, the plan is also aligned with key international legal frameworks, including the United Nations Convention on the Law of the Sea (UNCLOS) and the New York Agreement, both of which promote the conservation of marine resources. Furthermore, it reflects Ecuador's commitment to the Sustainable Development Goals (SDGs) of the 2030 Agenda, particularly Goal 14 concerning life below water.

The principal aim of PAN-ATUN is to ensure the long-term sustainability of industrial tuna fisheries, preventing the degradation of the species' life cycles and safeguarding associated marine biodiversity. The plan outlines several strategic lines of action. In terms of sectoral competitiveness, it emphasises the need to increase added value, strengthen the organisation of small and medium-sized vessels, promote certification schemes and eco-labelling, and invest in technological innovation to enhance operational efficiency. To reduce incidental catches, it proposes measures to minimise the capture of juvenile tuna and non-target species, with a particular focus on the management of purse-seine fisheries, alongside mechanisms for public-private participation in decision-making processes. Environmental management and monitoring are to be reinforced through satellite and physical tracking of the fleet, the implementation of a national traceability programme, and the strengthening of inspection and surveillance systems.

The plan also highlights the importance of education and communication by establishing clear catch control rules, onboard monitoring programmes, and permanent fisheries education services. Scientific research is recognised as a key component, aimed at reducing uncertainty in stock assessments, evaluating the effectiveness of conservation measures, and developing new, science-based management strategies. Institutional capacity-building is promoted through the creation of participatory spaces involving both public and private actors, and the reinforcement of institutional capabilities necessary for the plan's effective implementation. The Subsecretariat for Fisheries Resources is designated as the entity responsible for executing PAN-ATUN, in coordination with relevant national and international bodies, with immediate effect from the date of signature.

### 7.5.1.3 Secondary species impacted by the UoA

All species listed in **Table 7.5.1.1.2.1** (see section 7.5.1.1.2) that are not categorised as Endangered, Threatened, or Protected (ETP) and are not designated as primary species under Principle 2 (P2) were assessed as 'secondary' components. Based on the available data sources, a total of 47 secondary species were identified, comprising a diverse range of bony fish, sharks, and rays.

Of these, seven species met the criteria to be classified as 'main' secondary species in both UoA. For bony fish, this included striped marlin (*Kajikia audax*), blue marlin (*Makaira nigricans*), black marlin (*Istiompax indica*), mahi-mahi (*Coryphaena hippurus*), escolar (*Lepidocybium flavobrunneum*), and opah (*Lampris guttatus*), each exceeding 5% of the total catch in at least one year of the assessment period or designated as main following the precautionary approach. Regarding elasmobranchs, blue shark (*Prionace glauca*) and pelagic thresher shark (*Alopias pelagicus*) surpassed the 2% threshold, justifying their classification as main secondary species. Additionally, bigeye thresher shark (*Alopias superciliosus*) also met the criteria and was included among the main elasmobranch components.

The remaining 38 secondary species were classified as 'minor' components, as their catch volumes remained consistently below the respective 5% (for bony fish) or 2% (for elasmobranchs) thresholds throughout the assessment period. Among these minor components are species such as shortbill spearfish (*Tetrapturus angustirostris*), rainbow runner (*Elagatis bipinnulata*), oceanic puffer (*Lagocephalus lagocephalus*), and a variety of less frequently caught sharks and rays. Notable elasmobranchs recorded as minor include blacktip shark (*Carcharhinus limbatus*), dusky shark (*Carcharhinus obscurus*), common thresher shark (*Alopias vulpinus*), porbeagle (*Lamna nasus*), spiny dogfish (*Squalus acanthias*), and pelagic stingray (*Pteroplatytrygon violacea*).

#### iv. Bony Fishes

- **Billfish: Blue marlin (*Makaira nigricans*); Black marlin (*Istiompax indica*); Striped marlin (*Kajikia audax*)**

Billfish is a collective term used to refer to large pelagic fish species with prominent bills or rostra, including marlins, sailfish, and spearfish. These species are generally managed as a group, with no species-specific measures in place for *Kajikia audax* (striped marlin) within Ecuadorian waters.

According to **Table 7.5.1.1.2.1**, five billfish species are identified as *secondary* species in the fishery: *Kajikia audax* (striped marlin), *Makaira nigricans* (blue marlin), *Istiompax indica* (black marlin), *Tetrapturus angustirostris* (shortbill spearfish), and *Istiophorus platypterus* (Indo-Pacific sailfish). Of these, *K. audax*, *M. nigricans*, and *I. indica* are classified as "main" due to comprising over 5% of the catch in their category, while *T. angustirostris* and *I. platypterus* are considered "minor".

In the Eastern Pacific Ocean (EPO), these species are predominantly captured as bycatch in tuna longline and purse-seine operations, as well as in artisanal and recreational fisheries. The Inter-American Tropical Tuna Commission (IATTC) does not conduct species-specific stock assessments or establish reference points for black marlin in the region. As a result, the status of this stock remains uncertain, and no dedicated management measures have been adopted at the regional level.

Nevertheless, while several billfish species are caught incidentally in the fishery and are recognised as secondary species, the combination of low catch volumes (particularly for minor species) and the lack of targeted exploitation suggests limited current impact. However, the absence of formal assessments and tailored management responses

introduces uncertainty regarding the sustainability of these populations and reinforces the need for improved monitoring and species-specific management

- **Mahi mahi (*Coryphaena hippurus*)**

In the context of the Southeast Pacific swordfish longline fishery, mahi-mahi (*Coryphaena hippurus*) is primarily caught as bycatch and classified as “main” due to comprising over 5% of the catch in their category. The IATTC has collected bycatch data for mahi-mahi from large purse-seine vessels (class 6) since 1993, covering the period up to 2015. In the absence of direct data for smaller vessels, bycatch estimates were extrapolated using catch-per-set rates from these larger vessels, which represent approximately 23% of total purse-seine sets. However, such extrapolation is not applicable to the longline context, where mahi-mahi is caught both incidentally alongside the target species, swordfish (*Xiphias gladius*), and, in some cases, as a targeted species by certain segments of the fleet. Its relative abundance and role within this fishery therefore differ significantly from those observed in purse-seine operations.

The most recent regional assessments and scientific efforts related to mahi-mahi in the Eastern Pacific Ocean (EPO), while primarily focused on purse-seine fisheries, provide important contextual insights. Recent research supported by the IATTC has explored the species' genetic structure, catch trends, and sustainability implications. Although formal stock assessments with defined biological reference points are still lacking for the EPO as a whole, progress has been made in understanding the population structure, with genetic studies suggesting the presence of distinct, yet interconnected, population groups across the Pacific.

Ecuador and Peru have played a pivotal role in mahi-mahi research, particularly through collaborative initiatives such as tagging programmes and genomic studies aimed at elucidating patterns of stock distribution and connectivity. The IATTC has contributed to and endorsed these regional efforts, highlighting the need for enhanced coordination to improve stock assessment methodologies and data availability, including for the longline sector.

As of 2024, new developments include expanded genetic analyses, improved assessments of fishing impacts, and continued evaluation of stock status based on updated tagging data. While the fishery has historically faced sustainability challenges, notably due to data limitations, the implementation of Ecuador’s National Plan of Action for Mahi-Mahi (“Plan Dorado”) has led to measurable improvements in monitoring, management, and enforcement.

- **Escolar (*Lepidocybium flavobrunneum*) and Opah (*Lampris guttatus*)**

Both species were classified as a main species within the fishery, as its catches exceed 5% of the total catch volume. Currently, there are no species-specific management measures in place at the national level, nor is there consistent reporting on catch volumes or assessments of the potential impacts on the species' population. Nonetheless, existing international frameworks offer tools that could be adapted to improve both monitoring and mitigation. The IATTC has developed ecological risk assessments and bycatch monitoring programmes that, although primarily focused on species of conservation concern such as elasmobranchs and sea turtles, could also be applied to incidental catches of escolar. Similarly, technical guidelines issued by FAO on bycatch mitigation in longline fisheries recommend a range of operational and gear-based measures, including the use of circle hooks, night setting, bait modification and line weighting, which have demonstrated effectiveness in reducing interactions with non-target species.

### v. Sharks and rays

According to WWF-Ecuador, a total of 68 shark species have been documented in the country, of which 30 are considered to hold commercial significance. Among these, five species stand out as primary targets based on their

commercial value: the pelagic thresher shark (*Alopias pelagicus*), the blue shark (*Prionace glauca*), the silky shark *(Carcharhinus falciformis*), the bigeye thresher shark (*Alopias superciliosus*), and the hammerhead sharks (*Sphyrna lewini* and *Sphyrna zygaena*).

Sharks are caught as bycatch in the EPO tuna purse-sein fisheries and are also targeted or caught incidentally in longline and multi-species fisheries operated by coastal nations. Stock assessments or status indicators (SSIs) are available for only four shark species in the EPO: silky shark (*Carcharhinus falciformis*), blue shark (*Prionace glauca*), shortfin mako (*Isurus oxyrinchus*), and common thresher (*Alopias vulpinus*). Whale shark interactions with the tuna purse-seine fishery in the EPO are discussed in document BYC-08 INF-A. The impacts of tuna fisheries on other shark species in the region remain unknown.

A quantitative vulnerability assessment of shark bycatch in both industrial and artisanal EPO fisheries, using the EASI-Fish methodology, was completed in 2022 and presented at SAC-13 (SAC-13-11). This assessment recorded 49 shark species interacting with the fisheries, with 32 species formally assessed for 2019. The analysis classified 20 species as "most vulnerable," including hammerhead sharks (four species), requiem sharks (ten species), threshers (two species), mesopelagic sharks (three species), as well as the commercially significant blue shark and shortfin mako. The remaining 12 species were either deemed "least vulnerable" (nine species) or "increasingly vulnerable" (three species). The report suggested further exploration of potential conservation and management measures (CMMs) to reduce fishing impacts on particularly vulnerable shark species, including the silky, thresher, and hammerhead sharks.

Catch data from 1993 to 2021 for sharks in the large-vessel purse-seine fishery and longline fisheries are available in the IATTC report SAC 13-10 IATTC. Key species caught include the smooth hammerhead (*Sphyrna zygaena*), pelagic thresher (*Alopias pelagicus*), and mako sharks (*Isurus spp.*) (Figure 7.5.1.3.3). Average catch estimates for smooth hammerhead sharks in the purse-seine fishery were around 26 tons annually, with 13 tons reported in 2021, while in the longline fishery, the minimum reported catch averaged 958 tons (2006–2020), with 941 tons recorded in 2020. Pelagic thresher sharks were primarily caught in unassociated tuna school sets, with an average catch of 5 tons, and only 1 ton in 2021. Mako shark catch in the purse-seine fishery was lower, averaging 3 tons, with 2 tons reported in 2021.

The blue shark was the most frequently caught shark, with over 70,000 individuals reported caught in 2020, followed by the silky shark, which accounted for over 10,000 interactions.

These data are crucial for understanding the status of shark populations and the effectiveness of management measures aimed at minimizing bycatch in the EPO fisheries.

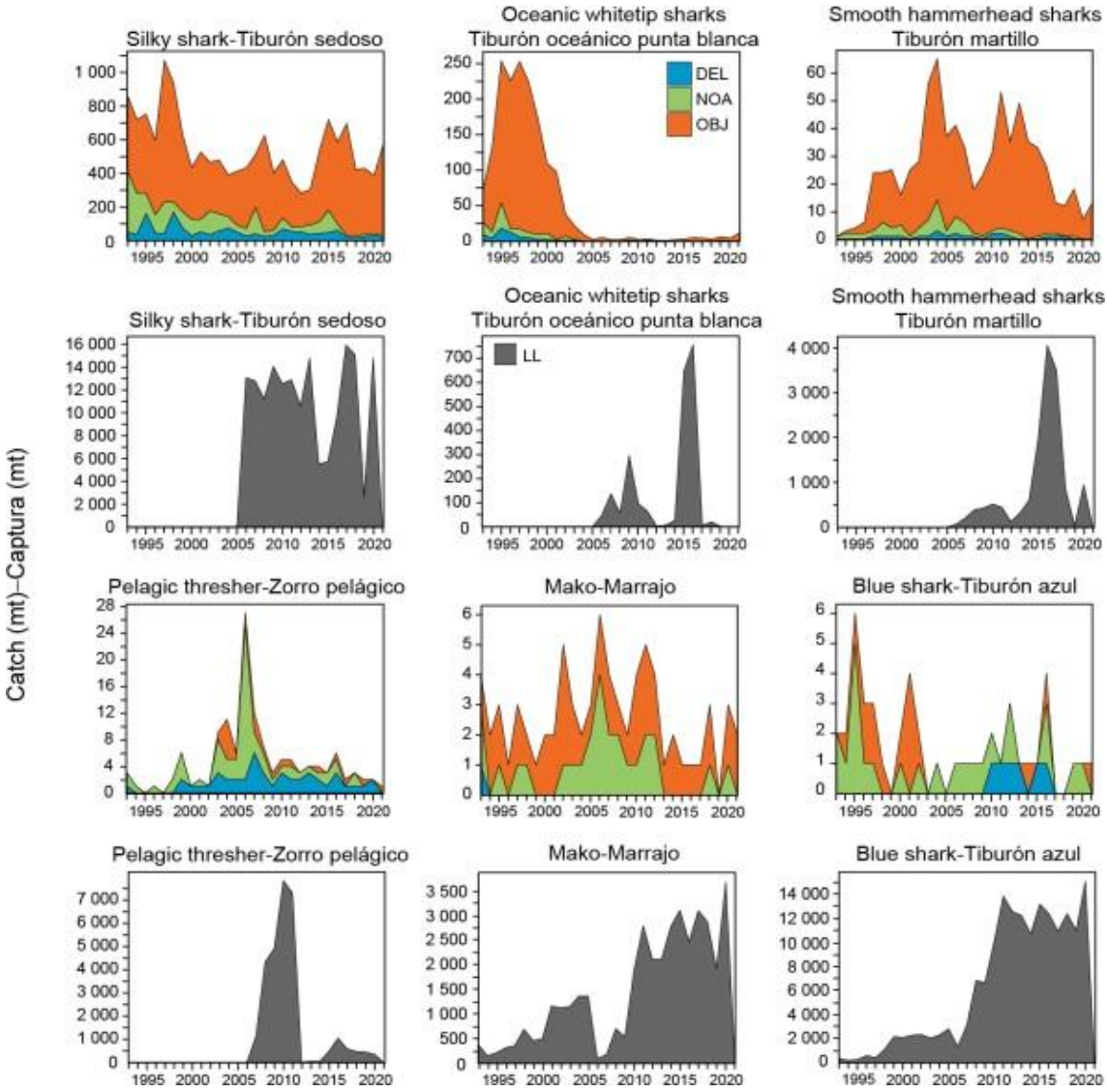



***Figure 7.5.1.3.3.*** *Estimated catches in metric tons (t) of key shark species in the eastern Pacific Ocean recorded by observers onboard large purse-seine vessels and minimum longline (LL) estimates of gross annual removals reported by CPCs (see section 2.2. for uncertainty in reporting of bycatch species caught by longline). Purse- seine catches are provided for size-class 6 vessels with a carrying capacity >363 t (1993–2021) by set type: floating object (OBJ), unassociated tuna schools (NOA) and dolphins (DEL). Longline catches (1993–2020) are minimum reported gross-annual removals that may have been estimated using a mixture of different weight metrics. Source: SAC 13-10 IATTC*.

Addicionally, Ecuador has implemented several significant conservation measures aimed at protecting key shark species, including the pelagic thresher shark (*Alopias pelagicus*), the bigeye thresher shark (*Alopias superciliosus*), and the blue shark (*Prionace glauca*). National legislation prohibits the fishing of pelagic thresher sharks and other shark species, reflecting a broader commitment established through the National Sharks Conservation Plan introduced in 2006. This plan promotes sustainable management of shark and ray populations by banning directed shark fishing and the practice of finning, which requires that sharks be landed with fins naturally attached to their bodies. Additionally, Ecuador has prohibited the use of steel or steel cable in fishing gear to mitigate harm to sharks. The country also actively fosters regional cooperation to minimise the fishing impact on shark populations and to enhance monitoring systems, such as those implemented by the PAT-Ec. initiative. Complementing these regulatory efforts, Ecuador has invested in awareness and educational campaigns to highlight the ecological importance of marine species and to combat illegal

trafficking, as underscored by statements from WWF-Ecuador following the seizure of illegal shark fin cargo in Hong Kong.

Relatively to the rays identified as secondary, there are three species classified under this category: the pelagic stingray (*Pteroplatytrygon violacea*), the longnose stingray (*Dasyatis longa*), and the thornback ray (*Raja clavata*). All these secondary rays are considered minor species, as their contribution to the catch is below 2%. More detailed information regarding the management of rays and mantas in Ecuador is provided in the section on ETP species.

#### 7.5.1.3.1. Management and information for secondary species

Information used to assess secondary species originates from the same monitoring programme described for primary species. Accordingly, data collected from the fishing fleet, onboard observers, and canneries are employed to monitor and manage these species. Additionally, the client has supplied the assessment team with logbook records and landing reports pertaining to the three vessels included in the current assessment.

In addition to various resolutions addressing specific issues such as the protection of dolphins and other marine mammals, the consolidated resolution on bycatch (C-04-05 Rev. 2) is regarded as a strategic framework for managing the fishery's impact on bycatch and for maintaining the currently very low levels of interaction. This resolution sets out a series of measures designed to improve the management of non-target species, consistent with the requirements established by the MSC. The general provisions include the obligation to promptly release, unharmed and to the extent practicable, all sea turtles, sharks, billfishes, rays, dolphinfish (*Coryphaena* spp.) and other non-target species. It also promotes the dissemination of these provisions and encourages the development and use of techniques and equipment that facilitate the rapid and safe release of such animals.

Specific measures address billfishes, sharks and rays, including the development of techniques or equipment to enable their release from the deck or gear, the allocation of resources to conduct experiments assessing post-release survival rates, and the identification of areas and periods where these species are most likely to be caught. In addition, the resolution calls upon governments with vessels targeting species covered by the Convention to provide the required bycatch information without delay, ensuring that adequate mechanisms are in place to facilitate the effective implementation of these measures.

### 7.5.1.4 ETP species impacted by the UoAs

In accordance with the MSC Fisheries Standard v2.01 (clause SA3.1.5), ETP designation is based on protection under international agreements such as:

- CITES (Convention on International Trade in Endangered Species) Appendix I;
- IUCN Red List (vulnerable, endangered or critically endangered status) for species classified as “out-of-scope” (amphibians, reptiles, birds and mammals);
- Convention on Highly Migratory Species (CMS) Appendices I and II where binding agreements are in place;
- National legal protections including sanctuaries within coastal state EEZs, and
- EPO CMMs that provide some measure of protection (i.e., a ban on landing).

The Bycatch Database is a structured and comprehensive repository of data on non-target species incidentally caught in swordfish fisheries under the IATTC framework. It compiles detailed information on the bycatch and associated mortality of a wide range of marine fauna, including cetaceans, sea turtles, sharks, rays, billfishes, seabirds, and tunas. Data are collected through a set of standardised forms, each focused on specific taxonomic groups, such as the Marine Fauna Record (MFR), as well as individual records for dolphins, turtles, sharks, rays, tunas, and billfish. These records are stored in interlinked relational tables, which facilitate analysis and are used by IATTC staff to support conservation and management decisions and to provide scientific advice.

Key components of the database include:

1. **Marine Fauna Record (MFR)** – Contains records of non-target species not specifically covered by other forms.
2. **Marine Mammal Sighting and Set Record (MMSSR)** – Focuses on dolphin interactions, including mortality and injury data.
3. **Sea Turtle Record (STR)** – Compiles information on sea turtle bycatch and mortality.
4. **Shark Record (RDT)** – Includes detailed data on shark catches, including individual measurements (e.g., size, sex) and aggregated mortality by size class.
5. **Ray Record (RR)** – Tracks ray species, following a structure similar to that of the shark and billfish records.
6. **Tuna Record (TR)** – Collects data on tunid species incidentally caught in swordfish fisheries.
7. **Billfish Record (BFR)** – Covers billfish bycatch, with data collection aligned with the methods used for sharks and rays.

In addition to these primary datasets, the database includes derived tables that summarise bycatch mortality by number of individuals or by weight. For the evaluation of swordfish fisheries (UoA1 and UoA2), bycatch data were obtained from four distinct sources: a) official landing records provided by the client and sourced from national administrations; b) a technical report produced in the context of a Fishery Improvement Project for the industrial fleet (UoA2); c) national observer programme data, covering only UoA1; and d) catch data submitted to the IATTC, encompassing both UoA1 and UoA2.

The ETP species identified as potentially impacted by the swordfish fishery fall into four main taxonomic groups: cetaceans, sea turtles, sharks, and rays. This section presents the available information on ETPs, structured by species group, and draws on multiple data sources, including observer records, official landings, and catch reports to the IATTC.

The aim is to provide a clear overview of the species most frequently encountered in the fishery and the associated conservation measures.

All species listed in **Table 7.5.1.1.2.1** (see section 7.5.1.1.2) that are categorised as ETP were assessed in accordance with MSC requirements. A total of 19 ETP species were identified across both UoA (UoA1 and UoA2), comprising sea turtles, marine mammals and elasmobranchs (sharks and rays)

Several ETP species were recorded in both UoA1 and UoA2, including *Caretta caretta* (loggerhead turtle), *Dermochelys coriacea* (leatherback turtle), *Eretmochelys imbricata* (hawksbill turtle), *Lepidochelys olivacea* (olive ridley turtle), *Mobula birostris* (giant manta ray), *Mobula munkiana* (Munk's devil ray), *Mobula spp.* (mobula rays), *Delphinidae spp.* (dolphins), and *Tursiops truncatus* (bottlenose dolphin).

A small number of ETP species were recorded exclusively in one of the two UoA. In UoA1 only, observations included *Chelonia mydas* (green turtle) and *Mobula mobular* (devil fish). In contrast, species found only in UoA2 comprised *Mobula tarapacana* (Chilean devil ray), *Mobula thurstoni* (smoothtail mobula), *Pseudorca crassidens* (false killer whale), and *Stenella attenuata* (spotted dolphin), as well as several shark species afforded protected status, including *Carcharhinus longimanus* (oceanic whitetip shark), *Sphyrna lewini* (scalloped hammerhead), *Sphyrna zygaena* (smooth hammerhead), and *Sphyrna spp.* (unspecified hammerhead sharks).

### 7.5.1.4.1 Marine Mammals

The conservation of small cetaceans in Ecuador has become a matter of increasing concern due to emerging evidence of human-induced threats. Recent studies, coupled with national and international regulatory frameworks, provide critical insight into the pressures faced by dolphin species in Ecuadorian waters. **Table 7.5.1.4.1.1** presents a summary of the applicable regulatory measures and agreements for the species and cetaceans identified as bycatch in the swordfish fishery, as well as the IUCN status. These will be discussed in further detail in the sections that follow.

***Table 7.5.1.4.1.1.*** *Summary of applicable regulatory measures and agreements for cetacean species identified as bycatch in the swordfish fishery. Source: Prepared by the team based on a review of the various information sources referenced throughout this section.*

| Species | CITES | CMS | IUCN |
|---|---|---|---|
| *Delphinidae* | Appendix II | Appendix II | - |
| *Tursiops truncatus* | Appendix II | Appendix II | Least Concerned |
| *Stenella attenuata* | Appendix II | Appendix II | Least Concerned |
| *Pseudorca crassidens* | Appendix II | Appendix II | Near threatened by (Baird, 2018). |

#### i. *Delphinedae* (Dolphins)

A study conducted by Jiménez *et al* (2018) raises serious concerns regarding the conservation of small cetaceans in Ecuador, following multiple stranding events of individuals with missing fins. The documented cases involve a short-beaked common dolphin (*Delphinus delphis*), a bottlenose dolphin (*Tursiops truncatus*), and two dwarf sperm whales (*Kogia sima*), found between 2014 and 2017 along the coasts of the Santa Elena and Manabí provinces. The systematic

removal of fins prompted questions as to whether these incidents were the result of bycatch, targeted fisheries, or predation. Although one specimen showed evidence of entanglement with artisanal gillnets, others lacked visible signs of such interaction.

Three main hypotheses are considered: first, that fishers removed the fins to protect their nets after incidental captures; second, that the events may indicate targeted hunting of dolphins for the illegal trade of meat or fins; and third, that natural predation may be responsible, though no bite marks were found. Historical accounts of dolphin meat being used as bait in artisanal fisheries, particularly in Puerto López and Puerto Bolívar, support concerns over ongoing illegal practices, though current evidence is lacking due to limited field monitoring.

The study underscores the vulnerability of *D. delphis* and *T. truncatus* at the national level, and the data deficiency status of *K. sima*, highlighting the broader issue of cetacean bycatch in Ecuador. The study highlight that although not a traditional practice, targeted capture may be increasing due to declining fish stocks and socio-economic pressures. Listed below are the main agreements and regulations applicable to dolphin species.

### a. International Agreement

**Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):** Ecuador is a Party to the Convention, which regulates international trade in endangered species. Numerous cetacean species are listed in Appendix II, requiring that any trade be subject to strict controls to ensure it is legal, sustainable, and not detrimental to the survival of the species.

**Convention on the Conservation of Migratory Species of Wild Animals (CMS / Bonn Convention):** Ecuador is a Party to the Convention, which obliges member States to protect migratory species listed in Appendices I and II, including numerous species of cetaceans.

**Inter-American Tropical Tuna Commission (IATTC) & Agreement on the International Dolphin Conservation Programme (AIDCP):** Ecuador, as a member of the IATTC and party to the AIDCP, is bound to reduce and report dolphin bycatch, and adhere to observer coverage and mortality limits aimed at eliminating dolphin deaths.

### b. National Legislation of Ecuador

**Código Orgánico del Ambiente (COA) – *Registro Oficial, 12 April 2017:*** This organic environmental code legally protects all wildlife, with priority for native, endemic, threatened or migratory species (including cetaceans). It prohibits trade, capture or possession without authorisation

**Executive Decree under COA – *Decreto Ejecutivo implementing COA* - Ecuador - Environmental - Decreto Ejecutivo 752:** This decree reinforces the legal protection of wildlife species and explicitly prohibits unauthorised commercial trade and handling of migratory or threatened animals. This executive decree also regulates the application of The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Chapter V, articles 106-121.

**Acuerdo Interministerial No. 0004 – *Registro Oficial No. 278, 30 June 2014:*** This regulation governs the observation of whales and dolphins in Ecuadorian waters. It establishes rules for tourism vessels, guides, distances, and safety measures to ensure the conservation of cetacean species during recreational observation

**Ministerial Agreement No. 196 – *1990:*** Declared the Galápagos Marine Resources Reserve a “whale sanctuary” and the rest of Ecuador’s territorial waters a refuge for whales. It prohibits all hunting or harmful disturbance to cetaceans within those zones

### ii. *Tursiops truncatus* (Bottlenose dolphin)

The common bottlenose dolphin (*Tursiops truncatus*) is a cosmopolitan species typically found in tropical and temperate waters up to the 45th parallel in both hemispheres, and as far north as the 65th parallel in the North Atlantic (Wells and Scott, 1999). Its broad distribution has contributed to notable morphological variation among populations. Although once thought to include multiple species, current taxonomy generally recognises two: *Tursiops truncatus*, widespread globally, and *Tursiops aduncus*, found in coastal Indo-Pacific waters (Moura et al., 2013, 2020). Two coastal subspecies of *T. truncatus* are acknowledged: *T. t. ponticus* in the Black Sea and *T. t. gephyreus* along the South American Atlantic coast. Distinctions between coastal and offshore ecotypes have been documented worldwide, with especially strong ecological, physiological, and genetic differentiation observed along the North American Atlantic coast (Gnone, 2023).

Addicionally, a recent study titled *Imminent Risk of Extirpation for Two Bottlenose Dolphin Communities in the Gulf of Guayaquil, Ecuador* by Fernando Félix and Santiago F. Burneo (2023) warns of the severe threat faced by bottlenose dolphins in this region.

The study reveals that the small and isolated dolphin population inhabiting the Gulf of Guayaquil is at imminent risk of extirpation. With only 62 individuals estimated, the population suffers from low genetic diversity and a high degree of inbreeding, compromising its long-term viability and resilience. The principal threats to their survival include habitat degradation resulting from pollution, expansion of port infrastructure, overfishing, and the proliferation of shrimp farms, all of which negatively impact the dolphins' natural environment and feeding areas. The authors call for urgent and targeted conservation actions. Without effective intervention, this population could disappear entirely within a few decades.

The conservation status of the common bottlenose dolphin (*Tursiops truncatus*) is recognised under several international conventions, agreements, and frameworks that promote the protection of cetaceans. These instruments provide the legal and strategic foundation for coordinated conservation measures.

**CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora)**: The species is listed in Appendix II, which includes species not necessarily threatened with extinction but in which trade must be controlled to avoid utilisation incompatible with their survival.

**CMS or Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals)**: The species is listed in Appendix II, which includes migratory species that require international agreements for their conservation and management

### iii. *Stenella attenuate* (Spotted dolphin)

The pantropical Spotted dolphin (*Stenella attenuata*) exhibits notable variation in size and spotting patterns, particularly between coastal and pelagic forms. Adults are slender and streamlined, with a distinctive colour pattern and increasing spotting with age. They are active, often seen breaching and bow-riding. Their diet consists mainly of small fish, squid, and crustaceans, and although frequently associated with yellowfin tuna, they do not prey on them. Sexual maturity is reached between 10 and 12 years, and the species can live up to 40 years.

The species faces significant conservation challenges in Ecuador, mainly due to bycatch in gillnet and purse-seine fisheries (Alavaa, 2017). Although international frameworks such as the CMS, the CITES, the U.S. Marine Mammal Protection Act (MMPA), and the protocols of the Inter-American Tropical Tuna Commission and the Agreement on the International Dolphin Conservation Programme (IATTC/AIDCP) establish a legal basis for protection, Ecuador's domestic implementation and enforcement remain limited. This situation relies heavily on research and scientific data

provided by non-governmental organisations, highlighting the urgent need for comprehensive national regulations on bycatch monitoring and gear-based mitigation measures.

**CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora)**: The species is listed in Appendix II, regulating international trade to prevent exploitation incompatible with the species' survival.

**CMS or Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals)**: The Eastern Tropical Pacific and Southeast Asian populations of *Stenella attenuata* is listed in Appendix II, which includes migratory species that require international agreements for their conservation and management. Additionally, the species is covered by CMS Memoranda of Understanding, including the Western African Aquatic Mammals MoU and the Pacific Cetaceans MoU, which promote regional conservation of cetaceans and their habitats.

**The U.S. Marine Mammal Protection Act**: safeguards the species across its range, designating the northeastern offshore stock as "Depleted" and mandating that fishery imports to the United States comply with MMPA standards to limit dolphin bycatch.

### iv. *Pseudorca carassidens* (False killer whale)

The false killer whale (*Pseudorca crassidens*) is a large, slender member of the dolphin family, characterised by a dark grey to black body with a lighter underside and a small conical head lacking a beak. Adult males, reaching up to 20 feet and 3,000 pounds, are larger than females and display a more pronounced overhang of the upper jaw. The species has distinctive S-shaped flippers and a curved dorsal fin, often marked by scars from fishery interactions or cookie cutter sharks, enabling photo-identification of individuals. Females reach sexual maturity between 8 and 11 years, while males mature significantly later. Reproduction is slow, with long gestation and lactation periods and an estimated 7-year interval between births. Females undergo menopause between the ages of 44 and 55.

Although the species does not benefit from a species-specific national conservation plan in Ecuador, it is nevertheless covered under the general regulatory and conservation framework that applies to all cetaceans in the country. These include the legal designation of the entire Exclusive Economic Zone (EEZ) as a whale sanctuary (Ministerial Decree No. 196, 1990; see IWC Country Profile – Ecuador), strict regulations on cetacean-watching tourism (Ministerial Agreement No. 20140004, June 2014), and national and international efforts to mitigate bycatch and other anthropogenic threats (Pacific Whale Foundation, 2022; PWF Ecuador Research).

The species is considered particularly vulnerable due to its low population density, complex social structure, and the limited number of individuals typically encountered (Reeves et al., 2009; WWF Nature – False Killer Whale). These biological characteristics render it highly susceptible to disturbances, bycatch, and depletion of prey resources (IWC, 2023; IWC Species Profile – Pseudorca crassidens).

Despite the scarcity of dedicated data on false killer whales in Ecuadorian waters, ongoing scientific efforts—most notably those led by the Pacific Whale Foundation—are gradually improving knowledge on its distribution, abundance, and the threats it faces. These efforts include photo-identification, acoustic monitoring, and the recording of strandings (PWF, 2022; PWF – Fisheries Interactions Part III), all of which contribute to long-term datasets that can inform evidence-based management decisions.

In light of this, all conservation rules and operational guidelines previously described for cetaceans are fully applicable to *Pseudorca crassidens* (Ministerial Agreement No. 20140004; IWC, 2023). The species thereby benefits indirectly from Ecuador's comprehensive cetacean protection regime, even in the absence of species-specific legislation.

### 7.5.1.4.2 Elasmobranchs (Sharks, rays and manta-rays)

The catch data collection revealed that numerous elasmobranchs are incidentally caught, some of which are classified as ETP under the MSC framework. These species were consistently recorded across observer data, landing records, and technical reports, and are subject to dedicated conservation measures due to their ecological vulnerability and/or international protection status.

**Main Conservation Measures for Sharks, Rays, and Mantas in Ecuador**

Ecuador has implemented a range of national conservation measures to protect shark, ray, and manta populations, particularly within its artisanal and industrial fisheries sectors. Key regulatory frameworks prohibit harmful practices such as shark finning, requiring that sharks be landed with fins naturally attached to the body to ensure traceability and reduce illegal finning activities These measures aims to promote sustainable fisheries management and protect vulnerable elasmobranch species.

Additionally, the Ecuadorian National Plans of Action for the Conservation and Management of dolphinfish and sharks (PAT-EC) incorporate several regulatory measures applicable to artisanal fisheries operating in Ecuadorian waters. Shark discards and finning practices are explicitly prohibited, with a requirement that all sharks be landed with fins naturally attached.

**i. Sharks**

Several shark species identified as ETP interact with fisheries in the Eastern Pacific Ocean (EPO), particularly through bycatch in tuna purse-seine fisheries and incidental capture in longline operations. Among these, *Sphyrna lewini* (scalloped hammerhead), *Sphyrna zygaena* (smooth hammerhead), *Sphyrna spp.* (unspecified hammerheads), and *Carcharhinus longimanus* (oceanic whitetip shark) are of particular concern due to their conservation status and confirmed presence in UoA2.

Quantitative assessments using the EASI-Fish methodology (2022) identified hammerheads, threshers, and makos among the most vulnerable shark species, highlighting the urgent need for targeted conservation and management measures (CMMs). Specifically, smooth hammerheads are caught in both purse-seine and longline fisheries, with average annual catches reaching 26 tons and up to 958 tons respectively.

The table below provides an overview of the conservation status of shark species classified as Endangered, Threatened, or Protected (ETP) in **Table 7.5.1.4.2.1**, indicating their listings under CITES and CMS conventions, as well as their current regulatory status under national legislation in Ecuador.

***Table 7.5.1.4.2.1.*** *Conservation Status and National Regulation of ETP Shark Species Identified in Table 7.5.1.1.2.1*

| Scientific name | Common name | CITES | CMS | National regulation in Ecuador |
|---|---|---|---|---|
| *Carcharhinus falciformis* | Silky shark | Appendix II | Appendix II | Agreement MPCEIP-SRP-2022-0002-A; IATTC res C-23-08 |
| *Carcharhinus longimanus* | Oceanic whitetip shark | Appendix I & II | Appendix II | Agreement MPCEIP-SRP-2020-0084-A; IATTC res C-11-10 |

| | | | | |
|---|---|---|---|---|
| *Sphyrna lewini* | Scalloped hammerhead shark | Appendix II | Appendix II | Agreement MPCEIP-SRP 2020-0084-A. |
| *Sphyrna spp.* | Hammerhead sharks (unspecified spp.) | Appendix II | Appendix II | Agreement MPCEIP-SRP 2020-0084-A. |
| *Sphyrna zygaena* | Smooth hammerhead shark | Appendix II | Appendix II | Agreement MPCEIP-SRP 2020-0084-A. |

### ii. Rays

The annual catches of manta rays (*Mobulidae*) and stingrays (*Dasyatidae*) in the EPO have been documented in both the large-vessel purse-seine (1993–2021) and longline fisheries (1993–2020). According to the data provided in **Figure 7.5.1.3.4** manta rays and stingrays are predominantly caught by the purse-seine fishery, with only limited catches reported for the longline fishery, specifically for Munk's devil ray and some species of the Dasyatidae family. The longline catches included 6 tons of Munk's devil ray in 2009 and 118 tons in 2010, as well as a total of 15 tons of Dasyatidae spp. over five years, with half of that occurring in 2009.

The giant manta ray had the highest average catches in the purse-seine fishery, with an average of 19 tons, followed by the spinetail (14 tons) and smoothtail (8 tons) mobulid rays. Catches of these species in 2021 were reported as 15 tons for the giant manta, 7 tons for both the spinetail and smoothtail, and less than 1 ton for the smoothtail species. Pelagic stingrays were caught in much smaller quantities, averaging only 2 tons per year, with 2 tons recorded in 2021.

The catches of rays in the purse-seine fishery are more significant in unassociated sets, followed by dolphin-associated sets, and are lowest in floating-object sets. In contrast, the small purse-seine vessel fishery reported minimal catches (≤1 ton) for other ray species in 2021, according to the limited available observer data for that year.

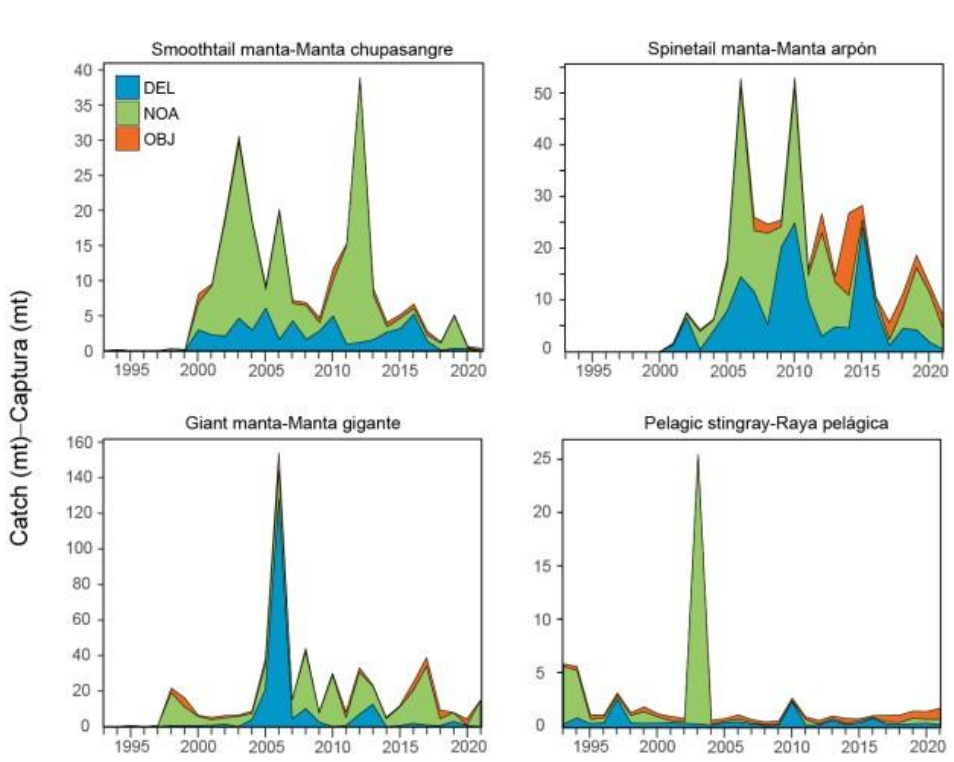



***Figure 7.5.1.3.4.*** *Estimated purse-seine catches in metric tons (t) of key species of rays in the Eastern Pacific Ocean. Purse seine catches are provided for size-class 6 vessels with a carrying capacity > 363 t (1993 – 2021) by set type: floating object (OBJ), unassociated tuna schools (NOA) and dolphins (DEL). Source SAC 13-10 IATTC.*

Furthermore, Ecuador aligns with international agreements such as CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and CMS (Convention on Migratory Species), which regulate international trade and promote cooperative conservation of migratory and endangered species, including many elasmobranchs. The Ecuadorian government has incorporated these international commitments into national legislation and enforces them through monitoring and control of fisheries activities.

Conservation efforts include the promotion of bycatch reduction measures and safe handling protocols aimed at increasing post-release survival of sharks, rays, and other non-target species. These include training for fishers in safe release techniques and the use of selective fishing gear to minimise incidental capture (FAO, 2018; IATTC, 2016**). Table 7.5.1.4.2.2** presents the main regulatory measures adopted at the national level by Ecuador and **Table 7.5.1.4.2.3**. at the regional level by the IATTC, with reference to the conservation of sharks, rays, and manta rays.

***Table 7.5.1.4.2.2****. Key national regulatory measures adopted by Ecuador concerning the conservation of sharks, rays, and manta rays.*

| Instrument | Reference | Summary Description |
|---|---|---|
| **Prohibition of elasmobranch targeting and shark finning** | *Article 152 of the LODAP* | Prohibits targeting any elasmobranch species, as well as the manufacture, transport, importation, and commercialisation of fishing gear intended for their capture; also bans shark finning. |
| **Initial shark fishing prohibition and gear restrictions** | *Executive Decree Nº 486 (30 July 2007)* | Prohibits directed shark fishing, shark finning, and the use of steel leaders. |
| **Amendment expanding species protections** | *Executive Decree Nº 902 (1 February 2008)* | Amends Decree 486 to prohibit retention onboard of whale sharks (*Rhincodon typus*), basking sharks (*Cetorhinus maximus*), white sharks (*Carcharodon carcharias*), and sawfish (*Pristis spp.*). |
| **Ray protection regulation** | *Ministerial Agreement Nº MPCEIP-SRP-2019-0019-A* | Prohibits retention of spotted eagle ray (*Aetobatus laticeps*) and snouted eagle ray (*Myliobatis longirostris*). Incidental catches (dead or alive) must be immediately de-hooked and released. |
| **Hammerhead and oceanic whitetip protection** | *Ministerial Agreement Nº MPCEIP-SRP-2020-0084-A* | Prohibits retention of smooth hammerhead (*Sphyrna zygaena*), scalloped hammerhead (*S. lewini*), bonnethead (*S. tiburo*), great hammerhead (*S. mokarran*), and oceanic whitetip shark (*Carcharhinus longimanus*). Requires immediate release of incidental catches and activates the PAT-Ec scientific advisory committee (2020–2024). |
| **Silky shark management and nursery protection** | *Ministerial Agreement Nº MPCEIP-SRP-2022-0002-A* | Updates conservation of silky shark (*Carcharhinus falciformis*). Prohibits retention onboard by purse seiners. Incidental catch by authorised longliners must be ≤20% of total trip catch (by weight); individuals <100 cm TL may not be retained. Fishing in nursery areas (as identified with IATTC) is prohibited. |
| **Adoption of shark action plan** | *Ministerial Agreement Nº MPCEIP-SRP-2022-SRP-0068-A* | Officially adopts the National Action Plan for the Conservation and Management of Sharks (PAT-Ec 2020–2024) as Ecuadorian state policy. |
| **Full mobulid ray protection** | *Ministerial Agreement Nº MPCEIP-SRP-2024-0210-A* | Prohibits all fishing and retention of *Mobula birostris*, *Mobula mobular*, *Mobula thurstoni*, *Mobula munkiana*, and *Mobula tarapacana*. All incidental catches (dead or alive) must be immediately de-hooked and released. |

| | | |
|---|---|---|
| **White-tip shark species report** | *Ministerial Agreement Nº MPCEIP-SRP-2024-0469-O* | Includes Ecuador's reports on the incidence of these white-tip shark species, as required for compliance with Resolution C-11-10 |
| **Shark finning ban and mobulid ray protection** | *Agreement 093 (2010)* | Prohibits shark finning by requiring fins to remain naturally attached to the body. Also bans targeted fishing of *Manta birostris*, *Mobula japanica*, *M. thurstoni*, *M. munkiana*, and *M. tarapacana*. |

***Table 7.5.1.4.2.3**. Key regional regulatory measures adopted by the Inter-American Tropical Tuna Commission (IATTC) concerning the conservation of sharks, rays, and manta rays.*

| Instrument | Reference | Summary Description |
|---|---|---|
| **Funding and mitigation development for juvenile tuna and bycatch** | *Resolution C-04-05 (June 2006)* | Instructs the Director to seek funding to reduce juvenile tuna mortality, develop gear and techniques to facilitate the live release of non-target species, and estimate post-release survival rates. |
| **Oceanic whitetip shark protection** | *Resolution C-11-10 (July 2011)* | Prohibits retention, transhipment, landing, storage, sale, or offer for sale of oceanic whitetip sharks (*Carcharhinus longimanus*). Requires their prompt and unharmed release where practicable. |
| **Mobulid ray protection** | *Resolution C-15-04 (July 2015)* | Bans the retention, landing, transhipment, and sale of mobulid rays (*Mobulidae*), including *Manta birostris* and *Mobula* spp. Requires live release whenever possible. |
| **Shark stock assessments and data collection** | *Resolution C-23-07 (valid until July 2025); Resolution C-24-05 (September 2024)* | Directs IATTC scientific staff to develop stock assessments for *Carcharhinus falciformis* and *Sphyrna* spp. CPCs must collect and report catch data in accordance with IATTC standards. |

### 7.5.1.4.3 Sea turtles

Between 1993 and 2022, the Inter-American Tropical Tuna Commission (IATTC) recorded 21,850 turtle interactions and 951 mortalities, with the olive ridley turtle (*Lepidochelys olivacea*) being the most frequently encountered species (Figure 7.5.1.3.2). In 2022 alone, 168 interactions were reported, but no mortalities were recorded for any species, including green, loggerhead, hawksbill, and leatherback turtles. Turtle bycatch generally occurs when individuals become entangled in fishing lines or ingest hooks. Nevertheless, the available data are considered underestimates, as observer coverage in longline fisheries remains low (approximately 5%), in stark contrast with the 100% coverage on large purse-seine vessels. Despite these limitations, the data have informed targeted mitigation strategies. Several binding resolutions adopted by the IATTC, most notably Resolution C-19-04, have contributed to the establishment of safe handling and release protocols aimed at reducing turtle mortality in both longline and purse-seine fisheries.

Ecuador has shown a strong and sustained commitment to sea turtle conservation, both nationally and internationally. At the national level, this is reflected in the development of long-term action plans, beginning with the 2014–2019 National Plan for the Conservation of Sea Turtles (PNCTM), formalised by Ministerial Agreement No. 324 and published in Official Gazette No. 371 of 10 November 2014. This was followed by the approval of a new Action Plan for 2021–2030, through Resolution MAAE-SPN-2021-001, which now serves as the main technical instrument for implementing

conservation initiatives across the country. Internationally, Ecuador is a signatory to the Inter-American Convention for the Protection and Conservation of Sea Turtles (CIT), under which multiple resolutions have been adopted for the conservation of sea turtles in the Eastern Pacific Ocean.

The olive ridley, green, loggerhead, and hawksbill turtles have all been identified in the catch data analysed for the preparation of this report. Various IATTC resolutions, most recently C-19-04, have been intended to mitigate fishing impacts on sea turtles and establish safe handling and release procedures for sea turtles caught by purse-seine and longline gear.

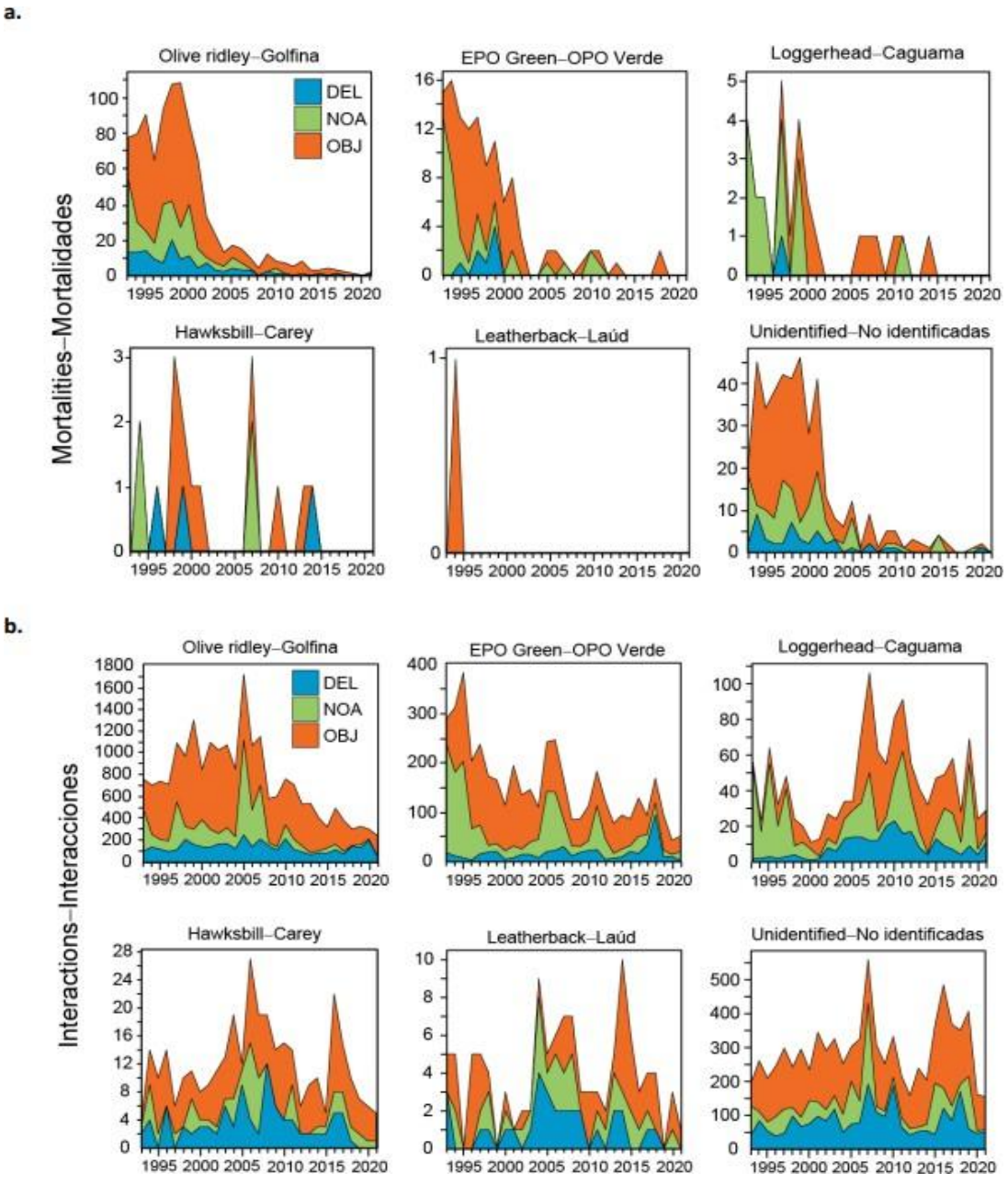



***Figure 7.5.1.3.2.*** *Estimated number of sea turtle a) mortalities and b) interactions by observers onboard large purse- seine vessels, 1993–2021, by set type (dolphin (DEL), unassociated (NOA), floating object (OBJ)) Source: SAC 13-10 IATTC*

The following table presents the conservation status of five marine turtle species identified in the catches data for swordfish long-line fishery consulted for this assessment, according to the International Union for Conservation of Nature (IUCN) Red List and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

*Table 7.5.1.4.2.4 Conservation Status of Marine Turtle Species identified for swordfish long-line fishery*

| Species | IUCN Red List Status | CITES Listing |
|---|---|---|
| *Caretta caretta* | Vulnerable (VU) | Appendix I |
| *Chelonia mydas* | Endangered (EN) | Appendix I |
| *Dermochelys coriacea* | Vulnerable (VU) | Appendix I |
| *Eretmochelys imbricata* | Critically Endangered (CR) | Appendix I |
| *Lepidochelys olivacea* | Vulnerable (VU) | Appendix I |

**Table 7.5.1.4.2.5** summarises the main regulatory measures currently in place at both national and regional levels for the conservation of sea turtles in Ecuadorian waters. These measures reflect Ecuador's adherence to various international agreements and the implementation of targeted national policies. The instruments listed include binding resolutions, national action plans, and international conventions that collectively seek to mitigate the impact of fisheries—particularly longline and purse-seine operations—on vulnerable turtle populations.

*Table 7.5.1.4.2.5. Key regulatory measures for the conservation of sea turtles applicable to Ecuadorian fisheries.*

| Instrument | Description | Jurisdiction |
|---|---|---|
| **Resolution C-04-07 (IATTC, 2004)** | Establishes a three-year programme to mitigate the impact of tuna fishing on sea turtles, including data collection, mitigation, industry education, capacity building, and reporting. | IATTC |
| **Resolution C-19-04 (IATTC, 2019)** | Mandates mitigation measures to reduce the impact of tuna fisheries on sea turtles in the Eastern Pacific Ocean, including safe handling and release protocols. | IATTC |
| **CITES Conf. 19.5** | Addresses the conservation and trade of marine turtles, aligning international trade controls with conservation objectives. | CITES |
| **Resolution CIT-COP10-2022-R6 (IAC, 2022)** | Replaces previous leatherback turtle resolutions and sets out strategic actions for the conservation of the Eastern Pacific leatherback turtle. | Inter-American Convention (CIT) |
| **Ministerial Agreement No. 324 (2014)** | Officialises Ecuador's National Plan for the Conservation of Sea Turtles (PNCTM), effective until 2019, with a focus on protecting turtles and critical habitats. | Ecuador |
| **Resolution MAAE-SPN-2021-001 (2021)** | Approves the Sea Turtle Conservation Action Plan 2021–2030 as Ecuador's technical framework for turtle conservation initiatives. | Ecuador |

### 7.5.1.5 Habitats

The swordfish-directed surface longline fishery in Ecuador is operated predominantly by the so-called *nodriza* fleet, used across all *Coryphaena hippurus* (dorado) and swordfish longline operations. Fishing occurs largely in deep, offshore, oceanic waters — including within the Exclusive Economic Zones of Ecuador, Peru, Panama, Colombia, and Costa Rica. The gear is deployed at shallow depths—typically 6 to 13 metres—for dorado, and similar

operational practices extend to swordfish sets, designed for the upper water column—thus no intentional seabed contact occurs (Martínez-Ortiz, 2015).

Surface longline gear is specifically designed to hang in the upper water column, reducing any risk of seabed contact; typical deployment depths are shallow relative to demersal longlines.

Swordfish in tropical and subtropical oceans are typically captured in shallow pelagic set configurations; studies show catch depths clustering above 60 m — frequently between 20 and 60 m (Martínez-Ortiz, 2015) — supporting the use of surface longlines rather than deep, demersal gear.

Given the configuration and deployment of surface longline gear, as well as the nature of targeting pelagic species, accidental interaction with the benthic environment is regarded as highly unlikely.

In accordance with MSC requirements (SA 3.13.1), the assessment team must evaluate the habitat component with respect to the effects of the Unit of Assessment (UoA) on the structure and function of the habitats it impacts. Particular attention is given to the structure and function of these habitats (including their capacity to provide ecosystem services) as well as their abundance and biological diversity. Therefore, the assessment must consider not only the direct impact on the habitat itself but also its ability to maintain and deliver ecosystem services. Prior to conducting this evaluation, the team is required to identify and provide justification for the classification of habitats as commonly encountered, vulnerable marine ecosystems (VMEs), or minor habitats (i.e., all other habitat types).

#### vi. Commonly encountered habitats

According to MSC requirements (FCR GSA3.13.3.1), commonly encountered habitats are defined as those preferred by the target species, those which the UoA's gear is specifically designed to exploit, and/or those that constitute a substantial portion of the UoA's fishing area. In the case of the swordfish fishery, which operates using surface longlines typically deployed at depths of approximately 20 to 60 metres, the epipelagic habitat of the Southeastern Pacific Ocean is considered the commonly encountered habitat for the purposes of this assessment. The assessment team is not aware of any evidence indicating adverse impacts by the swordfish longline fishery on the structure or functioning of the pelagic habitat. The fishery does not alter fundamental characteristics of the water column, such as temperature, salinity, or current dynamics.

#### vii. Vulnerable Marine Ecosystems (VMEs)

In accordance with MSC FCR GSA3.13.3.2, Vulnerable Marine Ecosystems (VMEs) are defined by the presence of one or more of the characteristics outlined in paragraph 42 of the FAO Guidelines, namely: (i) uniqueness or rarity; (ii) functional significance of the habitat; (iii) fragility; (iv) life-history traits of component species that hinder recovery; and (v) structural complexity. The Annex to the FAO Guidelines further identifies species groups, communities, and habitat-forming organisms that may constitute or indicate the presence of VMEs. These include: (i) certain cold-water corals and hydroids; (ii) sponge-dominated communities; (iii) communities formed by dense emergent fauna in which large sessile protozoans and invertebrates (e.g., hydroids and bryozoans) play a significant structural role; and (iv) seep and vent communities composed of endemic invertebrate and microbial species. The Annex also highlights several geographic features typically associated with such communities.

As epipelagic habitats in open oceanic waters do not fall within the scope of paragraph 42, subparagraphs (i)–(v) of the FAO Guidelines, these habitats are not considered VMEs under the criteria outlined in MSC FCR GSA3.13.3.2. Consequently, no VMEs have been identified in the context of this assessment.

#### viii. Minor habitats

Minor habitats, as defined by the MSC (GSA3.13.3), are those that do not meet the criteria for classification as either Commonly Encountered Habitats or Vulnerable Marine Ecosystems (VMEs). In this assessment, minor habitats have been identified as benthic environments that could potentially be affected in the event of gear loss. In line with the MSC Fisheries Standard v2.01, all habitats that may interact with the fishery must be categorised as 'Commonly Encountered', 'VME', or 'Minor', according to the definitions provided in **Table 7.5.1.5.1**.

***Table 7.5.1.5.1.*** *Habitat definitions as per the MSC Fisheries Certification Requirements v2.01.*

| FCR reference | Definition |
|---|---|
| **SA3.13.3.1** | A commonly encountered habitat shall be defined as a habitat that regularly comes into contact with a gear used by the UoA, considering the spatial (geographical) overlap of fishing effort with the habitat's range within the management area(s) covered by the governance body(s) relevant to the UoA. |
| **SA3.13.3.2** | A Vulnerable Marine Ecosystem (VME) shall be defined as is done in paragraph 42 subparagraphs (i)-(v) of the FAO Guidelines (definition provided in GSA3.13.3.2). This definition shall be applied both inside and outside EEZs and irrespective of depth. |
| **GSA3.13.3.2** | VMEs have one or more of the following characteristics, as defined in paragraph 42 of the FAO Guidelines:<br>Uniqueness or rarity – an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems.<br>Functional significance of the habitat – discrete areas or habitats that are necessary for survival, function, spawning/ reproduction, or recovery of fish stocks; for life-history stages (e.g., nursery grounds, rearing areas); or for ETP species.<br>Fragility – an ecosystem that is highly susceptible to degradation by anthropogenic activities.<br>Life-history traits of component species that make recovery difficult – ecosystems that are characterised by populations or assemblages of species that are slow growing, are slow maturing, have low or unpredictable recruitment, and/or are long-lived.<br>Structural complexity – an ecosystem that is characterised by complex physical structures created by significant concentrations of biotic and abiotic features |
| **N/a** | Minor habitats are those that do not meet the above definitions. |

## 7.5.1.6 Ecosystem

### 7.5.1.6.1. Marine Biodiversity, Food Webs and Ecosystem Resilience

#### i. Large Marine Ecosystems (LMEs)

Large Marine Ecosystems (LMEs) are defined as "areas of the ocean characterised by distinct bathymetry, hydrology, productivity and trophic interactions" (see Figure 7.5.1.6.1; NOAA, n.d.). The UoAs operates within two LMEs: the Pacific Central-American Coastal LME and the Humboldt Current LME.

The Pacific Central-American Coastal LME extends along the Pacific coastline of Central America, from approximately 22°N off the coast of Mexico to around 4°S (Heileman, 2009). This LME is shared by Mexico, Guatemala, El Salvador,

Honduras, Nicaragua, Costa Rica, Panama, Colombia, and Ecuador. It encompasses an area of nearly 2 million km², of which 1.42% is designated as protected. The region includes approximately 0.22% of the world's coral reefs and 0.78% of the planet's seamounts (Sea Around Us, 2007).

This LME is characterised by recirculating coastal currents and milder ocean temperatures in comparison with the adjacent California and Humboldt Current LMEs (Bakun et al., 1999). A substantial portion of the ecosystem is affected by the seasonal shifts of the Intertropical Convergence Zone (Bakun et al., 1999), and it is particularly vulnerable to the El Niño-Southern Oscillation (ENSO) phenomenon. ENSO events exert significant impacts on economic activities, infrastructure, natural resources, and the wider environment.

Climatic conditions within the LME range from tropical to temperate. A dry season occurs during the winter months, while the rainy season, from May to September, is marked by high river discharge rates, contributing large volumes of freshwater and suspended sediments to coastal areas (Windevoxhel et al., 2000). Due to the presence of a narrow and steep continental shelf, extreme ocean depths occur in close proximity to the coastline.

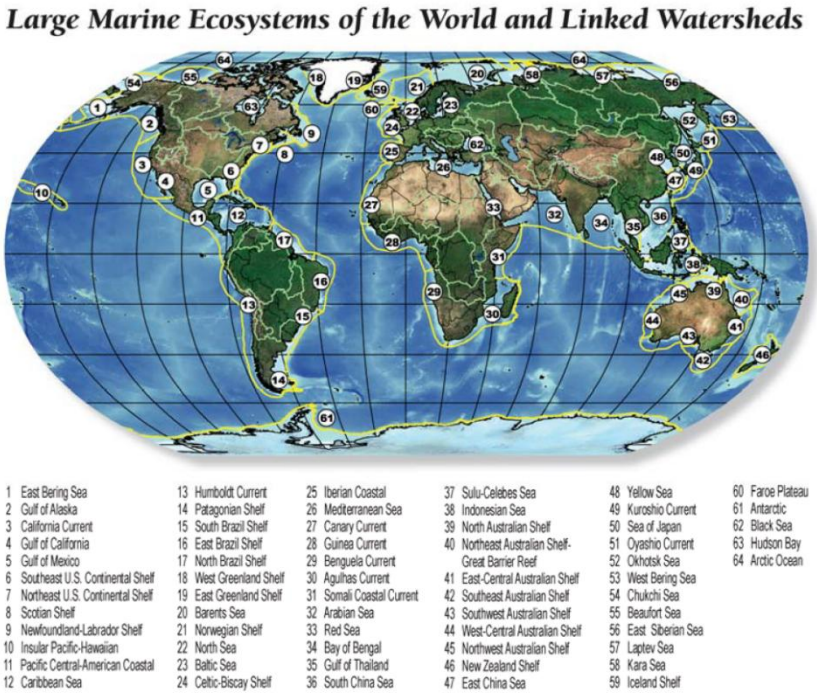



***Figure 7.5.1.6.1.*** *Map showing the 64 Large Marine Ecosystems (LMEs) of the world. LMEs in this map are numbered as they are on the LME website, www.lme.noaa.gov.*

The Humboldt Current LME, as delineated by Heileman et al. (2009), extends along the western coasts of Chile and Peru. Encompassing a surface area of 2.5 million km², this LME includes only 0.11% of protected marine areas and hosts 0.42% of the world's seamounts, alongside 24 major estuarine systems (Sea Around Us, 2007). The patterns of oceanic circulation within this ecosystem have been described extensively in the literature, including by Wyrtki (1967), Alheit and Bernal (1993), and Wolff et al. (2003). The predominant feature of this LME is the coastal upwelling system—one of the largest globally—driven by Ekman offshore divergence resulting from persistent southerly trade winds. This upwelling system is subject to pronounced climatic and oceanographic variability, influenced by seasonal, interannual, decadal, and longer-term fluctuations. In particular, El Niño-Southern Oscillation (ENSO) events can significantly disrupt the regular seasonal upwelling, leading to the intrusion of warmer, clearer oceanic waters from the west and north (Wolff et al., 2003; Alheit and Ñiquen, 2004).

The eastern tropical Pacific region, which encompasses the continental coastlines of southern Central America (notably

Costa Rica and Panama) and north-western South America (namely Colombia and Ecuador), is marked by a mosaic of coastal and marine habitats. These include cliffs interspersed with pocket beaches, alluvial and deltaic plains dominated by extensive sandy shorelines, as well as well-developed mangrove forests, estuaries, lagoons, and coral reefs (Miloslavich et al., 2011). The region also comprises ecologically significant offshore island groups, notably the Pearl Islands and the Galápagos Archipelago (Cruz et al., 2003; Díaz & Acero, 2003). Likewise, the Peruvian coastline is characterised by notable heterogeneity, comprising bays, cliffs, kelp forests and macroalgal beds, rocky and sandy shores, islands, and peninsulas. Additionally, it includes wetland systems that represent the southernmost extent of the tropical Pacific mangrove ecosystem (Tarazona et al., 2003; Fernandez-Baca et al., 2007).

### ii. Vulnerable Marine Ecosystems (VMEs)

Vulnerable Marine Ecosystems (VMEs) refer to sensitive benthic environments that are particularly susceptible to adverse impacts from fishing activities, especially in deeper waters. Although VMEs are most frequently associated with bottom-contact fisheries, such as deep-sea trawling, they are also of relevance to surface long-line fisheries. These ecosystems often encompass unique or fragile habitats—such as deep-sea coral formations or seamounts—that may be inadvertently affected by fishing operations.

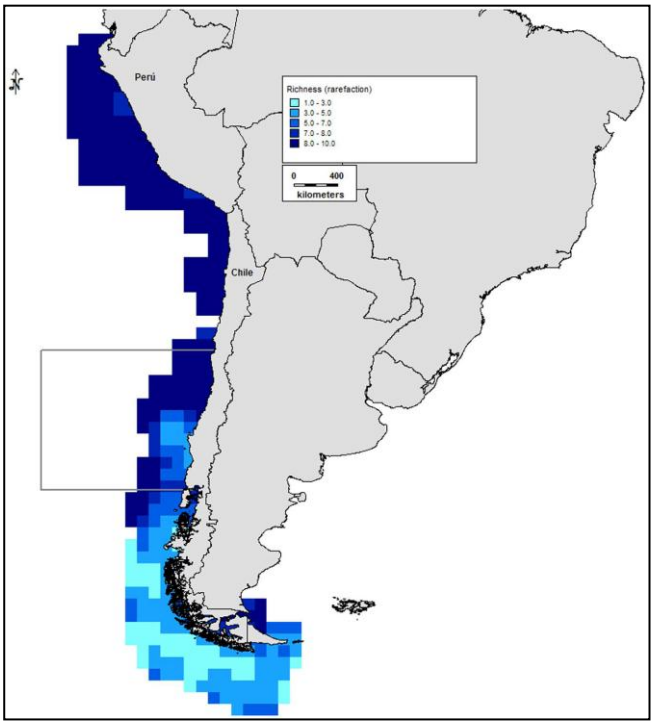
The IATTC has implemented measures aimed at the protection of VMEs by restricting fishing operations, Resolution C-11-08 specifically highlights the necessity of avoiding fishing activity on seamounts and similarly vulnerable areas within the Eastern Pacific Ocean. Fishing vessels are encouraged to report any interactions with VMEs and to adopt precautionary approaches to minimise the potential for environmental damage. These measures form part of a wider framework to promote sustainable fishing practices throughout the region.

### iii. Marine Biodiversity

According to Miloslavich et al. (2011), marine biodiversity in the Tropical Eastern Pacific—encompassing the coastal waters of Ecuador, Colombia, Panama, and Costa Rica—includes at least 6,714 taxa identified at the species level (**Figure 7.5.6.1.2)**. These taxa span four groups of Protista (Foraminifera, Radiolaria, Tintinnida, and Dinoflagellata), two plant phyla (Algae and Angiospermae), and 30 animal phyla.

In relation to the Humboldt Current region, which covers Chile and Peru, the analysis of compiled marine biodiversity data (Miloslavich et al., 2011) reveals three zones of particularly high species richness (**Figure 5.1.6.2**). These are: (a) the northern Peruvian coast between 5° and 8°S, with a peak diversity comprising 501 species, 270 genera, and 193 families; (b) the northern Chilean coast between 22° and 24°S, with 431 species, 273 genera, and 159 families at the point of maximum diversity; and (c) the southern Chilean coast between 52° and 56°S, where 522 species, 324 genera, and 188 families have been recorded. Overall, the documented biodiversity of the Humboldt Current amounts to 10,201 species, with Amphipoda, Gastropoda, and Polychaeta representing the taxa with the highest number of described species.

***Figure 7.5.1.6.2*** *Species richness in the Humboldt Current subregion. Scale represents number of species. (Source: Miloslavich et al., 2011)*




### i. Food web

In marine ecosystems, species predominantly interact through predation. Consequently, top-down control — defined as the regulation of lower trophic levels by one or more apex predators (**Figure 7.5.1.6.3**) is considered a critical component in ecosystem functioning (Cury et al., 2001)

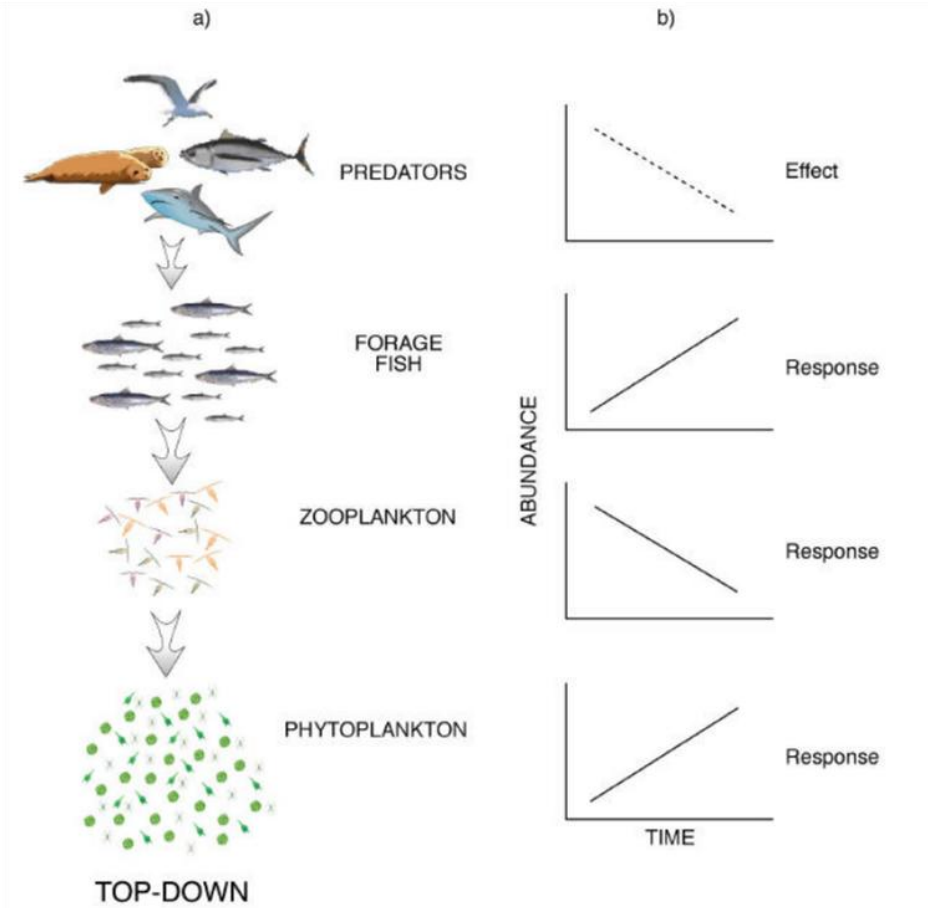


***Figure 7.5.1.6.3*** *(a) Top-down control within a simplified four-level food web in a marine ecosystem. (b) The decreasing size of the top predator populations lead to a reduced predation on the prey that leadsto an increase in the abundance of the prey fish. The increased predation of the fish prey on thezooplankton lead to a decrease in the population size. The diminution of the zooplankton abundancereduces the grazing pressure on the phytoplankton, which consequently becomes more abundant. (Source: Cury et al., 2001)*

To better support the monitoring and management of marine ecosystems, the IATTC has developed an ecosystem model for the Eastern Tropical Pacific (ETP). This model is designed to generate standardised ecological indicators and focuses on understanding the structure and function of the pelagic food web, thereby supporting broader goals of ecosystem integrity and resilience.

A related ecological concern is the potential existence of ecological traps in purse seine fisheries, particularly due to the widespread deployment of drifting Fish Aggregating Devices (FADs). According to the ecological trap hypothesis, animals may be lured into settling in degraded or suboptimal habitats that appear suitable based on historical cues. Research in tropical tuna fisheries suggests that small tuna and various associated species—such as mahi-mahi, rainbow runner, and wahoo—may exhibit prolonged residence under FADs, potentially altering their natural behaviour and biological characteristics. This may include changes in migratory routes, growth rates, physical condition, predation vulnerability, and mortality patterns.
Such artificial aggregation could lead to populations being spatially redistributed in ways that would not occur under natural conditions. Notably, the strong affinity of many pelagic fish for FADs may have unintended consequences for tuna population dynamics, potentially disrupting life-history processes such as spawning and recruitment (e.g., Marsac et al., 2000).

**ii. MPAs**

Ministerial Agreement No. 134 of 24 July 2007 designated the coastal zone extending from the shoreline of Ecuador's continental coast to one nautical mile offshore as a Reserve Area for the production of bio-aquatic species. Within this Reserve Area, the following activities are permitted:

a) The collection, extraction, or manual harvesting of crustaceans and molluscs by traditional artisanal fishers;
b) The use of traditional artisanal fishing gear, including cast nets (“atarraya”) and hand lines;
c) Sport fishing using hand lines and/or fishing rods;
d) The harvesting of oysters or other molluscs through freediving;
e) Non-extractive sport diving;
f) Extractive sport diving under breath-hold conditions (APNEA);
g) The extraction of resources under any fishing modality exclusively for scientific purposes.

In addition, Ministerial Agreement No. 2305 RO #3 of 6 August 1984 and Ministerial Agreement No. 080 of 19 March 1990 established a designated fishing zone extending up to 8 nautical miles offshore, reserved exclusively for artisanal fishers. Within this zone, both artisanal fishing activities and industrial shrimp trawling targeting *Protrachypene precipua* are authorised, subject to compliance with the national Fisheries Law and its corresponding regulations.

Ecuador also participates in the Eastern Tropical Pacific Marine Corridor (CMAR), a regional initiative coordinated by the governments of Costa Rica, Panama, Colombia, and Ecuador. CMAR aims to promote the conservation and sustainable management of marine resources, enhance and harmonise the management of the Marine Protected Areas (MPAs) comprising the corridor, and establish a regional governance framework aligned with national policies and

legislation (León Cabrera, 2018; https://www.iucn.org/es/content/corredor-marino-del-pac%C3%ADfico-este-tropical-cmar).

A notable milestone in this context is the establishment of the Hermandad Marine Reserve in 2022, formalised by Executive Decree No. 319. This newly created MPA, covering 60,000 km² northeast of the Galapagos archipelago, complements the existing Galapagos Marine Reserve and provides connectivity with Costa Rica's Cocos Island MPA. It serves as a protected migratory corridor for several threatened marine species, including sharks, manta rays, sea turtles, and whales. Of the total area, 50% is designated as a strict no-take zone where all extractive activities are prohibited, while the remaining 50% allows regulated fishing activities, explicitly excluding the use of longlines.

Marine Protected Areas (MPAs) within the South Eastern Pacific region that overlap with the area where the Unit of Assessment (UoA) fishery operates are illustrated in **Figure 7.5.1.6.4**. Further information regarding these MPAs may be accessed through platforms such as the MPAtlas (http://mpatlas.org/explore/) or Protected Planet (http://www.protectedplanet.net/).

These habitats are unlikely to be affected by the dorado (*Coryphaena hippurus*) surface longline fishery, which typically sets hooks at depths between 6 and 13 metres (Martínez-Ortíz & Zúñiga-Flores, 2012; Martínez-Ortíz et al., 2015), operating in offshore oceanic waters extending westward beyond 100°W, past the Galapagos archipelago. Given that the same fleet—particularly the *Nodriza* vessels—is used to target both dorado and Swordfish (the target species of this pre-assessment), it was considered appropriate to apply the same level of impact assessment in both cases. As shown in **Figure 7.5.1.6.5**, the spatial overlap between the fleet's operational area and protected habitats remains minimal.

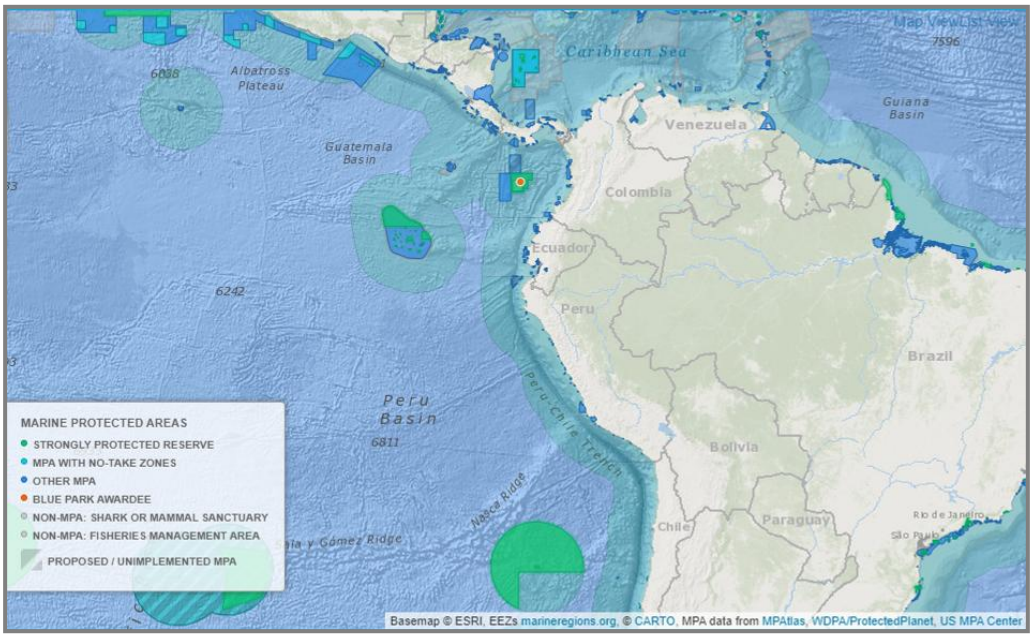



***Figure 7.5.1.6.4*** *Marine protected areas in the Eastern Pacific Ocean, © Marine Conservation Institute 2019. Source: MPAtlas website (http://mpatlas.org/explore/).*

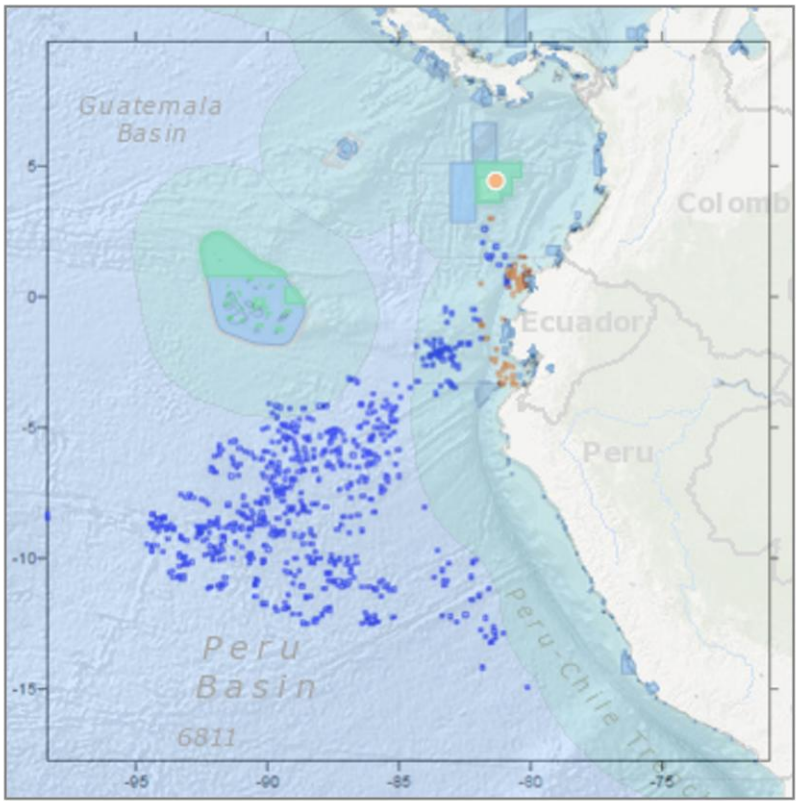



***Figure 7.5.1.6.5*** *Map of the marine protected areas in the Eastern Pacific Ocean with the Mahi mahi's fishing activity from 2008 – 2011 overlapped. Note: the blue squares are mother-ships, while the orange squares are the independent fiber-glass vessels.*

**Table 7.5.1.6.1** summarises key national legal provisions relevant to environmental and animal protection, illustrating how Ecuadorian law integrates nature as a legal subject and sets obligations for both public authorities and private actors.

***Table. 7.5.1.6.1****. Key Regulatory Instruments on Environmental and Animal Protection in Ecuador*

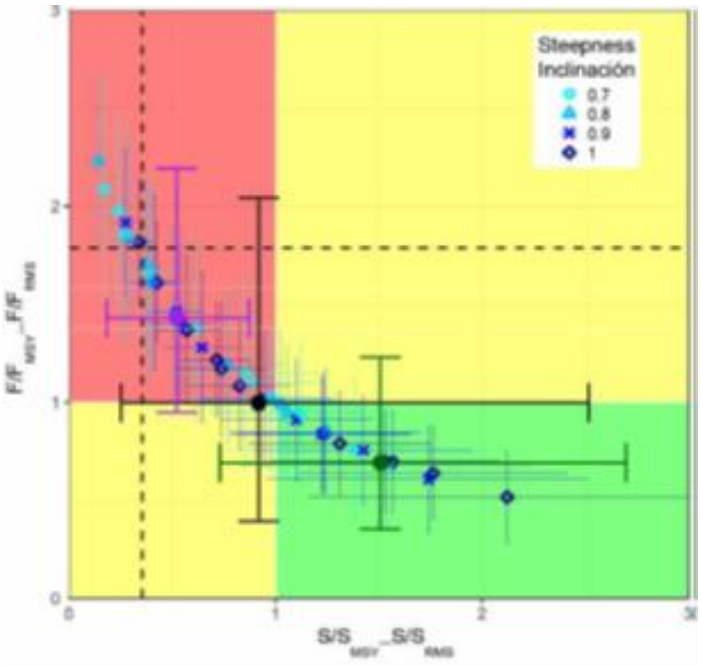
| Jurisdiction / Law | Key Provisions |
|---|---|
| **Ecuador – Environmental – Organic Procedural Code (COGEP), 2015** | - Permits any person to file lawsuits claiming damages on behalf of nature. - Nature can be legally represented by individuals, organisations, collectives, or the Ombudsperson, who may act proactively. - Article 30 defines the capacity to act as plaintiff or defendant, explicitly including nature. |
| **Ecuador – Rights of Nature – Civil Code (latest update: 2005)** | - Despite the constitutional recognition of animal rights as part of nature, animals are still classified as movable property. - Article 585 defines movable property as things that can be moved by their own force (e.g., animals) or by an external force. - Article 639 establishes full ownership of domestic animals. - A proposed animal welfare bill currently before the National Assembly aims to reclassify animals as sentient beings, in line with constitutional and judicial developments. |
| **Ecuador – Rights of Nature – Environmental Code (Código Orgánico del Ambiente, COA), 2018** | - Guarantees the right to a healthy, ecologically balanced environment and upholds the rights of nature for *Buen Vivir* ("good living"). - Informed reforms to the Criminal Code to increase penalties for animal cruelty. - Provides administrative sanctions: fines, confiscation, community service, bans on animal ownership, and recovery costs. - Regulates environmental management, including wildlife, urban fauna, climate change, and waste. - Establishes the duty to safeguard the welfare of both domestic and wild animals. - Assigns regulatory, supervisory, and management responsibilities to autonomous municipal and metropolitan governments. - Empowers municipalities to regulate animal welfare in relation to ownership, breeding, transport, trade, and euthanasia. - Mandates municipal programmes for prevention, control, and management of animal populations, including public awareness campaigns, sterilisation, and responsible adoption. |

Swordfish longline fishing in Ecuador primarily occurs in the Pacific Ocean, covering latitudes from approximately 5°N to 15°S and extending westwards to the 100°W meridian, near the Galápagos archipelago (Martínez-Ortiz, 2015). Artisanal fisheries targeting large pelagic species, including swordfish, are an important activity for Ecuador's coastal communities. Although the use of longlines has been prohibited within the Galápagos Marine Reserve since 2000, there are reports of ongoing illegal use of this fishing gear, sometimes justified by scientific research or economic necessity. Studies indicate that swordfish catches are higher in areas of high primary productivity, such as upwelling zones, which suggests that fishing efforts are concentrated in environmentally favourable regions (Félix-Salazar, 2024). While longline fishing is regarded as a selective technique, it can result in incidental bycatch of non-target species, including sharks and sea turtles, raising ecological concerns about its environmental impact.

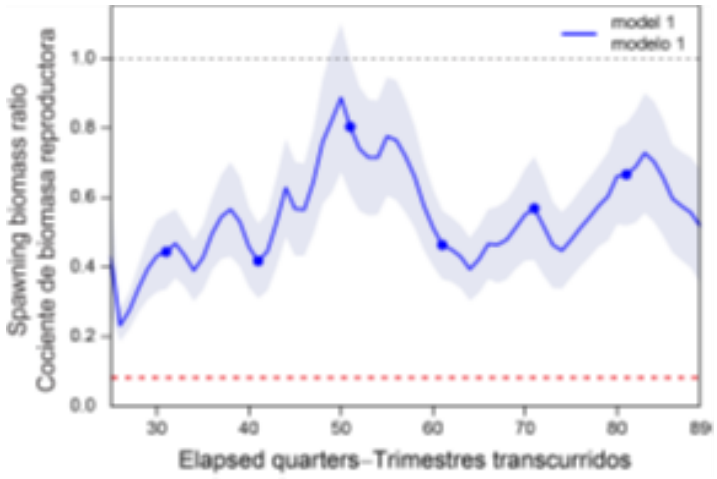
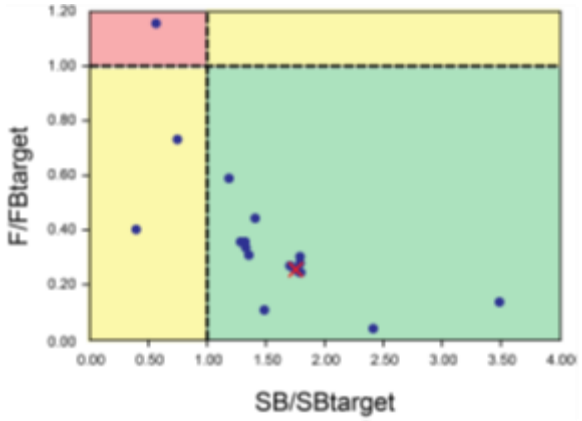
### 7.5.2 Principle 2 Performance Indicator scores

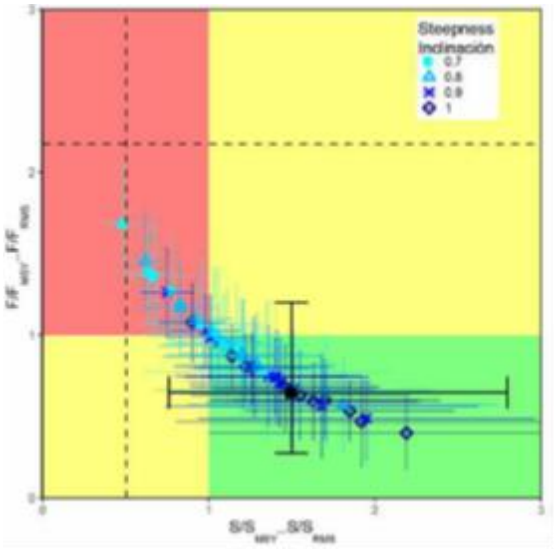
#### PI 2.1.1 – Primary species outcome – UoA1 *Nodrizas*

| PI 2.1.1 | | The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Main primary species stock status** | | | |
| | Guide post | Main primary species are **likely** to be above the PRI.<br><br>OR<br><br>If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding. | Main primary species are **highly likely** to be above the PRI.<br><br>OR<br><br>If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding. | There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY. |
| | Met? | **BET - Yes** | **BET – Yes** | **BET – No** |
| Rationale | | No species classified as “Primary Main” were found exclusively in UoA1, as all such species occur in both UoA1 and UoA2. The **bigeye tuna (*Thunnus obesus*)** was the only species classified as “Primary Main” in UoA1 and it was also recorded in UoA2.<br><br>IATTC Resolution C-16-02 establishes target and limit reference points for biomass and fishing mortality. The interim spawning biomass limit (SLIMITS) is defined as 50% of virgin recruitment (SB=0.5R0SB = 0.5R_0SB=0.5R0) based on a Beverton-Holt stock-recruitment function with a steepness of 0.75, equivalent to 7.7% of virgin spawning biomass (Maunder & Deriso, 2014). The fishing mortality limit (FLIMITF) is the rate that under equilibrium conditions sustains the spawning biomass at SLIMITS.<br><br>EPO bigeye tuna status is informed by the 2020 benchmark stock assessment (Xu et al., 2020) and stock status indicators (SSIs). Stock status relative to reference points was calculated as a weighted average across 44 alternative models using varying steepness values (0.7–1.0). The spawning biomass (S) of bigeye ranged from 51% to 532% of the limit reference level (Slimit); 5 out of the 44 model runs for the benchmark assessment suggested that it was below that limit. The results also showed that Scurrent ranged from 14% to 212% of the level at dynamic MSY;<br><br>The combined distribution of Fcur/FLIMIT from the 44 models tested is bimodal, due to the substantial differences in the estimates between the “short-term models” which are more pessimistic (Fcur/FMSY mostly above 1), and the “medium-term” models that do not assume the recruitment shift (R) is real, which are more optimistic (Fcur/FMSY mostly below 1). For the combined distribution, Fcur is at about 60% of FLIMIT and the probability of (Fcur > FLIMIT is 5%. The probability distribution for Scur/SLIMIT is also bimodal. The combined ratio of Scur/SLIMIT is estimated at approximately 3.07 and the probability of Scur < SLIMIT = 6%. (Xu et al., 2020). (**Figure 7.5.2.1**). | | |

| | |
|---|---|
| Rationale |  <br>**Figure 7.5.2.1**. Kobe plot of the most recent estimates of spawning biomass (S) and fishing mortality (F) relative to their MSY reference points (SMSY_d and FMSY) estimated by the 44 converged reference model runs (see Table 4). Each dot is based on the average F over the most recent three years. The dashed lines represent the limit reference points averaged for the 44 converged reference model runs. The error bars represent the 95% confidence interval of the estimates. The black, purple, and green dots are the combined estimates across all models, all pessimistic models, and all optimistic models, respectively. Source: IATTC, 2022, figure D-8.<br><br>Considering the need for this fishery to be harmonised with overlapping fisheries, the following justification is drawn from Tunacons (2025). In assessing the conformity of this fishery with the MSC Standard, the assessment team concluded that, notwithstanding the inherent uncertainties, the combined results of the benchmark assessment (Xu et al., 2020) and the exploratory analysis (Xu et al., 2023) provide probabilistic outcomes which, even under pessimistic scenarios, lead to the following conclusions:<br>Bigeye tuna (*Thunnus obesus*) displayed a wide and dispersed distribution, predominantly in distant oceanic waters. The highest concentrations were recorded to the southwest of the Galápagos region, beyond the boundaries of its Exclusive Economic Zone. Key aggregation areas were identified between 100°W and 120°W, from 5°S to 15°S, with additional catches between 90°W and 105°W, from 0° to 5°N, and occasional occurrences as far west as 125°W in the central Pacific. The species exhibited a marked preference for deep and likely cooler waters, alongside an increasing tendency to shift towards the southwestern sector of the study area, with coastal zones losing relative importance. This spatial redistribution may be associated with seasonal migrations, environmental changes, or strategic adaptations in fleet operations, and reflects a consistent inclination of the species to occupy more remote and oceanic habitats compared to other tunas.<br>In the pessimistic scenario, the estimated probability of the bigeye stock falling below the limit reference point was approximately 10%. Consequently, the fishery **meets the SG80** requirement that it is *highly likely* the stock is above the PRI (with a probability equal to or greater than 80%). However, it **does not meet the SG100** requirement of a *high degree of certainty* that the stock is above the PRI (with a probability equal to or greater than 95%). |
| **b** | **Minor primary species stock status** |

| | | | | |
|---|---|---|---|---|
| | Guide post | | | **Minor** primary species are **highly likely** to be above the PRI.<br><br>or<br><br>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of **minor** primary species. |
| | Met? | | | **SKJ – Yes**<br>**YFT - Yes** |
| Rationale | | The skipjack tuna (*Katsuwonus pelamis*) was the only species identified as "Primary Minor" occurring exclusively within UoA1, whereas the yellowfin tuna (*Thunnus albacares*) was present in both UoA1 and UoA2.<br><br>**Skipjack Tuna**<br>A stock assessment conducted in 2021 (Maunder et al., 2022) is described as interim by the IATTC scientific team, yet it is considered sufficiently robust to support management advice. The assessment model will continue to be refined ahead of the planned benchmark evaluation in 2024, incorporating new tagging data recently collected (IATTC, 2022).<br><br>Consistent with previous assessments of skipjack tuna in the Eastern Pacific Ocean, MSY-based reference points could not be estimated due to the trade-off between growth and natural mortality, combined with the assumption that recruitment is independent of stock size. This implies that the optimal yield would be achieved by harvesting fish at the youngest ages, suggesting an infinite fishing mortality. Therefore, a proxy target reference point was employed. Maunder et al. (2022) selected a depletion ratio of S_MSY/S_0 = 0.30, based on bigeye and yellowfin tuna values, as a conservative proxy. In contrast, the limit reference points used in the Harvest Control Rule (HCR) adopted in C-16-02 are calculable but not based on maximising yield. Several considerations informed the estimation of this ratio, resulting in the use of a dynamic depletion ratio (SBR_d) to assess stock status against the target reference point and an equilibrium ratio adjusted by average recruitment (SBR) to assess status relative to the limit reference point.<br>The reference model results show that spawning biomass currently exceeds the 30% proxy target of the unexploited spawning biomass under both static (SBR) and dynamic (SBR_d) ratios. Although three sensitivity analyses estimated the stock to be below the proxy target, none indicated that it was below the limit reference point.<br><br>The IATTC Harvest Control Rule accounts for uncertainty, particularly regarding the limit reference point, with uncertainty estimates remaining within acceptable bounds. see (**Figure 7.5.2.2**)<br>Regarding fishing mortality, the target proxy corresponds to the fishing mortality associated with the biomass target (F_0.3). The current fishing mortality estimated by the reference model is below this level (see **Figure 7.5.2.3**) | | |

| | |
|---|---|
| Rationale | Based on the evidence presented, the team concludes with a high degree of certainty (above the 80th percentile) that the stock is above the Precautionary Reference Index (PRI), and therefore the **SG100 management objective is met**.<br><br>  <br><br><br>**Figure 7.5.2.2..** 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 $S_{limit}$. Source: Maunder et al. 2022. Figure 16.<br><br>  <br><br><br>**Figure 7.5. 2..3**. Kobe plot showing the stock status estimates from all the models. The red cross indicates the status using the reference model. Source: Maunder et al. 2022. Figure 40.<br><br>**Yellowfin tuna**<br><br>The results from the most recent stock assessment conducted in 2019 (Minte-Veral et al., 2020) indicate that, at the beginning of 2020, the spawning biomass (S) of yellowfin tuna ranged from 145% to 345% of the limit reference level (S_limit). A total of 48 model runs were performed for the benchmark assessment, representing 12 different model configurations; none of these models suggested that the spawning biomass was below this limit. Additionally, the results showed that the current spawning biomass (S_current) ranged from 49% to 219% of the level corresponding to the dynamic Maximum Sustainable Yield (MSY).<br><br>Furthermore, Minte-Veral et al. (2020) report that, over the period 2017–2019, the fishing mortality (F) for yellowfin tuna ranged from 22% to 65% of the limit reference level (F_limit), with no model indicating that fishing mortality exceeded this threshold.<br><br>The outcomes from the reference models were combined in a risk analysis to provide management advice (Aires et al., 2020b). Probabilities of exceeding the reference points were calculated using each model's result weighted accordingly, with the final estimates presented in the figure below. |

| | |
|---|---|
| | The probability that spawning biomass is below S_MSY is low (12%), while the probability of it being below S_limit is zero. Similarly, there is a low probability (9%) that current fishing mortality (F_current) exceeds F_MSY, and the probability of F_current exceeding F_limit is zero (**Figure 7.5.2.4**).<br><br>Based on the information outlined above, the team considers there to be a high degree of certainty (above the 80th percentile) that the stock is above the Precautionary Reference Index (PRI). Therefore, the **SG100 management objective is considered to be met**.<br><br>  <br><br>**Figure 7.5.2.4.** Kobe (phase) plot of the time series of estimates of spawning stock size (*S*) and fishing mortality (*F*) of yellowfin tuna relative to their MSY reference points. The colored panels are separated by the target reference points (*S*MSY and *F*MSY). Limit reference points (dashed lines), which correspond to a 50% reduction in recruitment from its average unexploited level, based on a conservative steepness (*h*) of 0.75 for the Beverton-Holt stock-recruitment relationship, are merely indicative, since they vary by model and are based on all models combined. The center point for each model indicates the current stock status, based on the average fishing mortality (*F*) over the last three years; The solid black circle represents all models combined; to be consistent with the probabilistic nature of the risk analysis and the HCR, it is based on P(*S*cur/*S*LIMIT<x) = 0.5 and P(*F*cur/*F*MSY>x) = 0.5. The lines around each estimate represent its approximate 95% confidence interval. Source: IATTC, 2022, figure B-9. |
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |
| Data-deficient? (Risk-Based Framework needed) | **No** |

## PI 2.1.1 – Primary species outcome – UoA2 - *Aceros*

| PI 2.1.1 | | The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Main primary species stock status** | | | |
| | Guide post | Main primary species are **likely** to be above the PRI.<br><br>OR<br><br>If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding. | Main primary species are **highly likely** to be above the PRI.<br><br>OR<br><br>If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding. | There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY. |
| | Met? | **BET - Yes** | **BET – Yes** | **BET – No** |
| Rationale | | No species classified as “Primary Main” were found exclusively in UoA2, as all such species occur in both UoA1 and UoA2. The bigeye tuna (*Thunnus obesus*) was the only species classified as “Primary Main” in UoA1, and it was also recorded in UoA2.<br><br>**Bigeye tuna**:<br><br>*(See PI 2.1.1. UoA1)* | | |
| **b** | **Main primary species stock status** | | | |
| | Guide post | | | **Minor** primary species are **highly likely** to be above the PRI.<br><br>or<br><br>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of **minor** primary species. |
| | Met? | | | **ALB – Yes**<br>**YFT - Yes** |

| | |
|---|---|
| Rationale | The albacore tuna (*Thunnus alalunga*) was the only species identified as “Primary Minor” occurring exclusively within UoA2, whereas the yellowfin tuna (*Thunnus albacares*) was present in both UoA1 and UoA2.<br><br>**North Pacific Albacore Tuna**<br><br>The Albacore Working Group (ALBWG) of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) routinely conducts stock assessments for North Pacific albacore tuna. A benchmark assessment was completed in 2023, yielding the following key results:<br>• The spawning biomass in 2021 was estimated at 54% of the unfished spawning stock biomass (SSB) with fishing mortality (F) at 0.7, exceeding both the threshold and limit reference points, which are set at 30% and 14% of unfished SSB, respectively.<br>• The average fishing mortality from 2018 to 2020, corresponding to a spawning potential ratio (SPR) of 59%, was below the target reference point associated with an SPR of 45%.<br>• The Working Group concluded that the stock is unlikely to be overfished relative to the threshold and limit reference points established by the Western and Central Pacific Fisheries Commission (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC). Similarly, overfishing is unlikely to be occurring relative to the target reference point.<br>In 2023, the Commission adopted a Harvest Control Rule (HCR) as per resolution C-23-02, which defines the relationship between stock status and fishing intensity. Collaborative work with ISC has led to the development of criteria for identifying exceptional circumstances that could require suspension or adjustment of the harvest strategy, as outlined in SAC-15 INF-S. The evaluation of such circumstances considers fleet and stock dynamics, as well as implementation and enforcement aspects.<br>Further scientific advice has been provided on interpreting fishing intensity metrics in terms of catch and effort management measures. The ALBWG recommends that required changes in fishing intensity be translated into catch reductions for all fleet groups and effort reductions for surface fleets, noting that effort control is less precise than catch control for surface fleets.<br>Recommendations: Fishing mortality should be maintained at or below the target reference point, given the greater than 50% probability that the spawning biomass exceeds the threshold reference point. Changes in fishing intensity should be implemented through catch and effort measures in accordance with SAC-15 INF-T. Contracting Parties (CPCs) are encouraged to apply the ALBWG’s criteria for identifying exceptional circumstances (SAC-15 INF-S).<br><br>**South Pacific Albacore Tuna**<br>In 2021, in collaboration with the IATTC, the Pacific Community (SPC) conducted a benchmark assessment of South Pacific albacore tuna. This assessment employed a spatially explicit model treating the South Pacific Ocean as a single unit due to limited tagging data. Structural uncertainties were explored through a grid of 72 model variants, with displacement scenarios identified as the principal source of uncertainty.<br>The weighted median results are as follows:<br>• The recent spawning biomass ratio (2016–2019) was estimated at 0.52 (10th–90th percentile: 0.41–0.57) relative to unfished spawning biomass.<br>• There was zero probability that spawning biomass fell below the WCPFC’s limit reference point of 0.2 during 2016–2019.<br>• The recent fishing mortality ratio (2015–2018) was 0.24 (10th–90th percentile: 0.15–0.37) relative to fishing mortality at maximum sustainable yield (FMSY).<br>• There was zero probability that fishing mortality exceeded FMSY in the recent period.<br>The assessment indicates a healthy South Pacific albacore stock with fishing mortality well below sustainable limits. However, spawning biomass has decreased significantly since 2017, likely due to increased longline catches in recent years (see SAC-13-03). The spawning biomass ratio declined from above 0.9 in 1960 to below 0.5 in 2019 (Figure PI 2.1.1.1).<br>Recommendations: Continued collaboration with SPC is recommended to monitor stock condition using population indicators and to conduct a subsequent benchmark assessment within 3 to 4 years. The Commission should also request the WCPFC to coordinate joint efforts with IATTC and SPC scientific staff to explore management strategies for South Pacific albacore. |

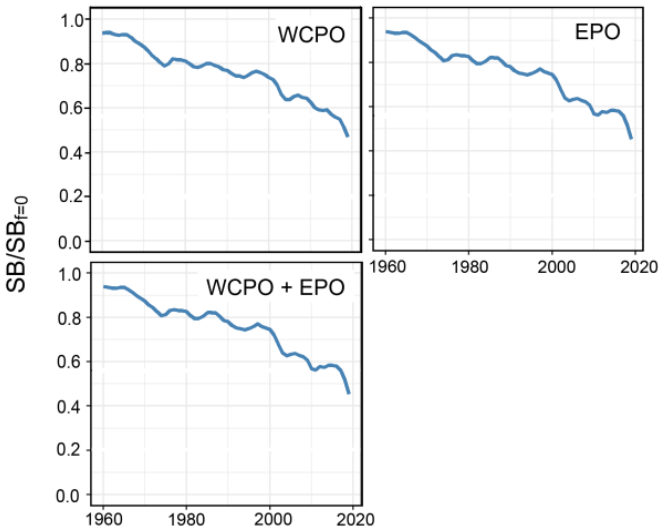



***Figure PI 2.1.1.1:*** *Estimated spawning biomass ratio for South Pacific albacore by management region (adapted from Figure 32 of SAC-15 INF-S).*

**Yellowfin tuna**

*(See PI 2.1.1. UoA1)*

| | |
|---|---|
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |
| Data-deficient? (Risk-Based Framework needed) | **No** |

### PI 2.1.2 – Primary species management strategy

| PI 2.1.2 | | There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Management strategy in place** | | | |
| | Guide post | There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI. | There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI. | There is a **strategy** in place for the UoA for managing main and minor primary species. |
| | Met? | **Yes all UoAs** | **Yes all UoAs** | **No all UoAs** |
| Rationale | | The assessment of the UoAs against this performance indicator demonstrates that comprehensive measures are in place to manage impacts on main and minor primary species. The combination of resolutions, such as C-03-04, C-16-02 (amended in C-23-06) and the recent C-24-01 (which superseded C-21-04) and others, reflects a cohesive strategy designed to achieve sustainability objectives for tropical tunas in the Eastern Pacific Ocean (EPO). These resolutions collectively form the basis for a strategy that **meets SG60 and SG80**, as they include measures targeting biomass conservation, effort limitations, monitoring, and adaptive management mechanisms.<br><br>Key measures include mandatory fishing closures, such as the 72-day purse seine fishing bans (Resolution C-24-01), area closures to protect juvenile tuna ('corralito area'), full retention mandates for all skipjack, bigeye, and yellowfin tuna, bycatch limits to the main longline fishing nations, FADs limitations, and the establishment of harvest control rules (HCRs) that prevent stocks from falling below limit reference points (Resolution C-16-02 and the amendment C-23-06). These measures ensure that impacts are managed at a level consistent with maintaining stocks at or above sustainable levels. Additionally, resolutions addressing fleet capacity (C-02-03), at-sea reporting (C-03-04), and vessel monitoring (C-14-02) further support the implementation of these strategies by enhancing accountability and compliance.<br><br>At the national level, general management measures applicable to all non-target species caught within both UoAs include technical gear specifications, a closed season for dolphinfish—which results in the fleet switching gear from longline targeting dolphinfish (LL-DOL) to longline targeting tunas, billfishes, and sharks (LL-TBS)—as well as a closed census period, mandatory data reporting requirements (including compulsory logbooks), and the obligation under Article 225 of Executive Decree 362/2022 for all interactions to be recorded. Furthermore, an observer programme is implemented, complemented by port inspections to verify landings through official landing certificates.<br>Nevertheless, uncertainties persist concerning the management of bigeye tuna (BET) stocks. Although existing measures effectively regulate both main and minor species within the scope of SG80, recent management actions by the IATTC do not entirely resolve uncertainties regarding the status of BET stocks. This limitation hinders the achievement of SG100, highlighting the necessity for more proactive and targeted management interventions to address the current strategy's gaps. **SG100 is not met**. | | |
| **b** | **Management strategy evaluation** | | | |
| | Guide post | The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species). | There is some **objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved. | **Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved. |
| | Met? | **Yes all UoAs** | **Yes all UoAs** | **No all UoAs** |

| PI 2.1.2 | | There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch | | |
|---|---|---|---|---|
| Rationale | | The strategy for yellowfin, skipjack and bigeye tuna in the IATTC is implemented by restricting the fishing effort of the entire purse seine fishery with closure periods and fishingcapacity limits. **SG60 and SG80 are met**.<br><br>The current closure period for IATTC purse seine vessels is 72 days. With a focus on bigeye tuna and yellowfin tuna (as more vulnerable species than skipjack tuna) Aires-da-Silva et al. (2020) investigated the utility of various closure periods (0, 36, 70, 72, 88, and 100 days) for the IATTC purse seine fishery.<br><br>For the years 2023 and 2024, CPCs shall ensure that vessels that exceeded, during the previous year, the annual catch limit of 1,200 metric tons of bigeye tuna shall increase, during the following year by 10 additional days, the closure period established in paragraph 3 of the resolution C22-05. If during this same period a vessel exceeds the annual catch limit of 1,500 metric tons of bigeye tuna, they shall increase the closure by 13 days; if it exceeds the annual catch limit of 1,800 tons of bigeye tuna, it shall increase its closure by 16 days; if it exceeds the annual catch limit of 2,100 metric tons, it shall increase its closure by 19 days; and if it exceeds the annual catch limit of 2,400 metric tons, itshall increase its closure by 22 days, in addition to the closure stipulated in paragraph 3 of the resolution above (C22-05).<br><br>However, the testing does not support a high degree of confidence that the partial strategy or strategy will be effective, based on information directly related to the fishery and/or species involved; consequently**, SG100 is not met.** | | |
| **c** | **Management strategy implementation** | | | |
| | Guide post | | There is **some evidence** that the measures/partial strategy is being **implemented successfully**. | There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its overall objective as set out in scoring issue (a).** |
| | Met? | | **Yes** | **No** |
| Rationale | | As per the conservation measures for tropical tunas in the EPO outlined in Resolution C-24-01, each CPC is required to strengthen the monitoring and control of tuna catches. This includes utilizing data from onboard observers, logbooks, port sampling, and information from tuna processing facilities. These measures enhance the ability to monitor catches by operators and captains, supporting compliance with the Resolution's objectives and achieving.<br><br>UoAs catches of each of the tropical tuna species are low at EPO stock level (67kg for UoA1 and 30kg for UoA2), and they are definitely below the 500 metric tons catch limit imposed to each CPCs through C-24-01. Thus, **SG60 and SG80 are met**.<br><br>Considering that the data reported by UoA1 records tunas spp. without species-level identification, and given the low observer coverage of the fleet, the SG100 criterion is not met. | | |
| **d** | **Shark finning** | | | |
| | Guide post | It is **likely** that shark finning is not taking place. | It is **highly likely** that shark finning is not taking place. | There is a **high degree of certainty** that shark finning is not taking place. |
| | Met? | **N/A** | **N/A** | **N/A** |
| Rationale | | No primary species are sharks, and so this SI is not scored (SA3.5.2, MSC 2018). | | |
| **e** | **Review of alternative measures** | | | |
| | Guide post | There is a review of the potential effectiveness and | There is a **regular** review of the potential | There is a **biennial** review of the potential |

| PI 2.1.2 | | There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch | | |
|---|---|---|---|---|
| | | practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species. | effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate. | effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate. |
| | Met? | **N/A** | **N/A** | **N/A** |
| Rationale | | A full retention policy is in place for tuna in the convection area. The only primary species caught by the UoA are tropical tunas. These are highly valuable species which are caught in low volumes. There is no incentive for discarding and, as far as the team is aware, there are no discards. Thus, this SI is not applicable. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 2.1.3 – Primary species information

| PI 2.1.3 | | Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species | | |
|---|---|---|---|---|
| Scoring issue | | SG 60 | SG 80 | SG 100 |
| a | Information adequacy for assessment of impact on main primary species | | | |
| | Guide post | Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status.<br><br>OR<br><br>**If RBF is used to score PI 2.1.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species. | Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status.<br><br>OR<br><br>**If RBF is used to score PI 2.1.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species. | Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status. |
| | Met? | **Yes all UoAs** | **Yes all UoAs** | **Yes all UoAs** |
| Rationale | | The stock assessment of primary species relies on robust data sources, including observer data, logbooks, cannery data, and port sampling. These provide sufficient information to meet **SG60**.<br><br>The skippers of both mother-ship and steel vessels have the obligation to record all catches in their logbooks. All landings shall be inspected by inspectors to get the Fisheries Landing Monitoring and Control Certificate (CMCDP). All potential primary species impacted by both UoAs would have commercial value and there is no incentive for underreporting or discarding at sea. Thus, the team considers that the available data sources are adequate to assess with a high degree of certainty that the UoA is not impacting on any main primary component. **SG60 and SG80 are met.**<br><br>Combined, these data sources are sufficient to evaluate the impact of the UoA on primary species. With adherence to IATTC measures, including a full retention policy for tuna species, **SG100 could be reached**. | | |
| b | Information adequacy for assessment of impact on minor primary species | | | |
| | Guide post | | | Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status. |
| | Met? | | | **Yes** |
| Rationale | | The only minor primary species impacted by the UoA are highly valuable tuna species, which are caught at low volumes. There is no incentive for underreporting or discarding at sea. Therefore, some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status and **SG100 is met** | | |
| c | Information adequacy for management strategy | | | |
| | Guide post | Information is adequate to support **measures** to manage **main** primary species. | Information is adequate to support a **partial strategy** to manage **main** primary species. | Information is adequate to support a **strategy** to manage **all** primary species and evaluate with a **high** |

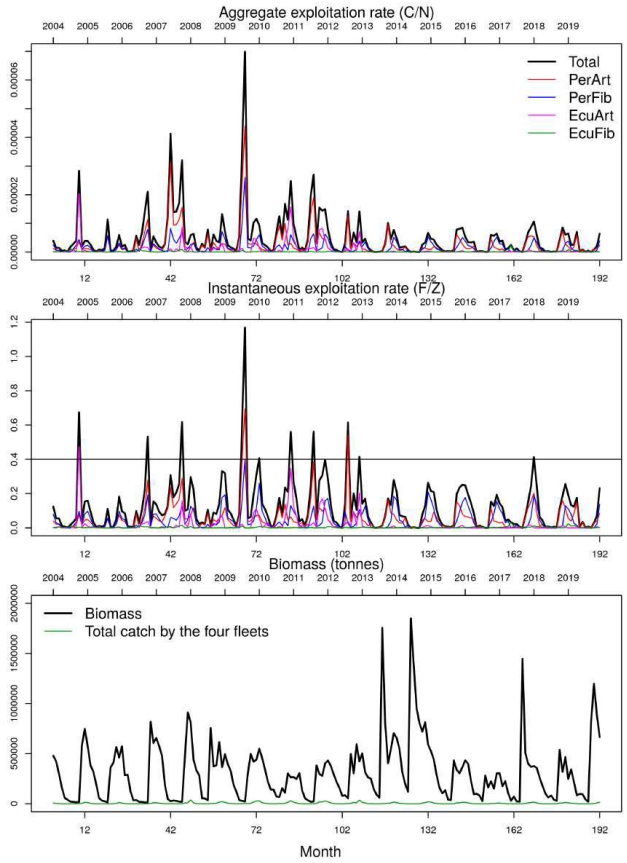
| PI 2.1.3 | | Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species | | |
|---|---|---|---|---|
| | | | | **degree of certainty** whether the strategy is achieving its objective. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Information is widely available for the primary tuna species that have been identified in both UoAs. The fleet can be tracked by VMS and the skippers have the obligation to record all catches in their logbooks.<br><br>Although the MPCEIP-SRP-2021-0208-A introduced progressively higher observer coverage targets for the longline fleet — 10% until December 2022, increasing to 15% in 2023 and 20% in 2024 — this regulation is not exclusive to the Ecuadorian fleet, and the team is not aware whether this commitment to increase observer coverage has been met. No new information is available for the current year (2025).<br><br>Therefore, information is adequate to support a **partial strategy** to manage main primary species and **SG60 and SG80 are met** but not for SG100. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 2.2.1 – Secondary species outcome – UoA 1 - Nodrizas

| PI 2.2.1 | | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Direct effects** | | | |
| | Guide post | Main secondary species are **likely** to be above biologically based limits.<br><br>OR<br><br>If below biologically based limits, there are **measures** in place expected to ensure that the UoA does not hinder recovery and rebuilding. | Main secondary species are **highly likely** to be above biologically based limits.<br><br>OR<br><br>If below biologically based limits, there is either **evidence of recovery or a demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding.<br>AND<br>Where catches of a main secondary species outside of biological limits are **considerable**, there is either **evidence of recovery** or a, **demonstrably effective strategy in place between those MSC UoAs that** | There is a **high degree of certainty** that main secondary species are above biologically based limits. |

| PI 2.2.1 | | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit | | |
|---|---|---|---|---|
| | | | **have considerable catches of the species**, to ensure that they collectively do not hinder recovery and rebuilding. | |
| | Met? | **DOL – Yes**<br>**Sharks – Yes**<br>**BUM – Yes**<br>**LEC; LAG; MLS - DD** | **DOL – Yes**<br>**Sharks – Yes**<br>**BUM – Yes**<br>**LEC; LAG; MLS - DD** | **DOL – No**<br>**Sharks – No**<br>**BUM – Yes**<br>**LEC; LAG; MLS - DD** |
| Rationale | | Within the UoA1, the species classified as **Secondary - Main** and exclusively present in this unit are the Mahi-mahi (*Coryphaena hippurus*), the Pelagic thresher (*Alopias pelagicus*), and the Blue shark (*Prionace glauca*). Official catch data provided by the client (source a), spanning the period from 2019 to 2024, indicate that the industrial and artisanal fleet of Nodrizas and associated fibres in UoA1 landed a total of 2,569,574 kg.<br>According to these official records, Mahi-mahi accounted for 0.87% of the total landings (53,290.3 kg), the Pelagic thresher represented 0.61% (31,185.79 kg), and the Blue shark comprised 0.05% (245,528.5 kg) of the catches.<br>In contrast, national observer data (source c) for the same fleet and period report considerably different proportions. The total number of individuals recorded was 544,446, with Mahi-mahi comprising 68.90% of the observed catch, the Pelagic thresher 5.53%, and the Blue shark 9.83%. These marked discrepancies between official landing volumes and observer data may be attributable to several factors. Observer data are based on the number of individuals caught and observed during fishing operations, whereas official landings report total weight, which can vary significantly due to differences in individual size, selectivity, and reporting practices. Additionally, differences might reflect underreporting, misidentification, or temporal and spatial variability in fishing effort.<br><br>**Mahi-mahi**<br>The stock identity of dolphinfish (*Coryphaena hippurus*) in the Eastern Pacific Ocean remains somewhat unresolved, with genetic studies indicating a predominantly panmictic population across the region, encompassing the Gulf of Panama, Costa Rica, Colombia, Ecuador, and extending to Peru. However, evidence suggests the existence of seasonal spatial structure, with a likely oceanic migratory component moving closer to coastal waters for feeding and spawning around October-November, and a coastal resident group present primarily north of the Equator (Lasso & Zapata, 1999; IATTC, 2016; Ochoa-Zavala et al., 2022). Recent stock assessments conducted at a regional scale within the Peruvian and Ecuadorian exclusive economic zones (EEZs) using length-structured and depletion models (Aires-da-Silva et al., 2016; Roa-Ureta et al., 2022) characterize dolphinfish as a highly productive and resilient species with a fast population turnover and high intrinsic growth rate (r). The most recent comprehensive assessment (Roa-Ureta et al., 2022) employed monthly catch and effort data from four artisanal longline fleets between 2004 and 2019, revealing that exploitation rates have consistently remained below the sustainable threshold of 0.4, indicating no evidence of overfishing or an overfished status throughout the time series. Biomass estimates demonstrate marked fluctuations, with the lowest biomass approximately 75,000 tonnes in 2016 and a near 400,000 tonnes peak estimated for 2020 (Figures PI 2.2.1.1 and PI 2.2.1.2). | | |

| PI 2.2.1 | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit |
|---|---|




***Figures PI 2.2.1.1*** *– Depletion model results for the dolphinfish (Coryphaena hippurus) in the Southeast Pacific: aggregate exploitation rate for each fleet and in total (top), instantaneous exploitation rate per fleet and in total (middle) and stock biomass and catch in weight (bottom) (Roa-Ureta et al., 2022).*

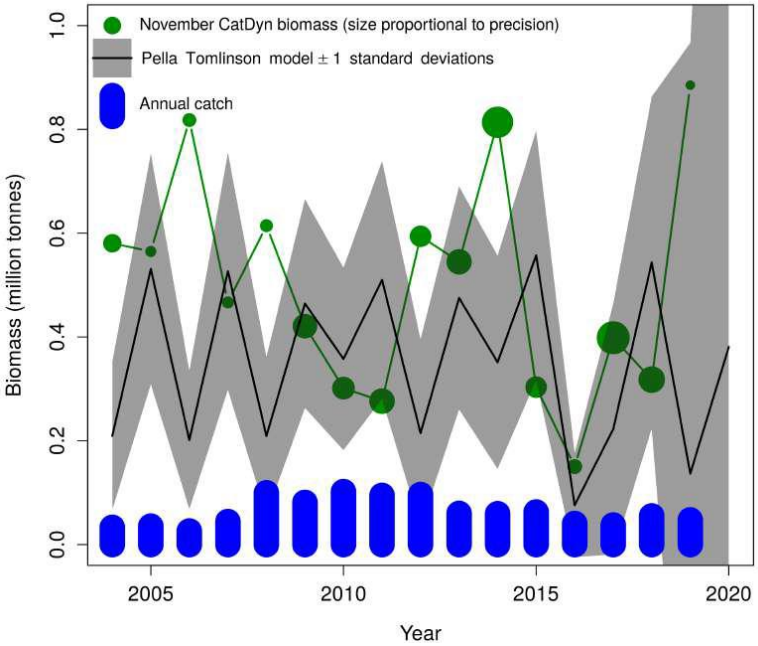



***Figure PI 2.2.1.2****- November stock biomass estimated by generalized depletion model, total annual catch by four artisanal longline fleets, and fitted Pella-Tomlinson model of population dynamics of the dolphinfish in the Southeast Pacific (Peru and Ecuador) (Roa-Ureta et al., 2022).*

The stock's asymmetric biomass production function and variable dynamics complicate the definition of maximum sustainable yield (MSY), which is estimated to be six times higher than the average historical catch (~75,000 tonnes), suggesting that current harvest levels are well below

| PI 2.2.1 | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit |
|---|---|
| | sustainable limits. While some parameters, such as natural mortality, remain uncertain and vary between assessments, the overall biological and fishery evidence supports a conclusion that the dolphinfish stock in the Southeast Pacific is robust, productive, and currently sustainably exploited. This supports that the stock **meets SG60 and SG80**, given it is below biologically based limits and there is no evidence of hindrance to recovery or rebuilding. However, due to remaining uncertainties and the absence of demonstrable recovery or a fully effective partial strategy, **SG100 is not met.**<br><br>**Sharks: Pelagic thresher, Bigeye thresher shark and Blue shark**<br><br>Due to the generally limited availability of catch and biological data for most shark bycatch species in pelagic fisheries of the Eastern Pacific Ocean (EPO), Griffiths et al. (2022) applied an Ecological Risk Assessment (ERA) framework—specifically the Ecological Assessment for the Sustainable Impacts of Fisheries (EASI-Fish)—to evaluate the vulnerability of 32 bycatch species to the cumulative impacts of multiple fisheries in the region. The study estimated proxies for fishing mortality ($F_{(2019)}$) and spawning stock biomass per recruit ($SBR_{(2019)}$) for 2019, comparing them with biological reference points ($F_{40}$% and $SBR_{40}$%). These reference points represent, respectively, the fishing mortality rate that reduces the spawning potential ratio (SPR) to 40%, and the corresponding *SBR* value at that mortality level.<br>The analysis found that 20 species, including the Blue shark (*Prionace glauca*) the Pelagic thresher shark (*Alopias pelagicus*) and the bigeye thresher shark (*Alopias superciliosus*), exceeded these thresholds and were therefore classified as “most vulnerable.” For the Blue shark, $F_{(2019)}/F_{40}$% = 4.526 (± 1.623) and $SBR_{(2019)}/SBR_{40}$% = 0.111 (± 0.134). For the Pelagic thresher shark, these values were $F_{(2019)}/F_{40}$% = 1.903 (± 0.084) and $SBR_{(2019)}/SBR_{40}$% = 0.446 (± 0.037). Given these results, neither species can be considered above biologically based stock limits. Consequently, the evaluation considered whether management measures exist that prevent the Unit of Assessment (UoA) from impeding population recovery and rebuilding. Measures outlined in PI 2.2.2(a), together with landing data, indicate that the UoA maintains bycatch levels of all non-target species, including these two sharks, at relatively low levels.<br>From 2019 to 2024, official landing records (Source a) show that Blue shark represented 0.05% of total landings (245,528.5 kg) and Pelagic thresher 0.61% (31,185.79 kg). In contrast, national observer data for the same fleet (source c) and period, based on numbers of individuals rather than total weight, recorded 544,446 individuals, with Blue shark accounting for 9.83% and Pelagic thresher 5.53%. These discrepancies are likely due to differences in size distribution, fishing selectivity, and the inherent mismatch between weight-based landings and number-based observer counts.<br>The species are of significant commercial value and are landed without formal catch limits, providing little incentive for under-reporting or discarding at sea. On this basis, the fishery is considered to meet the second component of the rationale for SG60, and SG60 is therefore achieved.<br>However, regarding SG80, the $F_{(2019)}$ estimates reported by Griffiths et al. (2022) considerably exceed their respective biological reference points, indicating no evidence of recovery. Given the inherent vulnerability of sharks, characterised by longevity and low fecundity, even selective fisheries capturing relatively few individuals can have severe effects on population viability (Lewison et al., 2004). Demonstrating an effective partial strategy to avoid impeding recovery would require accurate estimation of interaction magnitude, which is currently impossible due to low observer coverage and the absence of post-capture survival data, as discussed under PI 2.2.2(b). Accordingly, **SG80 is not met.**<br><br>**Common Secondary – Main species in UoA1and UoA2**<br><br>**Pacific blue marlin**<br>The best information currently available indicates that blue marlin constitutes a single world-wide species (M*akaira nigricans*) and a single stock in the Pacific Ocean. For this reason, statistics on catches are compiled, and analyses of stock status are made, for the entire Pacific Ocean (IATTC, 2022).<br>The most recent full assessment of the status and trends of the species was conducted in 2021, which included data through 2019 (IATTC, 2022). It indicated that blue marlin in the Pacific Ocean currently has a stock biomass that is 17% above $SSB_{MSY}$, while fishing mortality is 50% of $F_{MSY}$, |

<table>
<tr><td>PI 2.2.1</td><td colspan="4">The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit</td></tr>
<tr><td></td><td colspan="4">and is therefore neither overfished nor subject to overfishing. The cumulative catches of based on national landings (source a) account for around 12% of the total volume for the period analised. There are no other overlapping MSC—certified fisheries assessing this species as a main secondary species, so no cumulative impacts have to be considered for scoring SG80.<br>Based on the above, SG60 and SG80 are met.<br>Over the past seven years (2014–2020), however, annual catches increased in the EPO, averaging 3,994 t, indicating that catches may currently be in the vicinity of MSY (IATTC, 2022). Despite current catches are close to MSY, the team considers that there is a high degree of certainty (>80%ile) that the stock is above PRI. SG100 is met.<br><br>Data deficient species: Bony fish (3 species)<br>There are no biologically based limits established and the status remain unknown for the following species:<br>• LEC (Escolar / Lepidocybium flavobrunneum)<br>• LAG (Opah / Lampris guttatus)<br>• MLS (Striped marlin / Kajikia audax)<br>Therefore, they are all classified as Data Deficient species according to FCR7.7.6, and RBF shall be triggered for assessing their status against this SI.</td></tr>
<tr><td rowspan="3">b</td><td colspan="4">Minor secondary species stock status</td></tr>
<tr><td>Guide post</td><td></td><td></td><td>Minor secondary species are highly likely to be above biologically based limits.<br><br>OR<br><br>If below biologically based limits’, there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species</td></tr>
<tr><td>Met?</td><td></td><td></td><td>Bony fish: DD<br>Sharks: No</td></tr>
<tr><td>Rationale</td><td colspan="4">Data deficient species: Bony fish (11 species)<br>There are no biologically based limits established and the status remain unknown for the following species encountered exclusively in the UoA1:<br>• EPO (Dolphinfish / Dorado / Coryphaena equiselis)<br>• SNK (Snoek / La sierra / Thyrsites atun)<br>• NAU (Pilot fish / Pez Piloto / Naucrates ductor)<br>• OIL (Oilfish / Escolar raposo / Ruvettus pretiosus)<br>• BLL (Atlantic rubyfish / Japuta negra / Taractes rubescens)<br>• RBT (Ribbontail / Rey de los salmones / Trachipterus altivelis)<br>• BRU (Southern Rays Bream / Pez hacha / Brama australis)<br>• RRU (Rainbow runner / Salmonete / Elagatis bipinnulata)<br>• LFL (Oceanic puffer / Pez globo / Lagocephalus lagocephalus)<br>• MSL (Sharptail mola / Mola coliaguda / Masturus lanceolatus)<br>• MOX (Sunfish / Pez sol / Mola mola)<br>Therefore, they are all classified as Data Deficient species according to FCR7.7.6, and RBF shall be triggered for assessing their status against this SI.<br><br>Shark species (3 species and 1 group)<br>A total of three shark species and one group were identified as being impacted by UoA1 and classified as minor secondary species. These are: no identified thresher sharks (Alopias spp.),</td></tr>
</table>

| PI 2.2.1 | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit |
|---|---|
| | blacktip shark (*Carcharhinus limbatus*), dusky shark (*Carcharhinus obscurus*), and longfin mako shark (*Isurus paucus*). For scoring purposes, these four taxa are treated as a single scoring element. Unidentified thresher sharks and longfin mako, were also found in the UoA2.<br>As outlined in SI(a), Griffith et al. (2022) quantified the vulnerability of 32 bycatch species to the cumulative impacts of multiple fisheries in the Eastern Pacific Ocean (EPO). Estimates for a proxy of fishing mortality (F2019) and spawning biomass per recruit (SBR2019) for 2019 exceeded the relevant biological reference points (F40% and SBR40%) for 20 species, which were thereby classified as "most vulnerable". This group includes the blacktip shark (*C. limbatus*) and the shortfin mako shark (*Isurus oxyrinchus*). Three species were categorised as "increasingly vulnerable", one of which is among the species assessed here: the dusky shark (*C. obscurus*). Finally, nine species were classified as "least vulnerable", of which only one is assessed here: the longfin mako shark (*I. paucus*). Table PI2.2.1.1 presents the estimated mean values (± standard deviation) for the proxy fishing mortality (F2019), spawning stock biomass-per-recruit (SBR2019), and their corresponding biological reference points (F40% and SBR40%) for 32 shark species caught in pelagic fisheries of the Eastern Pacific Ocean in 2019. The colour coding reflects the vulnerability classification of each stock, with red indicating "most vulnerable", orange denoting "increasingly vulnerable", and green representing "least vulnerable", as defined by Griffith et al. (2022; Table 6).<br>On this basis, only one of the three assessed shark species (the longfin mako shark) can be considered likely to be above its biologically based limits. Consequently, the assessment team considers that the first part of the rationale for SG100 is not satisfied for the minor secondary shark species impacted by the UoA. The next step is therefore to evaluate whether there is evidence that the UoA does not hinder the recovery and rebuilding of these secondary species.<br>Griffith et al. (2022) estimated that the proxy for fishing mortality exceeded its biological reference point for 13 of the 14 species assessed in their study. Sharks are long-lived, low-fecundity species, and taxa with such life-history traits are highly vulnerable; even selective fisheries capturing only a small number of individuals may have substantial adverse effects on the viability of their populations (Lewison et al., 2004). For it to be concluded that there is evidence the UoA does not hinder recovery and rebuilding, it would be essential to obtain accurate estimates of the magnitude of interactions. However, this is not feasible due to the low observer coverage and the absence of information on post-capture survival rates. Therefore, **SG100 is not met**.<br><br>***Table PI2.2.1.1****. Estimated mean (+/- standard deviation) values for proxy fishing mortality (F2019), spawning stock biomass-per-recruit (SBR2019), and biological reference points (F40% and SBR40%) for 32 shark species in 2019 caught in pelagic fisheries of the eastern Pacific Ocean. Red, orange and green colors indicate scenarios where the stock was classified as "most vulnerable", "increasingly vulnerable" or "least vulnerable", respectively. Source: Griffith et al, 2022. Table 6.* |

| PI 2.2.1 | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit |
|---|---|

| Code | Species | $F_{2019}/F_{40\%}$ | $F_{2019}/F_{40\%}$ Std Dev | $SBR_{2019}/SBR_{40\%}$ | $SBR_{2019}/SBR_{40\%}$ Std Dev |
|---|---|---|---|---|---|
| ALV | *Alopias vulpinus* | 0.924 | 0.355 | 1.126 | 0.262 |
| BRO | *Carcharhinus brachyurus* | 1.356 | 0.396 | 0.782 | 0.262 |
| BSH | *Prionace glauca* | 4.526 | 1.623 | 0.111 | 0.134 |
| BTH | *Alopias superciliosus* | 6.404 | 2.526 | 0.030 | 0.036 |
| CCA | *Carcharhinus altimus* | 4.173 | 1.014 | 0.199 | 0.084 |
| CCE | *Carcharhinus leucas* | 4.284 | 1.006 | 0.073 | 0.066 |
| CCG | *Carcharhinus galapagensis* | 0.615 | 0.131 | 1.366 | 0.146 |
| CCL | *Carcharhinus limbatus* | 5.911 | 0.520 | 0.012 | 0.007 |
| CCP | *Carcharhinus plumbeus* | 2.980 | 0.508 | 0.409 | 0.075 |
| CCR | *Carcharhinus porosus* | 6.814 | 2.616 | 0.189 | 0.094 |
| CNX | *Nasolamia velox* | 1.559 | 0.339 | 0.737 | 0.147 |
| DUS | *Carcharhinus obscurus* | 0.610 | 0.133 | 1.431 | 0.167 |
| FAL | *Carcharhinus falciformis* | 7.447 | 0.477 | 0.002 | 0.001 |
| ISB | *Isistius brasiliensis* | 0.021 | 0.020 | 2.171 | 0.381 |
| LMA | *Isurus paucus* | 1.104 | 0.858 | 1.142 | 0.533 |
| LMD | *Lamna ditropis* | 0.264 | 0.154 | 2.026 | 0.262 |
| OCS | *Carcharhinus longimanus* | 1.706 | 0.427 | 0.581 | 0.229 |
| POR | *Lamna nasus* | 0.102 | 0.051 | 2.260 | 0.121 |
| PSK | *Pseudocarcharias kamoharai* | 1.529 | 0.159 | 0.648 | 0.089 |
| PTH | *Alopias pelagicus* | 1.903 | 0.084 | 0.446 | 0.037 |
| RHN | *Rhincodon typus* | 0.738 | 0.694 | 1.510 | 0.684 |
| RHU | *Rhizoprionodon longurio* | 3.504 | 0.380 | 0.161 | 0.039 |
| SCK | *Dalatias licha* | 2.411 | 3.670 | 1.083 | 0.734 |
| SMA | *Isurus oxyrinchus* | 6.254 | 1.468 | 0.019 | 0.029 |
| SPE | *Sphyrna media* | 6.648 | 0.422 | 0.083 | 0.011 |
| SPK | *Sphyrna mokarran* | 3.192 | 0.649 | 0.163 | 0.099 |
| SPL | *Sphyrna lewini* | 7.196 | 0.821 | 0.006 | 0.003 |
| SPZ | *Sphyrna zygaena* | 7.808 | 0.382 | 0.002 | 0.001 |
| SSN | *Sphyrna corona* | 4.470 | 0.794 | 0.084 | 0.046 |
| SSQ | *Zameus squamulosus* | 1.512 | 2.147 | 1.235 | 0.622 |
| TIG | *Galeocerdo cuvier* | 0.708 | 0.624 | 1.511 | 0.606 |
| WSH | *Carcharodon carcharias* | 0.070 | 0.032 | 2.337 | 0.076 |

| | |
|---|---|
| Draft scoring range | **DD** |
| Information gap indicator | **Information sufficient to score PI** |
| Data-deficient? (Risk-Based Framework needed) | **No** |

## References


Aires-da-Silva, A., Valero, J., Maunder, M., Minte-Vera, C., Lennert-Cody, C., Román, M., Martínez-Ortiz, J., Torrejón-Magallanes, E., & Carranza, M. (2016). Exploratory stock assessment of dorado (*Coryphaena hippurus*) in the southeastern Pacific Ocean. *IATTC Technical Report* SAC-07-06a(i).

IATTC. (2016). *Report of the 21st Technical Meeting on Dorado*. Inter-American Tropical Tuna Commission. Lima, Peru, 27–29 October 2015.

Lasso, J., & Zapata, L. (1999). Fisheries and biology of *Coryphaena hippurus* (Pisces: Coryphaenidae) in the Pacific coast of Colombia and Panama. *Scientia Marina*, *63*(3-4), 387–399.

Ochoa-Zavala, M., Diaz-Jaimes, P., Ortega-García, S., & Galván-Magaña, F. (2022). Genetic divergence at species boundaries of the dolphinfish (*Coryphaena hippurus*) in the Tropical Eastern Pacific. *PeerJ*. https://doi.org/10.7717/peerj.14389

Roa-Ureta, R. H., Amancio, G. R., Abanto, P. M., Izquierdo, I. G., Sior, A. A. N., Elías, E., & Peralta, M. (2022). *Stock assessment of the dolphinfish (Coryphaena hippurus) in the South-East Pacific Ocean* (IATTC Doc SAC-13 INF-O). Inter-American Tropical Tuna Commission.

### PI 2.2.1 – Secondary species outcome – UoA 2 - Aceros

| PI 2.2.1 | | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Direct effects** | | | |
| | Guide post | Main secondary species are **likely** to be above biologically based limits.<br><br>OR<br><br>If below biologically based limits, there are **measures** in place expected to ensure that the UoA does not hinder recovery and rebuilding. | Main secondary species are **highly likely** to be above biologically based limits.<br><br>OR<br><br>If below biologically based limits, there is either **evidence of recovery or a demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding.<br>AND<br>Where catches of a main secondary species outside of biological limits are **considerable**, there is either **evidence of recovery** or a, **demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species**, to ensure that they collectively do not hinder recovery and rebuilding. | There is a **high degree of certainty** that main secondary species are above biologically based limits. |
| | Met? | **All species: DD** | **All species: DD** | **All species: DD** |
| Rationale | | Within the UoA2, the species classified as Secondary - Main and exclusively present in this unit is BLM (Black marlin / Marlín negro / Istiompax indica) - DD<br>All the other species, were also encountered in UoA1 (see PI 2.2.1 UoA1), and there are no biologically based limits established and the status remain unknown for the following species:<br>• MLS (Striped marlin / Kajikia audax)<br>• BUM (Blue marlin / Makaira nigricans)<br>• LEC (Escolar / Lepidocybium flavobrunneum)<br>• LAG (Opah / Lampris guttatus)<br>• BTH (Bigeye thresher / Alopias superciliosus)<br>• WAH (Wahoo / Acanthocybium solandri)<br>Therefore, they are all classified as Data Deficient species according to FCR7.7.6, and RBF shall be triggered for assessing their status against this SI. | | |
| **b** | **Minor secondary species stock status** | | | |
| | Guide post | | | Minor secondary species are highly likely to be |

| PI 2.2.1 | | The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit | | |
|---|---|---|---|---|
| | | | | above biologically based limits.<br><br>OR<br><br>If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species |
| | Met? | | | **No** |
| Rationale | | **Data deficient species: Bony fish (12 species) and ray species (2 species)**<br>There are no biologically based limits established and the status remain unknown for the following species:<br>• SSP (Shortbill spearfish) DD<br>• SFA (Indo-Pacific sailfish / Pez vela del Indo-Pacífico / Istiophorus platypterus) DD<br>• SSP (Shortbill spearfish / Marlín trompa corta / Tetrapturus angustirostris) DD<br>• SFA (Indo-Pacific sailfish / Pez vela del Indo-Pacífico / Istiophorus platypterus) DD<br>• ALE (Lanzón Nariz Corta / Alepisaurus brevirostris) DD<br>• ALX (Short snouted lancetfish / Alepisaurus ferox) DD<br>• ASF (Razorback scabbardfish / Sable Aserrado / Assurger anzac) DD<br>• GES (Snake mackerel / Caballa Serpiente / Gempylus serpens) DD<br>• WPM (Pacific harvestfish / Pámpano / Peprilus medius) DD<br>• DSI (Longnose stringray / Raya Látigo / Dasyatis longa)<br>• RJC (Thornback ray / Raya de clavos / Raja clavata)<br><br>However, PF4.1.4 allows the team to avoid conducting RBF on 'minor' species when evaluating PI2.1.1 or 2.2.1 as far as final PI score is adjusted downward according to clause PF5.3.2. Due to the high number of different species to be assessed as minor secondary species the assessment team decided to take this option. Therefore, **in accordance with PF5.3.2.1 the final PI score shall not be greater than 80.**<br><br>**Sharks: Tiger shark, Crocodile shark, Thresher shark, Galapagos shark, Porbeagle, Spiny dogfish, and Spotted houndshark**<br><br>A total of nine shark species were identified as being impacted by the Unit of Assessment (UoA) and classified as minor secondary species. These are: Tiger shark (*Galeocerdo cuvier*), Crocodile shark (*Pseudocarcharias kamoharai*), Thresher shark (*Alopias vulpinus*), Galapagos shark (*Carcharhinus galapagensis*), Porbeagle (*Lamna nasus*), Spiny dogfish (*Squalus acanthias*), and Spotted houndshark (*Triakis maculata*). These nine species are assessed collectively as a single scoring element, as was the case in UoA1, given that they form part of the same species group examined in the study used to evaluate Performance Indicator (PI) 2.2.1 in UoA1. Consequently, the same information and assessment are applicable. **SG100 is not achieved.** | | |

| | |
|---|---|
| Draft scoring range | **DD** |
| Information gap indicator | **Information sufficient to score PI** |
| Data-deficient? (Risk-Based Framework needed) | **No** |

### PI 2.2.2 – Secondary species management strategy

| PI 2.2.2 | | There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch. | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Management strategy in place** | | | |
| | Guide post | There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery. | There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery. | There is a **strategy** in place for the UoA for managing main and minor secondary species. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | This Scoring Issue addresses only the measures or strategies in place to manage main secondary species. For the swordfish longline fishery, the main secondary species affected by the Unit of Assessment (UoA) include both those exclusive to UoA1, those exclusive to UoA2, and those present in both UoAs. Specifically, the main secondary species exclusive to UoA1 are mahi-mahi (*Coryphaena hippurus*), pelagic thresher shark (*Alopias pelagicus*), and blue shark (*Prionace glauca*). The main secondary species exclusive to UoA2 is black marlin (*Istiompax indica*). The main secondary species occurring in both UoA1 and UoA2 are striped marlin (*Kajikia audax*), blue marlin (*Makaira nigricans*), escolar (*Lepidocybium flavobrunneum*), opah (*Lampris guttatus*), bigeye thresher shark (*Alopias superciliosus*), and wahoo (*Acanthocybium solandri*).<br><br>All mother-ship vessels are required to maintain a fishing logbook, either physical or electronic, which must be completed daily in a comprehensive, reliable, and timely manner, and submitted upon landing or at the conclusion of fishing operations. The logbook must record estimated catches by species or species group, expressed in tonnes, kilograms, or number of individuals. No landed catch may be moved from the port unless inspected by the SRP and accompanied by a CMCDP.<br><br>At the national level, general management measures applying to all non-target species caught by the UoAs include technical gear specifications, a dolphinfish closed season (during which the fleet switches from LL-DOL to LL-TBS to target tunas, billfishes, and sharks), closed census periods, mandatory data reporting (logbooks and, under Article 225 of Executive Decree 362/2022, the recording of all interactions), an observer programme, and port inspections to issue landing certificates. Article 225 of the same Decree further requires that all catches and incidental interactions be recorded.<br><br>In addition, shark lines—individual lines attached to float lines or floats to target sharks—are prohibited both internationally (IATTC Resolution C-16-05) and nationally (Executive Decree Nº5486/2007). The use of steel leaders has been prohibited nationally since 2007 (Executive Decree Nº5486/2007). Shark finning is prohibited at both international and national levels (see PI 2.2.2(d) for further details).<br><br>Ecuador implemented its first National Action Plan for the management and conservation of sharks (PAN-EC) in 2013 for a five-year period, formalised as national policy through Executive Decree Nº486/2007. The updated 2020–2024 PAN-EC has also been adopted as national policy under Agreement MPCEIP-SRP 2022-0068-A.<br><br>At the IATTC level, Resolution C-19-08 requires each CPC to ensure that at least 5% of the fishing effort of its longline vessels over 20 m in length carries a scientific observer. National regulations | | |

| PI 2.2.2 | | There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch. | | |
|---|---|---|---|---|
| | | go further, requiring a minimum observer coverage of 10% for mother-ship vessel trips, with progressive increases to 20% by 2024. Observers' data are reported to the SRP.<br><br>Furthermore, in 2022, the IATTC formally established a Permanent Working Group on Ecosystem and Bycatch (EBWG) through Resolution C-22-06, replacing the previous Bycatch Working Group. The EBWG's objectives include evaluating and recommending measures to avoid, reduce, and minimise the catch and mortality of non-target species, promoting effective handling and safe release practices, and assessing the effects of fishing on endangered species.<br><br>The IATTC conducts analytical stock assessments for species such as blue marlin and swordfish, sometimes in collaboration with other RFMOs, and has undertaken a comprehensive risk assessment for 32 shark species, including blue shark and pelagic thresher shark.<br><br>Based on the evidence above, the assessment team considers that there is a strategy in place for managing main secondary species. Therefore, **SG60 and SG80 are met**. However, while the measures listed above help to maintain low bycatch levels of all non-target species in the UoA (including sharks), there is no strategy in place to manage all main and minor secondary species impacted by the UoA. Consequently, **SG100 is not met.** | | |
| **b** | **Management strategy evaluation** | | | |
| | Guide post | The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species). | There is some **objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved. | **Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. |
| | Met? | **Yes all UoAs** | **No all UoAs** | **No all UoAs** |
| Rationale | | Management measures currently in place include: mandatory daily completion of physical or electronic logbooks with catch estimates by species; inspections prior to landing; gear restrictions such as the prohibition of shark lines and steel leaders; bans on shark finning at both national and international levels; observer coverage requirements (minimum 10%, increasing to 20% by 2024); and seasonal or technical measures such as the dolphinfish closure, during which the fleet modifies gear type. Ecuador's National Action Plan for Shark Management and Conservation (PAN-EC, 2020–2024) is in force as national policy, complemented by IATTC measures such as Resolution C-19-08 on observer coverage and Resolution C-22-06 establishing the Permanent Working Group on Ecosystem and Bycatch. These are further supported by IATTC stock assessments and risk analyses for relevant species. SG60 is met.<br>Although these measures help limit bycatch levels, the limited observer coverage and lack of data on post-capture survival rates prevent the fishery from meeting the requirements of SG80. | | |
| **c** | **Management strategy implementation** | | | |
| | Guide post | | There is **some evidence** that the measures/partial strategy is being **implemented successfully**. | There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).** |
| | Met? | | **Yes** | **No** |
| Rationale | | There is some evidence that the management measures are being implemented successfully in the swordfish longline fishery. As far as the team is aware, the shark-specific measures (no shark lines or steel leaders) are implemented by the fleet. While there is clear indication of compliance with key regulations, such as reporting requirements and observer coverage, there is insufficient | | |

| PI 2.2.2 | | There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch. | | |
|---|---|---|---|---|
| | | evidence to confirm that the full partial strategy is achieving its objectives as set out in scoring issue (a). Therefore, the criterion is met at the level of some evidence but not at the level of clear evidence for full successful implementation. Therefore, **SG 80 is met** but **SG 100 is not achieved.** | | |
| **d** | **Shark finning** | | | |
| | Guide post | It is **likely** that shark finning is not taking place. | It is **highly likely** that shark finning is not taking place. | There is a **high degree of certainty** that shark finning is not taking place. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | This issue is applicable to both UoA, since there are **14 shark species** identified as secondary components, 2 of them classified as 'main', and the other 12 as 'minor'.<br>Shark finning is prohibited both at international and national level.<br><br>Resolution C-24-05 adopted by the IATTC in 2024 which consolidates previous Resolutions (C-05-03, C-16-04, C-16-05) sets the following in relation to retain and utilization:<br><br>- CPCs shall take the necessary measures to require that their fishers fully utilize all retained catches of sharks, with the exception of those species for which a retention ban has been adopted by the IATTC.<br>- CPCs shall prohibit shark finning.<br>- CPCs shall ensure that all sharks are landed with all fins naturally attached to the body. In order to facilitate on-board storage, shark fins may be partially sliced through and folded against the shark carcass as appropriate but shall remain naturally attached to the carcass until the first point of landing.<br>- Until the end of 2026, notwithstanding previous point, and other provisions in this Resolution, CPCs may take alternative measures to ensure that individual shark carcasses and their corresponding fins can be easily identified on board the vessel at any time, using one of the following methods described in the Resolution.<br>- CPCs shall require their vessels to have onboard fins that total no more than 5% of the weight of sharks onboard, up to the first point of landing. CPCs that currently do not require fins and carcasses to be offloaded together at the point of first landing shall take the necessary measures to ensure compliance with the 5% ratio through certification, monitoring by an observer, or other appropriate measures.<br>- Paragraphs 4 to 8 shall be reviewed, in consultation with IATTC scientific staff, and amendments shall be adopted by the Commission in 2026, as necessary.<br>- Fishing vessels are prohibited from retaining on board, transshipping, landing or trading of any fins harvested or that have been removed on board in contravention of this Resolution.<br><br>At national level, the Executive Decree 486 passed in 2007 set the following:<br><br>Art. 7.- Only the landing of whole sharks caught as bycatch by authorised fishing vessels will be allowed. The removal of the fins can only be carried out on land. If on board the fishing vessels shark fins are found without their respective bodies, or separated from the sharks' bodies, fins will be confiscated, and the corresponding legal actions will be initiated against the captain and owner of the vessel. In case of recidivism, the fishing authority will definitively suspend the fishing permit of the vessel and it may not be used for fishing or related activities.<br>Art. 8.- Shark fins that are confiscated will not be subject to donation, sale, auction, nor can they be exported. These fins will be guarded by the competent authority of the jurisdiction where they have been seized. (…) Subsequently, and after complying with the legal procedures, the confiscated fins will be incinerated, which will be done by the Undersecretary of Fisheries Resources of the Ministry of Agriculture, Livestock, Aquaculture and Fisheries, with prior notification to the Undersecretary of Management. Environmental Coastal Ministry of the Environment.<br>Art. 10.- The importation and maritime transhipment of whole sharks or shark fins in any state of conservation or processing, even when they have been captured in international waters, is prohibited. | | |

| PI 2.2.2 | | There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch. | | |
|---|---|---|---|---|
| | | Traceability begins with the presence of observers on board fishing vessels. Current national regulations require a minimum observer coverage of 10% of fishing trips conducted by mother-ship vessels, with a progressive increase to 20% by 2024. However, the team could not confirm whether this observer coverage has been implemented in recent years.<br><br>Eastern Pacific Tuna Fishery. (2022). Public Certification Report. Marine Stewardship Council (MSC).<br>Retrieved from: https://fisheries.msc.org/en/fisheries/eastern-pacific-tuna/<br>According to the MSC Public Certification Draft Report for the Ecuador Mahi-Mahi Longline Fishery, The Vice Ministry of Aquaculture and Fisheries, through the Undersecretariat of Fisheries Resources, the inspectors are checking that only whole sharks are offloaded, with their respective fins attached to the body. Only after this check, the CMCDP is issued, and this is the enabling document for the issuance of the Shark Bycatch Mobilization (GMPIT). The Monitoring Certificate and the Mobilization Guide are mandatory documents to transport and market the product internally or externally.<br><br>Based on the above, the team considers that **SG60 is met.**<br><br>Despite, the team cannot confirm the current stage of the observer coverage, it is important to consider that the Executive Decree 486/2007 is a policy requiring the landing of all sharks with fins naturally attached, no ratios are allowed. The MSC recognizes that this type of policy is the most rigorous approach to ensuring that shark finning is not occurring (GSA2.4.5-2.4.7), and the Executive Decree 486/2007 is fulfilling that requirement. The team has verified the latest Ecuador's report on the conservation of sharks caught in association with fisheries in the EPO during 2024, in compliance with Resolution C-23-07 (Oficio Nro. MPCEIP-SRP-2025-0653-O), and there are no issues on this topic. The team considers that current level of external validation and regulations in place work together to consider highly likely that shark finning is not taking place. **SG80 is met.**<br><br>Current levels of external validation are preventing to score SG100. **SG100 is not met.** | | |
| **e** | **Review of alternative measures to minimise mortality of unwanted catch** | | | |
| | Guide post | There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species. | There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate. | There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of all secondary species, and they are implemented, as appropriate. |
| | Met? | **N/A** | **N/A** | **N/A** |
| Rationale | | SG60 and AG80 are dealing just with the main species. The main secondary species exclusive to UoA1 are mahi-mahi (*Coryphaena hippurus*), pelagic thresher shark (*Alopias pelagicus*), and blue shark (*Prionace glauca*). The main secondary species exclusive to UoA2 is black marlin (*Istiompax indica*). The main secondary species occurring in both UoA1 and UoA2 are striped marlin (*Kajikia audax*), blue marlin (*Makaira nigricans*), escolar (*Lepidocybium flavobrunneum*), opah (*Lampris guttatus*), bigeye thresher shark (*Alopias superciliosus*), and wahoo (*Acanthocybium solandri*).<br><br>These are highly valuable species which are caught in low volumes. There is no incentive for discarding and, as far as the team is aware, there are no discards. Thus, this SI is not applicable. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | **More information on unwanted catches** | | |

### PI 2.2.3 – Secondary species information

| PI 2.2.3 | | Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Information adequacy for assessment of impacts on main secondary species** | | | |
| | Guide post | Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status.<br><br>OR<br><br>**If RBF is used to score PI 2.2.1 for the UoA:**<br><br>Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species. | Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status.<br><br>OR<br><br>**If RBF is used to score PI 2.2.1 for the UoA:**<br><br>Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species. | Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status. |
| | Met? | **UoA1-Yes**<br>**UoA2 -Yes** | **UoA1-Yes**<br>**UoA2 -Yes** | **UoA1-No**<br>**UoA2 -No** |
| Rationale | | **UoA1**<br>Sufficient quantitative information is available to assess mortality related to UoA1 and its impact on ETP (Endangered, Threatened, and Protected) species, thereby enabling evaluation of whether this UoA poses a risk to their conservation and recovery. The primary sources of data for this UoA comprise official landing records provided by the client, based on administrative databases, detailing catch composition from both the industrial and artisanal fleets (Nodrizas and associated fibreglass skiffs), alongside national observer data applicable exclusively to UoA1.<br>It is important to highlight that observer coverage for mothership vessels was initially established at 10% of fishing trips under Agreement 407 dated 12 October 2011. This was subsequently amended by Agreement MPCEIP-SRP-2021-0208-A in September 2021, progressively increasing observer coverage targets to 15% in 2023 and 20% in 2024. In 2021, observer coverage for the longline fleet was 6.4% (MPCEIP, 2022d), with the majority of observations focusing on the LL-TBS component and only 25% on the LL-DOL component. Observers are exclusively deployed on mothership vessels, while fishing activities carried out from associated fibreglass skiffs remain unmonitored.<br>Although observer coverage on mothership vessels was limited during earlier periods, the existing data (despite being incomplete for associated fibreglass skiffs) provides a sufficient qualitative foundation **to meet SG60**. Moreover, the availability of some quantitative data drawn from landing records and observer datasets allows an assessment of whether UoA1 may threaten the conservation and recovery of these species, thereby **meeting SG80**. Nevertheless, the limited observer coverage, absence of systematic monitoring of all fleet components, and lack of comprehensive quantitative data preclude an assessment with high certainty regarding the scale and consequences of UoA1-related impacts on secundary species. Consequently, **SG100 is not achieved**.<br>**UoA2**<br>Adequate quantitative and qualitative information is available to assess mortality associated with UoA2 and its potential impact on ETP species, thereby supporting evaluation of whether this UoA poses a risk to their conservation and recovery. For UoA2, key data sources include official landing records provided by the client, based on administrative records detailing catch composition from the industrial Aceros fleet, and a technical report prepared under the scope of a Fishery Improvement Project targeting the longline swordfish fishery. This report relies on data from a private observer programme implemented aboard the TRANSMARINA C.A. industrial fleet, | | |

| PI 2.2.3 | | Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species | | |
|---|---|---|---|---|
| | | initiated on 27 June 2022, which by December 2024 had recorded 82,880 individual organisms interacting with fishing gear, regardless of their fate.<br>Additional data sources include catch reports submitted to the IATTC, encompassing both UoA1 and UoA2. National observer data pertain solely to UoA1, as the steel fleet lacks systematic national observer coverage; according to the client, observers were present only during a single trip in 2024, which was excluded from this analysis.<br>While the absence of consistent national observer coverage limits the dataset's comprehensiveness, the combined data from landing records, IATTC catch reports, and the private observer programme provide an adequate qualitative basis to **meet SG60**, enabling a reasonable estimation of UoA2-related mortality on bycatch species. Furthermore, the availability of quantitative information from the private observer programme supports an assessment of whether UoA2 poses a threat to the conservation and recovery of these species, thereby meeting SG80. However, the lack of systematic observer coverage throughout the fleet and the absence of fully independent verification for all fishing operations impede an assessment with high confidence regarding the extent and implications of UoA2-related impacts on secundary species. Therefore, **SG100 is not achieved**. | | |
| **b** | **Information adequacy for assessment of impacts on minor secondary species** | | | |
| | Guide post | | | Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status. |
| | Met? | | | **No** |
| Rationale | | The Units of Assessment (UoAs) are subject to observer coverage under the AIDCP, with Ecuador setting a minimum target of 5%. Although coverage targets for mothership vessels have progressively increased—from 10% in 2011 to a planned 20% in 2024—there is no evidence that the 2024 target has been achieved, and current observer coverage levels remain unknown. Available data from official reports provide some information on secondary species, primarily sharks and mobulid rays. However, the quantitative information is insufficient to adequately estimate the impact of the UoAs on minor secondary species in terms of their status. Significant gaps exist due to limited and inconsistent observer coverage across fleet segments, the lack of updated stock assessments, and reliance on non-independent data sources. Consequently, the information adequacy required to estimate impacts on minor secondary species is not met. Thus, SG 100 is not met. | | |
| **c** | **Information adequacy for management strategy** | | | |
| | Guide post | Information is adequate to support **measures** to manage **main** secondary species. | Information is adequate to support a **partial strategy** to manage **main** secondary species. | Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of certainty** whether the strategy is **achieving its objective**. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The available information is adequate to support measures aimed at managing the main secondary species, thereby meeting SG60. Furthermore, the data support a partial management strategy for these species, fulfilling the requirements of SG80. This is evidenced by the observer data and landing records, which provide sufficient insights to implement targeted management measures and partially evaluate their effectiveness.<br>However, despite these positive aspects, the information does not support a comprehensive strategy to manage all secondary species with a high degree of certainty. Significant limitations remain, including inconsistent observer coverage across the fleet, reliance on non-independent data sources, and the absence of updated stock assessments. These factors impede the ability to | | |

| PI 2.2.3 | Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species |
|---|---|
| | fully evaluate whether the management strategy is achieving its objectives across the full suite of secondary species.Therefore, SG100 is not met |
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |

### PI 2.3.1 – ETP species outcome – UoA1

| PI 2.3.1 | | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Effects of the UoA on population/stock within national or international limits, where applicable** | | | |
| | Guide post | Where national and/or international requirements set limits for ETP species, the **effects of the UoA** on the population/ stock are known and **likely** to be within these limits. | Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population /stock are known and **highly likely** to be within these limits. | Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty that the combined effects of the MSC UoAs** are within these limits. |
| | Met? | **Silky Shark - Yes** | **Silky Shark - Yes** | |

**Rationale**

A total of **11 ETP** species were found to interact with the UoA1 based on information sources consulted (see **Table 7.5.1.1.2.1)**: 5 marine turtles, 1 shark and 3 ray species and 2 marine mammals. With the only exception of the silky shark (*C.falciformis*), retention on board of any of those species is prohibited by national and international regulations and all incidental interactions shall be returned to the sea and reported (see **section 7.5.1.4** for more details). However, there is no limit to the incidental interactions and therefore this SI is Not Applicable to any of the other ETPs considered in this assessment.

**Silky shark**

In the case of the silky shark, both the international and the national applicable regulations (IATTC Resolution C-23-08 and Ministerial Agreement MPCEIP-SRP-2022-0002-A, respectively), set limits to the catches of silky shark performed by longline vessels targeting pelagics. Thus, SI(a) is applicable for the silky sharks since the UoA1 catches are subject to national (and international) limits.

In this case, the national limits are stricter than the international ones because:

- The 20% threshold is measured in weight and nor in number of individuals and applies to all bycatches of silky sharks and not only to individual below 100cm TL.
- No individuals smaller than 100 cm TL are allowed.

Article 5 of the Ministerial Agreement MPCEIP-SRP-2022-0002-A states that the Directorate of Fisheries Control, through the Control Analysts, and Surveillance, at the time of landing in the authorized ports, will carry out inspections that allow the identification of the species, the verification of its size and the issuance of the applicable documents in accordance with current legal regulations.

Based on official landings data recorded between 2019 and 2024 (source a), silky shark accounted for approximately 0.33% of the total annual catches (by weight) within the UoA1. This is consistent with the maximum proportion reported by MPCEIP (2022a) for October–December 2020, which indicated that silky shark represented 0.3% of the total landings (by weight) during that period. Data from the observer programme, expressed in number of individuals, indicate that silky shark constituted 1.52% of the total observed catches over the same timeframe. According to MPCEIP, both international and national regulations applicable to silky shark (IATTC Resolution C-23-08 and Ministerial Agreement MPCEIP-SRP-2022-0002-A, respectively) establish limits for catches taken by longline vessels targeting pelagic species. Under the IATTC regulation, catches of silky sharks measuring less than 100 cm TL must not exceed 20% of the total number of silky sharks retained during a fishing trip. These data collectively suggest that the UoA is likely to operate in compliance with the relevant legal requirements.

**Table 2.3.1.1.** Landing volumes per species specific to mother-ship-based fishing operations between 2019-2024 Landings in tones, and % accounts for the % of the silky shark compared to the total annual volume caught. Source: Official landings data provided by the client.

| PI 2.3.1 | | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species | | |
|---|---|---|---|---|
| | | <table><tr><th>Fishing gear</th><th>2019</th><th></th><th>2020</th><th></th><th>2021</th><th></th><th>2022</th><th></th><th>2023</th><th></th><th>2024</th><th></th></tr><tr><th></th><th>t</th><th>%</th><th>t</th><th>%</th><th>t</th><th>%</th><th>t</th><th>%</th><th>t</th><th>%</th><th>t</th><th>%</th></tr><tr><td>Longline</td><td>25,33</td><td>3,42</td><td>36,99</td><td>2,83</td><td>40,12</td><td>1,91</td><td>15,14</td><td>0,84</td><td>31,94</td><td>1,09</td><td>22,43</td><td>0,87</td></tr></table><br>Thus, **SG60 is met for the silky shark.**<br><br>There has been no formal stock assessment for silky sharks in the Eastern Pacific Ocean (EPO). Existing stock status indicators, derived from bycatch-per-set data, are of limited reliability due to uncertainties in estimating the size composition of released individuals (Lennert-Cody et al., 2019). Nonetheless, as previously noted, the proportion of silky shark in UoA1 catches — 0.33% in official landings and 1.52% in observer records — remains well below the regulatory limit of 20% established for individuals under 100 cm TL. These results indicate that the combined effects of the UoA on the silky shark population are highly likely to be within the applicable national and international limits, thereby **meeting the SG 80** requirements. However, in the absence of a formal stock assessment or other robust evidence providing a high degree of certainty, the conditions for SG 100 are not met. | | |
| **b** | **Direct effects** | | | |
| | Guide post | Known direct effects of the UoA are likely to not **hinder recovery** of ETP species. | Direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species. | There is a **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on ETP species. |
| | Met? | **Turtles: Yes**<br>**Mobulid rays: Yes**<br>**Dolphins: Yes** | **Turtles: Yes**<br>**Mobulid rays: Yes**<br>**Dolphins: Yes** | **Turtles: No**<br>**Mobulid: No**<br>**Dolphins: Yes** |
| Rationale | | A total of **11 ETP** species were found to interact with the UoA1 based on information sources consulted (see **Table 7.5.1.1.2.1)**: 5 marine turtles, 1 shark and 3 ray species and 2 marine mammals. The silky shark (*Carcharhinus falciformis*) was already assessed in SI(a), while all the other species are assessed in this SI, i.e: Loggerhead sea turtle (*Caretta caretta*), Leatherback turtle (*Dermochelys coriacea*), Hawksbill turtle (*Eretmochelys imbricata*), Olive Ridley sea turtle (*Lepidochelys olivacea*), Green turtle (*Chelonia mydas*), Giant manta ray (*Mobula birostris*), Munk's devil ray (*Mobula munkiana*), Mobula rays (*Mobula spp*.), Bottlenose dolphin (*Tursiops truncatus*) and Dolphins (*Delphinidae*).<br><br>For all scoring elements related to sea turtles, sharks, and rays, the rationales provided are based on information derived from several sources (See **Section 7.5.1.1.1**). Retention on board of any of the species listed above is prohibited by national and international regulations and all incidental interactions shall be returned to the sea and reported (see **Section 7.5.1.4** for more details). However, there is no limit to the incidental interactions. No interactions with seabirds have been reported in the sources used.<br><br>**Marine Turtles:**<br><br>The conservation status of the marine turtle species listed in **Table 7.5.1.4.2.4**, as reported by the IUCN. The loggerhead turtle, feeds in the northern and southern limits of the eastern tropical Pacific but nests on distant beaches in the western Pacific. While the knowledge on conservation, movements, and habitat use for each of these species was updated in 2017 (IAC Habitat Use Working Group, 2017), the status of turtles encountered by fisheries in the EPO has not been specifically examined by IATTC. Current estimates suggest approximately 116,000 nesting female green turtles, 11,725 nesting female hawksbill turtles, 9,200 nesting female loggerhead turtles, and 4,000 nesting female leatherback turtles in the Pacific Ocean (Seminoff et al., 2015; NMFS and FWS, 2013; Benson et al., 2015).<br><br>National observer data from the longline fishery targeting swordfish show low interaction rates with sea turtle species. Recorded captures include 119 green turtles (*Chelonia mydas*) and 102 olive | | |

| PI 2.3.1 | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species |
|---|---|
| | ridley turtles (*Lepidochelys olivacea*), each representing approximately 0.02% of total observed catches, while hawksbill (*Eretmochelys imbricata*) and leatherback turtles (*Dermochelys coriacea*) were observed at negligible levels. Based on these data, the known direct effects of the UoA are likely to not hinder the recovery of sea turtle species, thereby **meeting the SG60** criterion. Furthermore, the direct effects of the UoA are highly likely to not hinder recovery, which fulfils the requirements for **SG80**. However, due to limitations in data availability, observer coverage, and reporting consistency, there is insufficient confidence to conclude with a high degree of certainty that there are no significant detrimental direct effects of the UoA on sea turtles. Therefore, SG 100 is not met.<br><br>**Mobulid Rays:**<br><br>Of the data sources consulted, only source c), referring to national observer data, reported captures of mobulid rays. Between 2019 and 2023, the longline fishery targeting swordfish recorded very low interactions with mobulid rays, including 2 giant manta rays (*Mobula birostris*) (0.00%) and 7 unidentified mobula individuals (0.00%). No Munk's devil rays were observed. According to the SI criteria, the known direct effects of the UoA are likely to not hinder the recovery of these species, thereby **meeting SG60**. Furthermore, given the low interaction rates, the direct effects of the UoA are highly likely to not hinder recovery, fulfilling **SG80**. However, due to limitations in data availability and observer coverage, there is insufficient confidence to conclude with a high degree of certainty that there are no significant detrimental direct effects of the UoA on these species. Therefore, SG 100 is not met.<br><br>**Mammals**<br>Limits have not been established for ETP mammals species caught by UoA vessels. In the case of longline fisheries targeting swordfish, the IATTC does not establish specific international requirements concerning dolphins, such as mortality limits or operational regulations analogous to those of the AIDCP. These fisheries operate under different schemes, including a minimum scientific observer coverage of 5% of fishing effort to record interactions with non-target species such as turtles, seabirds and sharks, but with no reference to dolphins (IATTC, 2019. Resolution C-19-08 on the collection and analysis of data on fish-aggregating devices, available at: https://www.iattc.org/GetAttachment/614c5692-74c5-40a7-a8b0-148ec0e52206/C-19-08-Active_Observers-on-longliners.pdf). On May 6, 2019, IPIAP recommended that Fisheries Observer Programs should systematically record information on vulnerable species (Statement No. INP-2019-0289-OF). Following this, the SRP, through MPCEIP-SRP-2019-0402-M dated May 14, 2019, endorsed this recommendation and established that observer programs must collect data on interactions with marine mammals and seabirds. According to official observer data, only 2 individuals from the family Delphinidae and 1 common bottlenose dolphin (*Tursiops truncatus*) were recorded, representing 0.00% of total observed catches. Direct interactions with marine mammals tend to occur more frequently in passive gears such as gillnets and longlines than in active gears like trawling (Read, 2005). Among passive gears, gillnets are associated with higher mortalities in marine mammals compared to longlines. Nevertheless, interactions with surface longlines—such as hooking or entanglement in buoy or main lines—have been documented in similar fisheries worldwide (Passadore et al., 2015).<br>Marine mammals are long-lived, low fecundity species, making them highly vulnerable; even limited bycatch may have significant impacts on population viability (Lewison et al., 2004).<br>Based on the absence and low frequency of recorded interactions, the assessment team considers that the known direct effects of the UoA are likely to not hinder the recovery of marine mammals, thereby **meeting the SG 60 criterion**. These findings also indicate that there is a hig degree of certainty that the direct effects are highly likely to not hinder recovery, fulfilling the requirements for **SG 80 and SG100**.<br><br>Although the UoA demonstrates that the known direct effects on sea turtles, mobulid rays, and dolphins are likely to not hinder the recovery of these ETP species—meeting the SG 60 criterion—and that the direct effects are highly likely to not hinder recovery of dolphins, thereby fulfilling SG 80 and SG 100 for this group, the same high degree of confidence is not achieved for sea turtles and mobulid rays. Due to data limitations, observer coverage, and inconsistencies, the assessment team cannot conclude with high confidence that there are no significant detrimental direct effects of the UoA on sea turtles and mobulid rays. Consequently, while SG 60 is met for all groups and SG 80 is met for sea turtles and mobulid rays, SG 100 is only met for dolphins. |

| PI 2.3.1 | | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species | | |
|---|---|---|---|---|
| c | **Indirect effects** | | | |
| | Guide post | | Indirect effects have been considered for the UoA and are thought to be **highly likely** to not create unacceptable impacts. | There is a **high degree of confidence** that there are no **significant detrimental indirect effects** of the UoA on ETP species. |
| | Met? | | **No** | **No** |
| Rationale | | **All ETP species**<br>The team is not aware that indirect effects on and of the ETP species have been considered for the UoA. SG80 is not met. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | | | |
| Data-deficient? (Risk-Based Framework needed) | | **No** | | |

### PI 2.3.1 – ETP species outcome – UoA2

| PI 2.3.1 | | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| a | **Effects of the UoA on population/stock within national or international limits, where applicable** | | | |
| | Guide post | Where national and/or international requirements set limits for ETP species, the **effects of the UoA** on the population/ stock are known and **likely** to be within these limits. | Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population /stock are known and **highly likely** to be within these limits. | Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty that the combined effects of the MSC UoAs** are within these limits. |
| | Met? | **Silky Shark - Yes** | **Silky Shark - No** | **Silky Shark - No** |
| Rationale | | A total of **19 ETP** species were found to interact with the UoA2 based on information sources consulted (see **Table 7.5.1.1.2.1)**:<br><br>**Silky shark (FAL)** (*See PI 2.3.1 UoA1*)<br>Based on the report provided by the client within the framework of the FIP (source b), silky shark (*Carcharhinus falciformis*) accounted for 4,261 individuals, representing approximately 5.14% of the total catch by number within UoA2 between 2022 and 2024. Notably, in 2023, catches of silky shark reached 21%, slightly exceeding the limits established by current regulations. According to MPCEIP, both international and national regulations applicable to silky shark (IATTC Resolution C-23-08 and Ministerial Agreement MPCEIP-SRP-2022-0002-A, respectively) set catch limits for longline vessels targeting pelagic species. Under the IATTC regulation, catches of silky sharks measuring less than 100 cm total length must not exceed 20% of the total number of silky sharks retained during a fishing trip.<br><br>**Table 2.3.1.2.** Landing volumes per species specific to steel boats fishing operations between 2022-2024 Landings in number of individual, and % accounts for the % of the silky shark compared to the total annual volume caught. Source: Official landings data provided by the client. | | |

<table>
<tr><td colspan="2">PI 2.3.1</td><td colspan="4">The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species</td></tr>
<tr><td colspan="2"></td><td colspan="4">
<table>
<tr><th>Fishing gear</th><th>2022</th><th></th><th>2023</th><th></th><th>2024</th><th></th></tr>
<tr><th></th><th>Ind</th><th>%</th><th>Ind</th><th>%</th><th>Ind</th><th>%</th></tr>
<tr><td>Longline</td><td>621</td><td>6</td><td>2338</td><td>21</td><td>1302</td><td>11</td></tr>
</table>
<br>Based on data from UoA2 between 2022 and 2024, the effects of this UoA on the silky shark population are known and likely to be within the applicable national and international limits, thereby satisfying the SG60 criterion. However, due to the variability observed in catch proportions across the three analysed years, including one year in which the catch exceeded the regulatory limits, the combined effects of the UoA do not meet the requirements for SG80, which necessitates a high likelihood of compliance within those limits. Moreover, in the absence of a formal stock assessment or other robust evidence providing a high degree of certainty, the conditions for SG 100 are not fulfilled.</td></tr>
<tr><td rowspan="3">b</td><td colspan="5">Direct effects</td></tr>
<tr><td>Guide post</td><td>Known direct effects of the UoA are likely to not hinder recovery of ETP species.</td><td>Direct effects of the UoA are highly likely to not hinder recovery of ETP species.</td><td colspan="2">There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.</td></tr>
<tr><td>Met?</td><td>Sharks: OSC, SPL, SPN,SPZ<br>Turtles<br>Mobulid Rays<br>Mamals</td><td>No</td><td colspan="2">No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="4">A total of 19 ETP species were found to interact with the UoA2 based on information sources consulted (see Table 7.5.1.1.2.1): 5 sharks, 4 marine turtles, and 6 ray species and 2 marine mammals. The silky shark (Carcharhinus falciformis) was already assessed in SI(a), while all the other species are assessed in this SI, i.e: Oceanic whitetip shark (Carcharhinus longimanus), Scalloped hammerhead shark (Sphyrna lewini), Hammerhead sharks (Sphyrna spp.),Smooth hammerhead shark (Sphyrna zygaena), Devil fish (Mobula mobular), Chilean devil ray (Mobula tarapacana), Smoothtail mobula (Mobula thurstoni), Giant manta ray (Mobula birostris), Munk's devil ray (Mobula munkiana), Mobula rays (Mobula spp.), False killer whale (Pseudorca crassidens), Spotted dolphin (Stenella attenuata).<br><br>Sharks:<br>Apart from the silky shark, which was also recorded by UoA1 and assessed under scoring issue a), 3 other shark species were clearly identified. Among the hammerhead sharks, 2 species were explicitly identified: the scalloped hammerhead shark (Sphyrna lewini) and the smooth hammerhead shark (Sphyrna zygaena). Additionally, other hammerhead sharks were recorded but only at the genus level (Sphyrna spp.). The reported numbers for these species remain low across the 3 years, with Sphyrna lewini being recorded only once in 2024, Sphyrna zygaena observed 14 times cumulatively with a total weight corresponding to 0.01% of the catch, and Sphyrna spp. recorded once in 2023. Furthermore, the oceanic whitetip shark (Carcharhinus longimanus) was also caught incidentally, with 339 individuals reported over the three years, representing approximately 0.40% of total catches by weight. All hammerhead shark species and the oceanic whitetip shark are afforded protection under both international regulations (IATTC Resolutions C-23-08 and C-24-05) and national legislation (Executive Decree N486/2007; Ministerial Agreements MPCEIP-SRP-2020-0084 and 2022-0068-A), which prohibit targeting these sharks, shark finning, use of shark lines and steel leaders, and retention onboard. All incidental catches, whether alive or deceased, must be promptly released back to the sea. The observer data thus reflect adherence to these regulatory measures, as evidenced by the low numbers recorded during the assessed period.</td></tr>
</table>

| PI 2.3.1 | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species |
|---|---|
| | Observer data from UoA2 (source b), collected onboard steel vessels within the framework of the FIP between 2022 and 2024, indicate a low number of interactions with ETP shark species. Given these consistently low catch levels, the criteria for SG60 (direct effects are likely to not hinder recovery of ETP species) and SG80 (direct effects are highly likely to not hinder recovery) is not met, nor is SG100 (high degree of confidence that there are no significant detrimental direct effects on ETP species), due to the very limited number of trips recorded (always on the same vessel, totalling only four) which introduces inherent uncertainties in the data and does not allow a robust assessment of potential rare but unavoidable incidental catches.<br><br>**Mobulid Rays:**<br>Mobulid rays, including the giant manta ray (*Mobula birostris*), spinetail mobula (*Mobula mobular*), and the devil ray (*Mobula munkiana*), are subject to strict protection under Ministerial Agreement No. 093 of 26 August 2010, which prohibits targeted fishing of these species using any fishing gear recognized in Ecuadorian fisheries. This regulation, updated by MPCEIP-SRP-2022-0078-A, mandates the immediate release of incidentally caught individuals back to their natural habitat and forbids the retention, transshipment, landing, storage, transportation, sale, or offer for sale of whole or partial carcasses of the protected mobulid species. In cases of incidental capture, individuals must be released alive whenever possible; if caught by longlines, any hooks must be carefully removed or the gangion cut as close to the hook as possible, prioritising personal safety. Observer data from the steel vessel fleet within the FIP framework between 2022 and 2024 show very low catch numbers: 2 individuals of *M. birostris*, 86 of *M. mobular*, 21 of *M. munkiana*, and 30 of unidentified *Mobula* spp. Although all mobulid rays are reported to be returned to the sea, post-release survival rates remain undocumented. Given the small number of interactions and the existence of risk mitigation measures and adherence to safe handling and release protocols, the fishery meets the **SG60 criterion**, indicating that direct effects are likely to not hinder recovery of these ETP species. Given the low catch rates recorded, the fishery **meets the SG80 criterion**, indicating that it is highly likely that the direct effects do not hinder the recovery of these ETP species. However, SG100 is not met due to the lack of robust data providing the high degree of confidence required to exclude significant detrimental direct effects.<br><br>**Sea Turtles** (*See PI 2.3.1 UoA1*)**:**<br>Data from UoA2, covering the longline fishery over the period 2022 to 2024 (source b), indicate low interaction rates with sea turtle species. Recorded incidental captures comprised 1 loggerhead turtle (*Caretta caretta*), 5 green turtles (*Chelonia mydas*), 59 leatherback turtles (*Dermochelys coriacea*), 1 hawksbill turtle (*Eretmochelys imbricata*), and 5 olive ridley turtles (*Lepidochelys olivacea*). Based on these data, the known direct effects of UoA2 are likely to not hinder the recovery of sea turtle species, thus fulfilling the SG60 criterion. However, given the higher number of individuals recorded for the leatherback turtle and the uncertainty regarding the potential impact on its population, the SG80 criterion is not achieved for this species. For the other sea turtle species, the consistently low capture rates indicate that the direct effects are highly likely to not hinder recovery, thereby meeting the SG80 requirement. However, limitations related to data availability, observer coverage, and reporting consistency constrain the confidence level required to assert with a high degree of certainty that there are no significant detrimental direct effects of the UoA on sea turtles. Consequently, SG100 is not met<br><br>**Mammals** (*See PI 2.3.1 UoA1*)**:**<br>Based on observer data from the steel vessels fleet (source b) within the UoA2 longline fishery targeting swordfish, only 2 cetacean species were identified: the false killer whale (*Pseudorca crassidens*) and the spotted dolphin (*Stenella attenuata*). Interactions with these species were minimal and did not occur consistently across all years analysed, with a total of 3 individuals of false killer whale and 2 individuals of spotted dolphin recorded, representing negligible proportions of the total catch. There are no specific mitigation measures applicable exclusively to these species; however, they benefit from general cetacean protection measures previously outlined in the UoA1. The assessment team considers these interactions negligible, although it is acknowledged that marine mammals are characterised by slow reproductive rates, which can increase their vulnerability to fisheries interactions.<br>Based on the low levels of interaction observed, the assessment team considers that the UoA **meets the SG60 criterion**, indicating that known direct effects are likely to not hinder the recovery of ETP species. Additionally, the UoA **fulfils the SG80 criterion**, reflecting that direct effects are highly likely to not hinder recovery. However, due to the lack of robust data and limited certainty, |

| PI 2.3.1 | | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species | | |
|---|---|---|---|---|
| | | SG100 is not met, as there is insufficient confidence to assert a high degree of certainty that there are no significant detrimental direct effects of the UoA on ETP species. | | |
| c | **Indirect effects** | | | |
| | Guide post | | Indirect effects have been considered for the UoA and are thought to be **highly likely** to not create unacceptable impacts. | There is a **high degree of confidence** that there are no **significant detrimental indirect effects** of the UoA on ETP species. |
| | Met? | | **Yes** | **No** |
| Rationale | | **All ETP species**<br>The team is not aware that indirect effects on and of the ETP species have been considered for the UoA. SG80 is not met. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | | | |
| Data-deficient? (Risk-Based Framework needed) | | **No** | | |

### PI 2.3.2 – ETP species management strategy- UoA1

| PI 2.3.2 | | The UoA has in place precautionary management strategies designed to:<br>• **Meet national and international requirements.**<br>• **Ensure the UoA does not hinder recovery of ETP species.**<br><br>**Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species** | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| a | **Management strategy in place (national and international requirements)** | | | |
| | Guide post | There are **measures** in place that minimise the UoA-related mortality of ETP species, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species. | There is a **strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species. | There is a **comprehensive strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to **achieve above** national and international requirements for the protection of ETP species. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | IATTC has developed several measures to protect ETPs species, the most relevant that apply to this fishery are listed below.<br><br>Resolution C-15-04, adopted by the Inter-American Tropical Tuna Commission (IATTC) in 2015, focuses on the conservation of **mobulid rays** (family Mobulidae) within the IATTC Convention Area. This resolution prohibits the retention, transshipment, landing, storage, sale, or offering for sale of any part or whole carcass of mobulid rays caught in association with fisheries in the area. It also mandates the prompt and safe release of any mobulid rays incidentally caught, ensuring minimal harm during the release process. | | |

| PI 2.3.2 | **The UoA has in place precautionary management strategies designed to:**<br>• **Meet national and international requirements.**<br>• **Ensure the UoA does not hinder recovery of ETP species.**<br><br>**Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species** |
|---|---|
| | Resolution C-15-04 remains active and continues to be enforced. There have been no amendments or updates to this specific measure since its adoption. The IATTC maintains a list of active resolutions, including C-15-04, on its official website. In summary, Resolution C-15-04 continues to play a crucial role in the conservation efforts for mobulid rays within the IATTC Convention Area, with no recent updates or changes to its provisions.<br><br>At the national level, Ministerial Agreement MPCEIP-SRP-2022-0078-A prohibits the retention on board, transshipment, landing, storage, transportation, sale, or offering for sale of whole or partial carcasses of the following mobulid ray species: Giant manta ray (Mobula birostris), Devil ray (Mobula mobular), Bentfin devil ray (Mobula thurstoni), Pygmy devil ray (Mobula munkiana), and Chilean devil ray (Mobula tarapacana).<br>In the event of incidental catches of the species listed in Article 1, individuals must be returned to their natural habitat unharmed to the extent possible, or otherwise if dead. Specimens entangled or ensnared must be released; if captured by longlines, any hook embedded in the body should be removed, or the branchline cut as close to the hook as possible, always ensuring personal safety.<br><br>As of November 2024, the IATTC has implemented several resolutions aimed at the conservation of silky sharks (*Carcharhinus falciformis*) and other **shark species** within its convention area. The key resolutions and their current status are as follows:<br><br>Resolution C-24-05 created to consolidate IATTC Resolutions C-05-03, C-16-04, C-16-05, and to strengthen shark conservation and management measures in the eastern Pacific Ocean.<br>Resolution C-21-06 (2021): Adopted during the 98th Meeting of the IATTC, this resolution amended and extended the provisions of C-19-05 for the years 2022 and 2023. It continued the prohibition on the retention of silky sharks and reinforced data collection efforts. As of now, there have been no new resolutions adopted to replace or extend C-21-06. Therefore, the specific measures outlined in C-21-06 are no longer in effect.<br><br>In summary, there are specific measures for silky shark conservation under Resolution C-23-08 but the overarching conservation framework for sharks are established by Resolution C-24-05 (previous C-23-07).<br><br>Furthermore, Ecuador developed its first National Action Plan for sharks' management and conservation (PAN-EC) in 2013, valid for a period of 5 years. This PAN-EC was adopted as a national policy through Executive Decree Nº486/2007. The latest PAT-EC was developed for the period 2020-2024, and it has also been adopted as National policy through Agreement MPCEIP-SRP 2022-0068-A. The objective of the PAT-EC, which includes both sharks and rays, is to ensure the conservation, sustainable management, and recovery of shark, ray, guitarfish, and chimaera populations within Ecuadorian maritime territory. This activity will be carried out within the framework of the Code of Conduct for Responsible Fisheries and in accordance with the legal and technical regulations issued by the national fisheries authority, as well as by international entities of which Ecuador is a participant.<br><br>Current national regulations oblige to comply with a minimum observer coverage of 10% of the fishing trips performed by the mother-ship vessels, and to increase it progressively up to 20% in 2024. Observers' data are reported to the SRP.<br><br>**Turtles**<br>Resolution C-19-04, adopted by the Inter-American Tropical Tuna Commission (IATTC) in 2019, focuses on mitigating the impacts of tuna fishing on sea turtles within the Eastern Pacific Ocean (EPO).<br><br>Provisions of Resolution C-19-04: |

<table>
<tr><td colspan="2">PI 2.3.2</td><td colspan="4">The UoA has in place precautionary management strategies designed to:<br>• Meet national and international requirements.<br>• Ensure the UoA does not hinder recovery of ETP species.<br><br>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species</td></tr>
<tr><td colspan="2"></td><td colspan="4">• Prohibition of Retention: Fishing vessels are prohibited from retaining, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of sea turtles caught incidentally.<br>• Safe Handling and Release: Vessels must promptly release incidentally caught sea turtles, ensuring minimal harm during the release process.<br>• Use of Circle Hooks and Fish Bait: Longline vessels are encouraged to use circle hooks and whole fish bait to reduce sea turtle bycatch.<br>• Crew Training: Operators are required to train their crews in techniques for safe handling and releasing sea turtles.<br>• Reporting Requirements: Members and cooperating non-members (CPCs) must report all interactions with sea turtles, including species identification, condition upon release, and mitigation measures employed.<br>Resolution C-19-04 remains in effect and continues to be enforced. There have been no amendments or updates to this specific measure since its adoption. The IATTC maintains a list of active resolutions, including C-19-04, on its official website.<br><br>Finally, a Permanent Working Group on Ecosystem and Bycatch (EBWG) was formally created in 2022 through the adoption of Resolution Resolution C-22-06. Among the objectives of this WG is to evaluate and recommend measures and best practices to avoid, reduce and minimize catch and mortality of non-target species, effective methods for safe handling practices and release of non-target species, and the effects of fishing on endangered species.<br><br>In summary, Resolution C-19-04 continues to play a crucial role in the conservation efforts for sea turtles within the IATTC Convention Area, with no recent updates or changes to its provisions. For all ETP species assessed (oceanic whitetip sharks, mobulid rays, sea turtles, seabirds, and dolphins), SG60 and SG80 are met due to existing management measures and regulations.<br><br>According to the definitions provided in Table SA8 (FCP 2.01), a ‘comprehensive strategy’ is a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses. The team considers that the strategy in place and described above is still not a comprehensive strategy. Thus, SG100 in not met.</td></tr>
<tr><td rowspan="3">b</td><td colspan="5">Management strategy in place (alternative)</td></tr>
<tr><td>Guide post</td><td>There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.</td><td>There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.</td><td colspan="2">There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td colspan="2">No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="4">IATTC has developed several measures to protect ETPs species, the most relevant that apply to this fishery are listed below.<br><br>Resolution C-15-04, adopted by the Inter-American Tropical Tuna Commission (IATTC) in 2015, focuses on the conservation of mobulid rays (family Mobulidae) within the IATTC Convention Area. This resolution prohibits the retention, transshipment, landing, storage, sale, or offering for sale of any part or whole carcass of mobulid rays caught in association with fisheries in the area. It also mandates the prompt and safe release of any mobulid rays incidentally caught, ensuring minimal harm during the release process.<br><br>Resolution C-15-04 remains active and continues to be enforced. There have been no amendments or updates to this specific measure since its adoption. The IATTC maintains a list of active resolutions, including C-15-04, on its official website. In summary, Resolution C-15-04</td></tr>
</table>

| PI 2.3.2 | **The UoA has in place precautionary management strategies designed to:**<br>• **Meet national and international requirements.**<br>• **Ensure the UoA does not hinder recovery of ETP species.**<br><br>**Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species** |
|---|---|
| | continues to play a crucial role in the conservation efforts for mobulid rays within the IATTC Convention Area, with no recent updates or changes to its provisions.<br><br>As of November 2024, the IATTC has implemented several resolutions aimed at the conservation of silky sharks (*Carcharhinus falciformis*) and other **shark species** within its convention area. The key resolutions and their current status are as follows:<br><br>Resolution C-24-05 (previous C-23-07)created to consolidate IATTC Resolutions C-05-03, C-16-04, C-16-05, and to strengthen shark conservation and management measures in the eastern Pacific Ocean.<br>Resolution C-21-06 (2021): Adopted during the 98th Meeting of the IATTC, this resolution amended and extended the provisions of C-19-05 for the years 2022 and 2023. It continued the prohibition on the retention of silky sharks and reinforced data collection efforts. As of now, there have been no new resolutions adopted to replace or extend C-21-06. Therefore, the specific measures outlined in C-21-06 are no longer in effect.<br><br>In summary, there are specific measures for silky shark conservation under Resolution C-23-08 but the overarching conservation framework for sharks are established by Resolution C-24-05 (previous C-23-07).<br><br>Furthermore, Ecuador developed its first National Action Plan for sharks' management and conservation (PAN-EC) in 2013, valid for a period of 5 years. This PAN-EC was adopted as a national policy through Executive Decree Nº486/2007. The latest PAT-EC was developed for the period 2020-2024, and it has also been adopted as National policy through Agreement MPCEIP-SRP 2022-0068-A. Current national regulations oblige to comply with a minimum observer coverage of 10% of the fishing trips performed by the mother-ship vessels, and to increase it progressively up to 20% in 2024. Observers' data are reported to the SRP.<br><br>**Turtles**<br>Resolution C-19-04, adopted by the Inter-American Tropical Tuna Commission (IATTC) in 2019, focuses on mitigating the impacts of tuna fishing on sea turtles within the Eastern Pacific Ocean (EPO).<br><br>Provisions of Resolution C-19-04:<br><br>• Prohibition of Retention: Fishing vessels are prohibited from retaining, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of sea turtles caught incidentally.<br>• Safe Handling and Release: Vessels must promptly release incidentally caught sea turtles, ensuring minimal harm during the release process.<br>• Use of Circle Hooks and Fish Bait: Longline vessels are encouraged to use circle hooks and whole fish bait to reduce sea turtle bycatch.<br>• Crew Training: Operators are required to train their crews in techniques for safe handling and releasing sea turtles.<br>• Reporting Requirements: Members and cooperating non-members (CPCs) must report all interactions with sea turtles, including species identification, condition upon release, and mitigation measures employed.<br>Resolution C-19-04 remains in effect and continues to be enforced. There have been no amendments or updates to this specific measure since its adoption. The IATTC maintains a list of active resolutions, including C-19-04, on its official website.<br><br>Finally, a Permanent Working Group on Ecosystem and Bycatch (EBWG) was formally created in 2022 through the adoption of Resolution Resolution C-22-06. Among the objectives of this WG is to evaluate and recommend measures and best practices to avoid, reduce and minimize catch and mortality of non-target species, effective methods for safe handling practices and release of non-target species, and the effects of fishing on endangered species. |

| PI 2.3.2 | | The UoA has in place precautionary management strategies designed to:<br>• **Meet national and international requirements.**<br>• **Ensure the UoA does not hinder recovery of ETP species.**<br><br>**Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species** | | |
|---|---|---|---|---|
| | | In summary, Resolution C-19-04 continues to play a crucial role in the conservation efforts for sea turtles within the IATTC Convention Area, with no recent updates or changes to its provisions. For all ETP species assessed (oceanic whitetip sharks, mobulid rays, sea turtles, seabirds, and dolphins), **SG60 and SG80** are met due to existing management measures and regulations.<br><br>According to the definitions provided in Table SA8 (FCP 2.01), a 'comprehensive strategy' is a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses. The team considers that the strategy in place and described above is still not a comprehensive strategy. Thus, SG100 is not met. | | |
| **c** | **Management strategy evaluation** | | | |
| | Guide post | The measures are **considered likely** to work, based on **plausible argument** (e.g. general experience, theory or comparison with similar fisheries/species). | There is an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or the species involved. | The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis** supports **high confidence** that the strategy will work. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | There are strategies in place that are designed to prevent UoA as they have been detailed in the scoring guidepost b. as it has been mentioned, these strategies are reflected in the various resolutions adopted by the Inter-American Tropical Tuna Commission (IATTC) and implemented within the fisheries management area for instance; Mobulid Rays – Resolution C-15-04 (2015); Several resolutions for sharks starting with C-21-06 in 2021 aim to protect silky sharks; resolution C-19-04 (2019) for sea turtles; resolution C11-02 for seabirds and all the measures estabisehd by AIDCP for dolphins.<br><br>While these measures **meet SG60 and SG80** standards by ensuring that the fisheries comply with the necessary conservation and management requirements, SG100 is not met because the strategies do not go beyond the minimum standards required for the protection and recovery of ETP species. Therefore, while the current strategy is expected to prevent the UoA from hindering the recovery of ETP species, it does not fully ensure that the recovery will exceed baseline expectation. | | |
| **d** | **Management strategy implementation** | | | |
| | Guide post | | There is some **evidence** that the measures/strategy is being implemented successfully. | There is **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and **is achieving its objective as set out in scoring issue (a) or (b).** |
| | Met? | | **Yes** | **No** |
| Rationale | | There is evidence to suggest that the measures and strategies in place for the conservation of ETP species are being implemented successfully. The various resolutions adopted by the IATTC, such as **Resolution C-15-04** for mobulid rays, **Resolution C-19-04** for sea turtles, and the **AIDCP** for dolphins, are actively enforced, with specific provisions in place to ensure compliance by fishing vessels. | | |

| PI 2.3.2 | | The UoA has in place precautionary management strategies designed to:<br>• Meet national and international requirements.<br>• Ensure the UoA does not hinder recovery of ETP species.<br><br>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species | | |
|---|---|---|---|---|
| | | These include the prohibition of retention of ETP species, the requirement for their safe release, and mandatory crew training for handling and releasing these species with minimal harm.<br><br>Moreover, the IATTC regularly monitors and reports on the effectiveness of these measures, which indicates a clear commitment to ensuring their success. The fact that these resolutions remain active and enforceable, with no amendments or updates required since their adoption, also demonstrates their continued relevance and the ongoing implementation of their provisions.<br><br>While the strategy is largely successful in meeting **SG60** and **SG80** standards for ETP species, further evidence may be needed to fully demonstrate the long-term recovery of these species beyond the minimum requirements.<br><br>However, the foundational management measures in place appear to be effectively contributing to the protection of these species and minimizing the risk of harm from fishing activities. | | |
| **e** | **Review of alternative measures to minimise mortality of ETP species** | | | |
| | Guide post | There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species. | There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate. | There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate. |
| | Met? | **Yes** | **Yes** | **Yes** |
| Rationale | | There is an ongoing research programme to improve understanding of the interactions and implications of the different EPO fisheries on non-target species, and ecosystem considerations is a standing item on the agenda of the IATTC's Science Advisory Committee (e.g., Griffiths & Fuller 2019b), while there is an annual meeting of the IATTC's Working Group on Bycatch (e.g., IATTC 2019f) where bycatch mitigation is considered explicitly. Together, it is considered that there is at least a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate – **SG60, SG80 and SG100 are met** | | |
| Draft scoring range | | **>80** | | |
| Information gap indicator | | **Information is enough to score the PI** | | |

### PI 2.3.3 – ETP species information – UoA1

| PI 2.3.3 | | Relevant information is collected to support the management of UoA impacts on ETP species, including:<br>• Information for the development of the management strategy;<br>• Information to assess the effectiveness of the management strategy; and<br>• Information to determine the outcome status of ETP species | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Information adequacy for assessment of impacts** | | | |
| | Guide post | Qualitative information is **adequate to estimate** the | Some quantitative information is **adequate to assess** the UoA related | Quantitative information is available to assess with a high degree of certainty the |

| PI 2.3.3 | | Relevant information is collected to support the management of UoA impacts on ETP species, including:<br>• **Information for the development of the management strategy;**<br>• **Information to assess the effectiveness of the management strategy; and**<br>• **Information to determine the outcome status of ETP species** | | |
|---|---|---|---|---|
| | | UoA related mortality on ETP species.<br><br>OR<br><br>**If RBF is used to score PI 2.3.1 for the UoA:** Qualitative information is **adequate to estimate productivity and susceptibility attributes** for ETP species. | mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.<br><br>OR<br><br>**If RBF is used to score PI 2.3.1 for the UoA:** Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species. | **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Adequate quantitative information is available to assess UoA1-related mortality and its impact on ETP species, thereby supporting the evaluation of whether the UoA poses a risk to their protection and recovery. For this UoA, the primary sources of information include official landing records provided by the client, based on administrative data, which detail the catch composition of both the industrial and artisanal fleets (*Nodrizas* and associated fibras), and national observer data, which apply exclusively to this UoA. It should be noted that observer coverage for mother-ship vessels was initially set at 10% of fishing trips under Agreement 407 of 12 October 2011, later revised by Agreement MPCEIP-SRP-2021-0208-A in September 2021, which progressively increased targets to 15% in 2023 and 20% in 2024. In 2021, observer coverage for the longline fleet was 6.4% (MPCEIP, 2022d), with the majority of observations focusing on the LL-TBS component and only 25% on the LL-DOL. Observers are deployed exclusively on mother-ship vessels, with fishing operations conducted from associated fibre-glass skiffs remaining unobserved. While observer coverage on mother-ship vessels was limited in earlier years, the data available (although incomplete for the associated fibre-glass skiffs) provides sufficient qualitative basis to **meet SG60**, as it allows a reasonable estimation of UoA-related mortality on ETP species. Furthermore, the availability of some quantitative information, derived from the landing records and observer datasets, enables the assessment of whether the UoA may pose a threat to the protection and recovery of these species, thereby **meeting SG80**. However, the limited observer coverage, the absence of systematic monitoring of all vessels, and the lack of comprehensive quantitative data for all fleet components prevent an assessment with a high degree of certainty regarding the magnitude and consequences of UoA-related impacts on ETP species. Therefore, **SG100 is not achieved.** | | |
| **b** | **Information adequacy for management strategy** | | | |
| | Guide post | Information is adequate to support **measures** to manage the impacts on ETP species. | Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species. | Information is adequate to support a **comprehensive strategy** to manage impacts, minimise mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The UoAs are subject to observer coverage under the AIDCP, with the minimum requirement established by Ecuador set at 5%. It should be noted that observer coverage for mother-ship vessels was initially set at 10% of fishing trips under Agreement 407 of 12 October 2011, later | | |

| PI 2.3.3 | **Relevant information is collected to support the management of UoA impacts on ETP species, including:**<br>• **Information for the development of the management strategy;**<br>• **Information to assess the effectiveness of the management strategy; and**<br>• **Information to determine the outcome status of ETP species** |
|---|---|
| | revised by Agreement MPCEIP-SRP-2021-0208-A in September 2021, which progressively increased targets to 15% in 2023 and 20% in 2024. However, there is no evidence that the 20% coverage target for 2024 has been achieved, and the current observer coverage percentage for the fleet is unknown. According to Official Letter No. MPCEIP-SRP-2025-0653-O (Report of Ecuador on the conservation of sharks caught in association with fisheries in the Eastern Pacific Ocean during 2024, in compliance with Resolution C-23-07), information is provided on the catches and release conditions for various taxa, including sharks, mobulid rays, and sea turtles. Existing observer data provide information on catches for sharks, mobulid rays, dolphins and sea turtles, which is sufficient to track trends and manage impacts on these species, meeting SG60 for all ETP species and SG80 for sharks, turtles, and rays. Nonetheless, the absence of updated stock assessments, combined with the lack of verified observer coverage data, prevents the fishery from meeting SG100. |
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |

### PI 2.3.3 – ETP species information – UoA2

| PI 2.3.3 | | **Relevant information is collected to support the management of UoA impacts on ETP species, including:**<br>• **Information for the development of the management strategy;**<br>• **Information to assess the effectiveness of the management strategy; and**<br>• **Information to determine the outcome status of ETP species** | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Information adequacy for assessment of impacts** | | | |
| | Guide post | Qualitative information is **adequate to estimate** the UoA related mortality on ETP species.<br><br>OR<br><br>**If RBF is used to score PI 2.3.1 for the UoA:**<br>Qualitative information is **adequate to estimate productivity and susceptibility attributes** for ETP species. | Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.<br><br>OR<br><br>**If RBF is used to score PI 2.3.1 for the UoA:**<br>Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species. | Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Adequate quantitative and qualitative information is available to assess UoA2-related mortality and its potential impact on ETP species, thereby supporting the evaluation of whether this UoA poses a risk to their protection and recovery. For UoA2, the primary sources of information include official landing records provided by the client, based on administrative data, which detail the catch composition of the industrial Aceros fleet, and | | |

| PI 2.3.3 | | **Relevant information is collected to support the management of UoA impacts on ETP species, including:**<br>• **Information for the development of the management strategy;**<br>• **Information to assess the effectiveness of the management strategy; and**<br>• **Information to determine the outcome status of ETP species** | | |
|---|---|---|---|---|
| | | a technical report produced within the framework of a Fishery Improvement Project for the longline swordfish fishery. The latter is based on data from a private observer programme implemented on board the TRANSMARINA C.A. industrial fleet, initiated on 27 June 2022, which by December 2024 had recorded 82,880 individuals, encompassing all organisms interacting with the fishing gear, irrespective of their fate. Additional data sources include catch reports submitted to the IATTC, which cover both UoA1 and UoA2. National observer data apply exclusively to UoA1, as the steel fleet has no systematic national observer coverage; according to the client, observers were present only during a single trip in 2024, which was therefore excluded from the analysis. While the absence of consistent national observer coverage limits the comprehensiveness of the dataset, the combined information from landing records, IATTC reports, and the private observer programme provides a sufficient qualitative basis to **meet SG60**, as it allows a reasonable estimation of UoA2-related mortality on ETP species. Furthermore, the availability of quantitative data from the private observer programme supports an assessment of whether UoA2 may pose a threat to the protection and recovery of these species, thereby **meeting SG80**. However, the lack of systematic observer coverage across the fleet and the absence of fully independent verification for all fishing operations prevent an assessment with a high degree of certainty regarding the magnitude and consequences of UoA2-related impacts on ETP species. Therefore, SG100 is not achieved. | | |
| **b** | **Information adequacy for management strategy** | | | |
| | Guide post | Information is adequate to support **measures** to manage the impacts on ETP species. | Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species. | Information is adequate to support a **comprehensive strategy** to manage impacts, minimise mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Under the AIDCP framework, Ecuador has established a minimum observer coverage target of 10% for its fleets; however, for the UoA under assessment, there is no evidence confirming that this requirement is currently being met. Available observer data are limited, with only a single trip in 2024 monitored on board steel-hulled vessels, and these records could not be disaggregated by fleet segment. As such, the primary independent monitoring information for this UoA derives from the private observer programme implemented within the industrial fleet. According to *Oficio Nro. MPCEIP-SRP-2025-0653-O* (Reporte de Ecuador sobre la conservación de tiburones capturados en asociación con las pesquerías en el OPO durante el año 2024, en cumplimiento de la Resolución C-23-07), catches and release conditions are reported for several taxa, including sharks, mobulid rays and sea turtles. Regarding dolphins, while the fleet officially reports zero mortality, observers recorded at least two different species, albeit at very low interaction levels. Nonetheless, the potential for unobserved mortality remains a management concern. The currently available data are sufficient to identify species interactions, track general trends, and manage impacts at a level consistent with **meeting SG60 and SG80**. However, the lack of systematic coverage across the fleet, the reliance on non-independent datasets for the majority of operations, and the absence of updated stock assessments prevent achieving SG100. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 2.4.1 – Habitats outcome

| PI 2.4.1 | | The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Commonly encountered habitat status** | | | |
| | Guide post | The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. | The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. | There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Commonly encountered habitats are defined by MSC Requirements (FCR GSA3.13.3.1) as those preferred by the target species, that the UoA's gear is designed to exploit, and/or make up a reasonable portion of the UoA's fishing area.<br>The mahi mahi fishery with doradero (thin surface longline) takes place at around 6-13 m depth (Martínez-Ortíz & Zúñiga-Flores, 2012; Martínez-Ortiz et al., 2015) in oceanic waters as far as 100o W, west of the Galapagos Islands therefore, the epipelagic habitat in the Southeastern Pacific Ocean is considered as the commonly encountered habitat for the purpose of this assessment.<br><br>Pelagic habitats function is mostly determined by their physico-chemical properties (Raymond, 2011). The status of pelagic habitats is affected by human induced pressures such as eutrophication and hazardous substances, as well as by natural and human-induced changes in climate (HELCOM, 2018). The fishery, however, will not change the characteristics of the water column (for example, the temperature, salinity, currents) and it does not come into contact with benthic habitats. Besides, the characteristics of the fishing gear used makes very unlikely the gear loss. The fiber glass vessels set a line and then they remain close to it, sailing from one point to the other checking the hooks, getting the catches on board and re-baiting when necessary. Then, at the end of the day they haul the line before sailing back to the mother-ship.<br><br>Therefore, it is highly unlikely that the fishery will reduce the structure and function of the pelagic habitat to a point where there is serious or irreversible damage. Hence, meeting **SG80**.<br><br>However, as there is no evidence of it, **SG100 is not met.** | | |
| **b** | **VME habitat status** | | | |
| | Guide post | The UoA is **unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. | The UoA is **highly unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. | There is **evidence** that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. |
| | Met? | **N/A** | **N/A** | **N/A** |
| Rationale | | Due to the operational procedures of this type of fishing, neither the seabed nor any VMEs are encountered.<br><br>In addition, epipelagic habitats in open waters are not included in the definition of paragraph 42, subparagraphs (i)-(v) of the FAO Guidelines on Vulnerable Marine Ecosystems (VMes), as described in MSC FCR GSA3.13.3.2. Therefore, this SI is not relevant. | | |
| **c** | **Minor habitat status** | | | |

| PI 2.4.1 | | The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates | | |
|---|---|---|---|---|
| | Guide post | | | There is **evidence** that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm. |
| | Met? | | | **No** |
| Rationale | | Minor habitats are defined by MSC as those that do not fall within the classification of Commonly Encountered Habitats or VMEs (SA3.13.3).<br><br>FS v.2.01 includes Guidance on the Habitats Management PI (2.4.2) that indicates that in order for a fishery to score a 100, a management strategy should be in place even for gears that do not regularly contact benthic habitats since gear loss or unexpected seafloor impacts could occur (Box GSA7). Thus, minor habitats are benthic habitats that could be potentially impacted by gear loss. Since no information is being collected regarding this issue, **SG100 is not met.** | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | | | |
| Data-deficient? (Risk-Based Framework needed) | | **No** | | |

### PI 2.4.2 – Habitats management strategy

| PI 2.4.2 | | There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Management strategy in place** | | | |
| | Guide post | There are **measures** in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance. | There is a **partial strategy** in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. | There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | MSC FCR Table SA8, states that "the term “if necessary” is used in the management strategy PIs at SG60and SG80 for the primary species, secondary species, habitats and ecosystems components. This is to exclude the assessment of UoAs that do not impact the relevant component at these SG levels”.<br><br>Bearing in mind that the present fishery is highly unlikely to impact benthic habitats, the term “if necessary” does apply here and no measures or partial strategy are required. Hence, **SG60 and SG80 are met.**<br><br>FS v.2.01 includes Guidance on the Habitats Management PI (2.4.2) that indicates that in order for a fishery to score a 100, a management strategy should be in place even for gears that do not regularly contact benthic habitats since gear loss or unexpected seafloor impacts could occur (Box GSA7). As there is no strategy in place for managing the impacts of gear loss on habitats, **SG100 is not met.** | | |
| **b** | **Management strategy evaluation** | | | |
| | Guide post | The measures are **considered likely** to work, | There is some **objective basis for confidence** that | **Testing** supports **high confidence** that the partial |

| PI 2.4.2 | | There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats | | |
|---|---|---|---|---|
| | | based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats). | the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved. | strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | As mentioned above, the longlin fishery is an oceanic fishery, which is confirmed by the UoAs logbooks and the VMS requirement for mother-ships and steel fleet which allows continuous monitoring.<br><br>Moreover, as stated in SIa, management measures/partial strategy as described under SGs 60 and 80 are not required, therefore, **SG60 and SG80 are met.**<br><br>As stated in PI 2.4.2, there is no strategy in place for managing the impacts of gear loss on habitats, and no information is being collected regarding this issue. Thus, **SG100 is not met**. | | |
| **c** | **Management strategy implementation** | | | |
| | Guide post | | There is **ome quantitative evidence** that the measures/partial strategy is being implemented successfully. | There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a). |
| | Met? | | **Yes** | **No** |
| Rationale | | As confirmed by the UoA logbooks and the VMS requirement for mother-ships and stell fleet which allows continuous monitoring, the dolphinfish fishery is an oceanic fishery whose commonly encountered habitat is the epipelagic habitat, and which does not interact directly with any benthic habitats.<br><br>As stated in SIa, no measures or partial strategy are required, therefore this **SG80 is met**.<br><br>In the absence of information regarding gear loss, **SG100 is not met**. | | |
| **d** | **Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs** | | | |
| | Guide post | There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs. | There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. | There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. |
| | Met? | **N/A** | **N/A** | **N/A** |
| Rationale | | As mentioned in PI 2.4.1, the fishery takes place only in the epipelagic habitat where there are no VMEs.<br><br>Therefore, as there are no management requirements to protect VMEs, this **SI is not relevant.** | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | | | |

### PI 2.4.3 – Habitats information

| PI 2.4.3 | | Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat | | |
|---|---|---|---|---|
| Scoring issue | | SG 60 | SG 80 | SG 100 |
| a | Information quality | | | |
| | Guide post | The types and distribution of the main habitats are **broadly understood.**<br><br>OR<br><br>**If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the types and distribution of the main habitats. | The nature, distribution and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.<br><br>OR<br><br>**If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats. | The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The fishery activity lays between two of the world's Large Marine Ecosystems (LMEs), the Pacific Central-American Coast LME and the Humboldt Current LME. Both are broadly characterized in Heileman, 2009 and Heileman et al., 2009, respectively.<br><br>In addition, one of the functions of the IATTC under the 2003 Antigua Convention is to "adopt, as necessary, conservation and management measures and recommendations for species belonging to the same ecosystem and that are affected by fishing for, or dependent on or associated with, the fish stocks covered by this Convention, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened". Therefore, among other issues, a description of the offshore pelagic ecosystem of the tropical and subtropical Pacific Ocean, and the oceanographic conditions in the Eastern Pacific Ocean mostly regarding their effects on tuna fisheries are available (IATTC, 2013; 2015; 2019b).<br><br>Jiménez – Santistevan (2008) has also characterized the equatorial Pacific Ocean between the Galapagos Islands and continental Ecuador.<br><br>All this shows that the main habitat is broadly understood, hence, **meeting SG60**.<br><br>The characteristics of each of these areas can be consulted in websites such as the MPAtlas website (http://mpatlas.org/explore/) or the protected planet website (http://www.protectedplanet.net/). Nevertheless, these protected marine areas are outside the spatial range of the fishery, therefore, they are not relevant here.<br><br>Moreover, as there are no vulnerable habitats in the pelagic ecosystem that could be damaged or impacted by the use of the doradero gear, **SG80 is also met**.<br><br>However, as the detailed distribution of all habitats is not known over their entire range, SG100 is not met. | | |
| b | Information adequacy for assessment of impacts | | | |
| | Guide post | Information is adequate to broadly understand the nature of the main impacts of gear use on the main | Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, | The physical impacts of the gear on all habitats have been quantified fully. |

| PI 2.4.3 | | Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat | | |
|---|---|---|---|---|
| | | habitats, including spatial overlap of habitat with fishing gear.<br><br>OR<br><br>**If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats. | and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.<br><br>OR<br><br>**If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats. | |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The nature, distribution, and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. The distribution and ecosystem characteristics in the EPO area are well-known, as outlined in the IATTC SAC-13-10 – Ecosystem Considerations, which provides a broad understanding of the ecosystem and the factors that define different areas and species distributions, including thermal conditions and other variables. This fishery operates in the pelagic region, and the commonly encountered habitat is the pelagic environment. Therefore, the habitats' nature, distribution, and vulnerability are well understood in relation to the scale and intensity of the UoA, and SG60 and SG80 are met. While VME or minor habitats of relevance are not encountered, the vast scale of the IATTC Convention Area and the lack of detailed mapping means that SG100 is not met. | | |
| **c** | **Monitoring** | | | |
| | Guide post | | Adequate information continues to be collected to detect any increase in risk to the main habitats. | Changes in all habitat distributions over time are measured. |
| | Met? | | **Yes** | **No** |
| Rationale | | VMS data on the fishery spatial distribution continues to be collected though the DIRNEA (National Directorate of Aquatic Spaces).<br><br>Fishermen have to fill the Longliner set form (“Formulario lance palangrero”) every time they set their gear. In that form, among other information, they fill in the Sea Surface Temperature. All the information gathered by the fishery are analyzed by the Ministry technicians who can monitor and detect changes.<br><br>In addition, as the IATTC recognizes ecosystem issues in many of its management decisions, it aims at quantifying and evaluating the Commission’s ecosystem approaches to fisheries, through current tools available to assess the state of the ecosystem (IATTC, 2019b), including the physical environment of tunas and billfishes.<br><br>Thus, **SG80 is met.**<br><br>As stated in PI 2.4.2, there is no strategy in place for managing the impacts of gear loss on benthic habitats, and no information is being collected regarding this issue. Thus, **SG100 is not met.** | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | | | |

### PI 2.5.1 – Ecosystem outcome

| PI 2.5.1 | | The UoA does not cause serious or irreversible harm to the key elements underlying ecosystem structure and function | | |
|---|---|---|---|---|
| Scoring issue | | SG 60 | SG 80 | SG 100 |
| a | Ecosystem status | | | |
| | Guide post | The UoA is **unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm. | The UoA is **highly unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm. | There is **evidence** that the UoA is **highly unlikely** to disrupt the **key** elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The fishery operates in the Eastern Tropical Pacific (EPO), where key ecosystem elements include physical factors driving productivity and predator dynamics, as well as trophic structure and function within the pelagic food web.<br>Environmental phenomena like El Niño and La Niña impact temperature, salinity, and nutrient levels, which affect the distribution of tuna and small pelagic species.<br><br>The IATTC's SAC 13-10 Ecosystem considerations report highlights the influence of these conditions on marine life, with models like ETP7 and ETP8 used to assess fishing impacts. The IATTC's SAC-14-11 meeting in 2023 did not show significant changes to the ecosystem considerations compared to SAC-13, but it continued to emphasize the need for improved data collection and reporting on bycatch species in the tuna fisheries. There was ongoing progress in the analysis of fishing impacts, especially related to purse-seine and longline fisheries, with a notable focus on ecosystem impacts and bycatch data quality. The SAC-14-11 document outlined efforts to improve data collection from both large and small vessels, although challenges remain with inconsistent reporting formats and gaps in data provision. Despite these assessments, uncertainty remains regarding the ecological impact of FADs, preventing full compliance with SG100.<br><br>Based on available information, fishery is unlikely to cause serious or irreversible harm to ecosystem structure or function, meeting SG60 and SG80, but not SG100. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |
| Data-deficient? (Risk-Based Framework needed) | | **No** | | |

### PI 2.5.2 – Ecosystem management strategy

| PI 2.5.2 | | There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function | | |
|---|---|---|---|---|
| Scoring issue | | SG 60 | SG 80 | SG 100 |
| a | Management strategy in place | | | |
| | Guide post | There are **measures** in place, if necessary which take into account the **potential impacts** of the UoA on key elements of the ecosystem. | There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance. | There is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place. |

| PI 2.5.2 | | There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function | | |
|---|---|---|---|---|
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | As already mentioned in PI 2.4.1, the assessed fishery does not impact abiotic elements, therefore no measures or partial strategy are required for the abiotic elements of the ecosystem.<br><br>Ecuador is part of the East Tropical Pacific Marine Corridor (CMAR), a regional initiative led by the governments of Costa Rica, Panama, Colombia and Ecuador. The CMAR has among its objectives, to promote the management and conservation of marine resources, improve and consolidate the management of Marine Protected Areas that make up the corridor, and establish a regional framework that facilitates the development and integral management of the corridor compatible with national policies and laws (León Cabrera, 2018; https://www.iucn.org/es/content/corredor-marino-del-pac%C3%ADfico-este-tropical-cmar). A new protected area in Galapagos called the Hermandad Marine Reserve constitutes the most recent achievement in this regard. The creation of the new protected area with an area of 60,000 km2 was adopted in 2022 through Executive Decree 319. This MPA complements the existing Galapagos Marine Reserve and connects it with the Cocos Island MPA in Costa Rica. This corridor aims to ensure a safe migratory route for many threatened marine species such as sharks, manta rays, turtles and whales. The new marine reserve is located northeast of the Galapagos archipelago. Of the 60,000 km2, 50% corresponds to strict protection where no type of extractive activity will be allowed, while the remaining 50% will allow fishing, excluding the use of longlines.<br><br>The marine protected areas in the South Eastern Pacific Ocean in the area where the UoA fishery operates. The characteristics of each of these areas can be consulted in websites such as the MPAtlas website (http://mpatlas.org/explore/) or the protected planet website (http://www.protectedplanet.net/).<br><br>Agreement 031 from October 8, 2004 states that only thin surface longline (doradero) with hook type “J” of size number 4 or 5, or circular hook of size number 14 or 15 is allowed to prevent incidental catches as much as possible.<br><br>In addition, Ecuador has specific legislation and management measures to protect sea turtles: (i) Ministerial Agreement 212 which considers all species of sea turtles in Ecuadorian territorial waters protected by the State; (ii) the National Plan for the Conservation of Sea Turtles, whose general objective is to identify the necessary actions to ensure the conservation of sea turtles in Ecuador; and (iii) the Sea Turtle Bycatch Reduction Program.<br><br>Moreover, there are national and international management measures specific to mitigate pressures on shark populations. At a national level, for example, there is the implementation of the National Action Plan for the Conservation and Management of Sharks (PAT-Ec) to conserve and manage sharks (Executive Decree 486 and 902); or the establishment of the Single Observer Program for the Longline Fleet of Ecuador (Ministerial Agreement 204), which is linked to other projects of national interest such as the National Action Plan for the Conservation and Management of the Mahi mahi (PAN Dorado), and the PAT-Ec. At a regional level, IATTC has a resolution to manage shark species (C-16-05, https://www.iattc.org/PDFFiles/Resolutions/IATTC/_English/C-16-05-Active_Management%20of%20sharks%20species.pdf).<br><br>Even though no cetaceans have been reported (not even from the observer’s reports), Ministerial Agreement 196 protects cetaceans stating that all species of whales present in territorial waters are considered protected by the State; and any activity that threatens the life of these marine mammals is prohibited.<br><br>Ecuador also has (apart from the fishery catch data) a database with the biological and fishing information of each trip registered by the Ministry of Aquaculture and Fisheries observers, where among other things, by-catch species are recorded.<br><br>All this shows that there is a partial strategy which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance, thus **meeting SG80**. | | |

| PI 2.5.2 | | There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function | | |
|---|---|---|---|---|
| | | However as there is not a strategy consisting of a plan containing measures to address all main impacts of the UoA on the ecosystem, **SG100 is not met.** | | |
| **b** | **Management strategy evaluation** | | | |
| | Guide post | The **measures** are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/ ecosystems). | There is **some objective basis for confidence** that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved. | **Testing** supports **high confidence** that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Physical factors driving ecosystem productivity and high order predator dynamics – A partial strategy to restrain the effects of the Fishery on the physical factors driving ecosystem productivity and predator dynamics is not necessary as these are major oceanographic features that will not be impacted by the fishery, therefore **SG60 and SG80 are met**. However, to meet SG 100 testing supports high confidence based on information from UoAs, as mentioned above some gaps of information are related to FADs and therefore, **SG100 is not met.**<br><br>Trophic structure and function within the pelagic food web – Modelling of the eastern tropical Pacific pelagic food web by Watters et al. 2003 was updated by Griffiths & Fuller 2019a and then by Griffiths et al. 2021. These authors demonstrated that the pelagic ecosystem has been impacted by increasing levels of purse seine effort and FAD fishing since 1993, for example with reductions in the trophic level within catches. Griffiths & Fuller 2019a concluded that the ecosystem condition was not significantly impacted and would be relatively stable at current levels of effort, but the additional analysis by Griffiths et al. 2021 highlighted the risk posed by increasing levels of FAD effort over time. SG 60 and 80 are met but as some gaps of information are related to the catches on FADs, even though the fishery does not deploy them, **SG100 is not met** | | |
| **c** | **Management strategy implementation** | | | |
| | Guide post | | There is **some evidence** that the measures/partial strategy is being **implemented successfully**. | There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).** |
| | Met? | | **Yes** | **No** |
| Rationale | | There is evidence that the measures and partial strategies are being successfully implemented. The IATTC's comprehensive management measures, including those for tuna species like yellowfin and bigeye, have demonstrated success in regulating fishing efforts to sustain healthy stock levels.<br><br>Additionally, ongoing data collection and research programs support monitoring ecosystem impacts, especially within the pelagic food web. These efforts are aligned with the objectives set out by the Antigua Convention, and while the strategy is not fully cohesive enough to meet SG100, it has been effective in ensuring SG60 and SG80 for key ecosystem elements. Therefore, the evidence suggests that the measures are working to restrain the impacts of the fishery on the ecosystem. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 2.5.3 – Ecosystem information

| PI 2.5.3 | | There is adequate knowledge of the impacts of the UoA on the ecosystem | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Information quality** | | | |
| | Guide post | Information is adequate to **identify** the key elements of the ecosystem. | Information is adequate to **broadly understand** the key elements of the ecosystem. | |
| | Met? | **Yes** | **Yes** | |
| Rationale | | The abiotic elements of the pelagic ecosystem in the Eastern Pacific Ocean are identified and understood.<br><br>The biotic elements considered of primary importance and to be most likely threatened by the Ecuador longline fishery is the trophic structure.<br><br>Therefore, information is adequate to broadly understand the key elements of the ecosystem. Thus, **meeting SG80** | | |
| **b** | **Investigation of UoA impacts** | | | |
| | Guide post | Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail. | Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail.** | Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail.** |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The main impacts of the UoA on the key ecosystem elements have been inferred from existing information, with some impacts investigated in detail. For example, research on the physical factors driving ecosystem productivity and predator dynamics in the Eastern Tropical Pacific (ETP) has shown that the major oceanographic features, such as temperature, salinity, and nutrient levels, are influenced by interannual variations like the El Niño Southern Oscillation (ENSO) and decadal oscillations (Fiedler & Lavin 2006, Watters et al. 2003).<br><br>These physical factors are vital drivers of ecosystem productivity and are unlikely to be significantly impacted by the fishery, ensuring compliance with SG60 and SG80.<br><br>Similarly, the trophic structure and function of the pelagic food web have been extensively studied. The influence of middle trophic level species, such as squids and bullet tunas, on the ecosystem has been highlighted in various studies (Watters et al. 2003, Olson & Watters 2003, Griffiths & Fuller 2019). These studies, particularly the use of Ecopath with Ecosim models, have allowed for simulations of the potential ecological impacts of the fishery, ensuring that the UoA meets the required standards for SG60 and SG80. | | |
| **c** | **Understanding of component functions** | | | |
| | Guide post | | The main functions of the components (i.e. P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**. | The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the |

| PI 2.5.3 | | There is adequate knowledge of the impacts of the UoA on the ecosystem | | |
|---|---|---|---|---|
| | | | | ecosystem are **understood**. |
| | Met? | | **Yes** | **No** |
| Rationale | | Tuna fishing in the EPO is a significant global fishery, and the region itself plays a major role in global climate variability. Extensive research has been conducted to understand the physical drivers of the cold tongue pelagic ecosystem and the impact of fishing on the trophic structure. This includes understanding the functions of key components like primary species (bigeye, yellowfin and skipjack tuna), secondary species, ETP species (sharks, rays, turtles, dolphins), and pelagic habitats. As a result, the main ecosystem functions are well understood, and SG80 is met.<br><br>However, while the impacts on these components are known, the full understanding of all ecosystem functions remains unclear including the target species (swordfish). From a precautionary standpoint, this prevents SG100 from being met, as some uncertainties remain about the broader ecosystem impacts. | | |
| **d** | **Information relevance** | | | |
| | Guide post | | Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. | Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred. |
| | Met? | | **Yes** | **No** |
| Rationale | | Adequate information is available on the impacts of the UoA on these ecosystem components, allowing some of the main consequences for the ecosystem to be inferred. Extensive research has been conducted on the physical drivers of the EPO cold tongue pelagic ecosystem, including studies of the oceanographic conditions influenced by phenomena such as El Niño and La Niña (Fiedler & Lavin, 2006; Watters et al., 2003).<br><br>The impacts of fishing activities on trophic structure and function within the ecosystem, including effects on target species, primary, secondary species such as bonitos and sharks, and ETP species like turtles and dolphins, have been evaluated through studies of fishing effort and biological modeling (Griffiths & Fuller, 2019; Griffiths et al., 2021). These sources provide a solid foundation for understanding the impacts of the fishery on key ecosystem components, although some uncertainties remain about the full extent of these impacts, especially regarding FAD usage and long-term ecosystem changes.<br><br>Thus, while there is sufficient information to infer the main consequences, uncertainties still exist that prevent a comprehensive understanding of all impacts. Therefore, SG80 is met, but SG100 is not fully achieved due to these remaining gaps. | | |
| **e** | **Monitoring** | | | |
| | Guide post | | Adequate data continue to be collected to detect any increase in risk level. | Information is adequate to support the development of strategies to manage ecosystem impacts. |
| | Met? | | **Yes** | **No** |
| Rationale | | Adequate data continue to be collected to detect any increase in risk levels. The IATTC has established a comprehensive monitoring and data collection program to assess the impacts of tuna fishing on the ecosystem. This includes the collection of data on target specie, primary species such as bigeye, yellowfin and skipjack tuna, secondary species (e.g., bonitos, sharks), and ETP (Eastern Tropical Pacific) species like turtles and dolphins.<br>The monitoring program integrates physical oceanographic data to track environmental changes that may influence ecosystem dynamics (IATTC SAC 13-10, 2022; SAC14-11,2024). | | |

| PI 2.5.3 | There is adequate knowledge of the impacts of the UoA on the ecosystem |
|---|---|
| | Additionally, the IATTC's Ecosystem and Bycatch Program is dedicated to research and monitoring ecosystem impacts from fishing, ensuring that any increases in risk to the ecosystem or species are detected. Models such as "ETP7" and "ETP8" also provide ecological risk assessments and indicators to detect changes over time in species populations and ecosystem health (Griffiths et al., 2021). Regular reviews of the monitoring data allow the IATTC to update conservation and management measures as needed to mitigate potential risks.<br><br>This continuous data collection and analysis process supports the ongoing detection of any rising risks, ensuring that appropriate actions can be taken to maintain ecosystem health. |
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |

## 7.6 Principle 3

### 7.6.1 Principle 3 background

The jurisdictional categories that apply in this assessment for the target specie is straddling stock ('SSS') and highly migratory species ('HMS') and, therefore, the UoAs are subject to international cooperation to manage the target stock.

#### 7.6.1.1 Regulatory framework applicable to the assessed fishery

**Inter-American Tropical Tuna Commission (IATTC)**

Tunas are highly migratory species therefore the management at international level is done by Regional Fisheries Management Organisations (RFMO). The Inter-American Tropical Tuna Commission (IATTC) is the RFMO responsible for the conservation and management of tuna and tuna -like species, associated species and their ecosystems, throughout the Eastern Pacific Ocean, from Canada, in the north, to Chile, in the South.

The IATTC was established in 1949. Current members are Belize, Canada, China, Colombia, Costa Rica, Ecuador, El Salvador, the European Union, France, Guatemala, Japan, Kiribati, Mexico, Nicaragua, Panama, Peru, Republic of Korea, Chinese Taipei, United States, Vanuatu, and Venezuela. Bolivia, Honduras, Indonesia, and Liberia are cooperating non-members.

The objective of the IATTC is to ensure the long-term conservation and sustainable use of tuna and tuna-like species and other species of fish taken by vessels fishing for tunas and tuna like species in the EPO, in accordance with the relevant rules of international law. In 1976, the IATTC's responsibilities were broadened to address the problems arising from the interaction of dolphin with tuna fisheries in the EPO. Defined policy objectives were to maintain a high level of tuna production while minimizing the incidental catch of dolphin, the stocks of which were to be kept at or above levels that ensure their survival. “The Agreement on the International Dolphin Conservation Program” (AIDCP) (1999), is implemented by the IATTC and it provides the Program secretariat.

The Republic of Ecuador has been a Contracting Party to the IATTC since 2004, having ratified its membership in May 2021; as well as to the Agreement on the International Dolphin Conservation Program (AIDCP).

The international laws mentioned in the Antigua Convention are the United Nations Convention on the Law of the Sea (UNCLOS) (1982); the Rio Declaration on Environment and Development and Agenda 21 adopted by the United Nations Conference on Environment and Development (1992); the Johannesburg Declaration and Plan of Implementation adopted by the World Summit on Sustainable Development (2002); the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization (FAO) 1995; the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, 1993 and International Plans of Action, both of which fall within the framework of the Code and the 1995 UN Fish Stocks Agreement (UNFSA).

A list of some IATT Resolutions of relevance to the fishery under assessment are listed in **Table 7.7.1.1.1**

**Table 7.7.1.1.1** List of IATTC Resolutions

| | |
|---|---|
| C-03-05 | Resolution C-03-05 (Data Provision) requires that pertinent data are provided annually, including total catch in numbers, and weight if available, as well as fishing effort. |
| C-11-05 | Positive list of longline vessels |
| C-14-08 | Revision of the IATTC Rules of procedure |
| C-17-04 | Amendment to the IATTC Rules of procedure |
| C-18-06 | Regional Vessel Register |
| C-19-02 | IUU Vessel List |
| C-19-08 | Observers on longliners |
| C-21-07 | Port State measures |
| C-22-02 | Compliance |
| C-22-03 | Amendment to Resolution C-12-07 on establishing a Program for transhipments by large -scale fishing vessels. |
| C-23-06 | Harvest control rules |
| C-23-11 | Vessel Monitoring System (VMS) |
| C-24-01 | Tuna conservation in the EPO 2025-2026 |
| C-24-06 | FADs - Amends C-23-03 (amended C-99-07) |
| C-24-08 | Working group on Management Strategies Evaluation |

**National/Flag State Management: Ecuador**

Ecuador's Constitution of 2008 provides the legal foundations for the management of its fisheries. Article 14 declares as a public interest the preservation of the environment and the conservation of ecosystems. Article 395 declares "The State will ensure a sustainable model of development, environmentally balanced and respectful of cultural diversity, which preserves biodiversity and the natural regeneration of ecosystems, and ensures that the needs of present and future generations are met." This article together with article 396 also gives effect to the precautionary approach in natural resource management. Article 281 states: "Food sovereignty constitutes a strategic objective and an obligation of the state to ensure that individuals, communities, peoples, and nationalities achieve the self-sufficiency of healthy and culturally appropriate foods on a permanent basis.

The Organic Law for the Development of Aquaculture and Fisheries (Ley Orgánica para el Desarrollo de la Acuicultura y Pesca, Registro- LODAP) approved by Official Register No. 187 on April 21, 2020, constitutes the overarching legal framework to establish the legal regime for the development of aquaculture and fishing activities in all their phases of extraction, harvesting, reproduction, breeding, cultivation, cultivation, processing, storage, distribution, internal and external commercialization, and related activities such as the promotion of the production of healthy food; the protection, conservation, research, exploitation and use of hydrobiological resources and their ecosystems, through the application of the ecosystemic fishing approach in such a way as to achieve sustainable and sustainable development that guarantees access to food, in harmony with the principles and rights established in the Constitution of the Republic, and respecting traditional and ancestral knowledge and forms of production.

The General Regulation of the Organic Law for the Development of Aquaculture and Fisheries (Reglamento General a la Ley Orgánica para el desarrollo de la acuicultura y pesca) approved by the Executive Decree Nº 362, on February 5, 2022, provides the guidelines for compliance and correct application of the LODAP in the country, which has as its governing body the Advisory Council on Aquaculture and Fisheries, as an instance of non-binding technical advice, responsible for the monitoring, surveillance and evaluation of public policies in aquaculture and fisheries, as well as promoting and encouraging dialogue between public and private actors in matters of competence. The General regulation also considers the implementation of roundtable dialogues, as an instrument of information sharing and participatory decision making.

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

The technical measures applicable to mothership vessels 'nodrizas' and fibers ('fibras') are set out in the Ministerial Agreement **No. 407 of October 12, 2011**. In its articles 1 and 3, defines the characteristics of longline fishing vessels, and establishes a maximum number of up to 6 smaller fiber-glass vessels that can be towed by mother ships during the tuna and swordfish fishing season. It also sets that at least 10% of the mother-ships shall have observers on board.

Ecuador administration together with other stakeholders, has developed the **Ecuador Swordfish Action Plan** with the same objectives as other existing Action Plans for Ecuadorian fisheries (Shark NPOA or Dorado NPOA). The proposal for a Swordfish NPOA aims, among other elements, to respond to the main problems associated with the fishery, promoting research, sustainable management of the fishery and its continuous evaluation, minimisation of its impacts on other species, habitats and the marine ecosystem, information and participation of stakeholders, improvement of control and deterrence of illegal fishing, among others. However, at the time of preparing this report the PAN is under consultation for publication.

### 7.6.1.2 Entities and institutions involved in the management of the assessed fishery

The organization of the IATTC (see **Figure 7.6.1.2.1**) includes research and management, having its own scientific staff, headed by a Coordinator of Scientific Research, which provides advice regarding fisheries management, data collection and research to the Scientific Advisory Committee (SAC) and the Commission, as well as assistance and capacity building to its developing members. In addition to a number of field offices in several countries, the Commission has its own research laboratory at Achotines, in Panama.

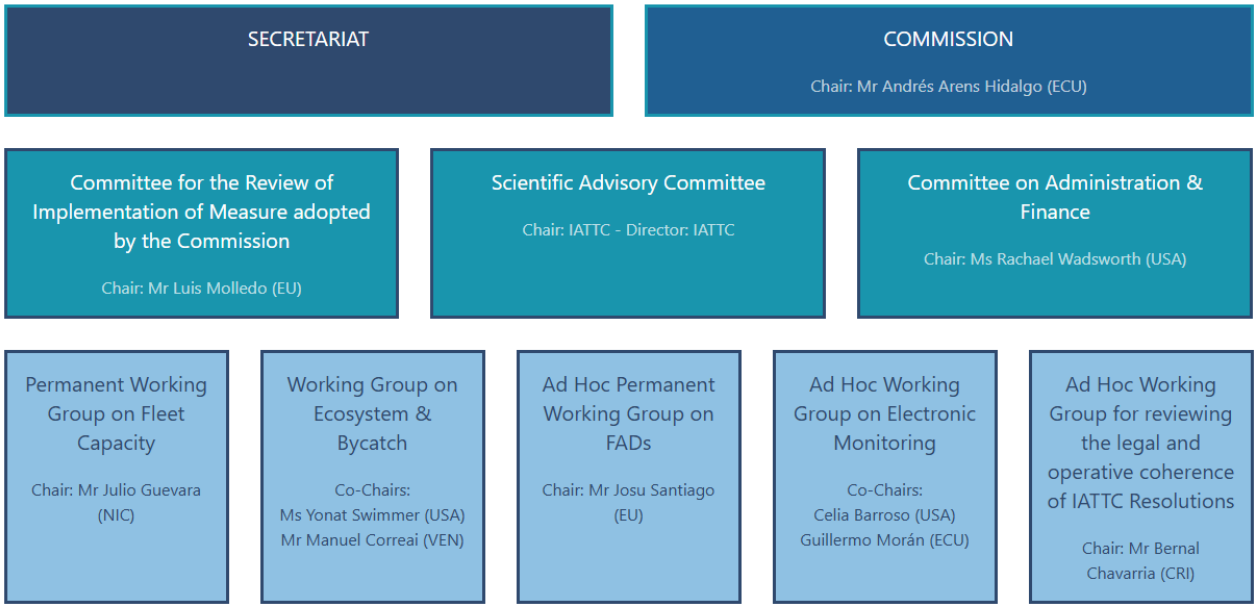



**Figure 7.6.1.2.1** IATTC Organigram. Source: https://www.iattc.org/en-US/About/Role#organigram

The Working Group on Bycatch was replaced by the Permanent Working Group on Ecosystem and Bycatch (EBWG) that was formally created in 2022 through the adoption of Resolution C-22-06. Among the objectives of this WG is to evaluate and recommend measures and best practices to avoid, reduce and minimize catch and mortality of non-target species, effective methods for safe handling practices and release of non-target species, and the effects of fishing on endangered species.

**Ecuador**

**The Vice Ministry of Aquaculture and Fisheries (Viceministerio de acuicultura y pesca)**

The Vice Ministry under the Ministry of Production, Exterior, Investment and Fisheries (MPCEIP), regulates, promotes and manages the use of fishing and aquaculture activities, based on policies, strategies, standards and technical and legal instrumentation for this purpose. The Vice Ministry must issue regulations, agreements and resolutions related to the direction and control of aquaculture activity in the country as well as to coordinate with public and private entities for the development of aquaculture and fishing activities. The most relevant Secretariats and Directorates for the assessed fishery are listed below:

- Under Secretariat for quality and safety (Subsecretaría de Calidad e Inocuidad - SCI). SCI manages regulatory processes of safety regulation, monitoring and certification related with the quality and safety of hydrobiological products, through the implementation of systems, standards, and regulations to guarantee the quality of the production chain of bio aquatic products.
- Fisheries and Aquaculture Policies Directorate (Dirección de Política Pesquera y Acuícola - DPPA). DPPA oversees the design, proposal and evaluation of management regulations, plans, programs, national and international cooperation agreements to regulate and promote the activities related to fisheries and aquaculture. In order to guarantee the sustainable and responsible use of resources in all their phases, the DPPA uses scientific instruments and information.
- Under Secretariat for Fishery Resources (Subsecretaría de Recursos Pesqueros - SRP). Is responsible for the supervision and implementation of the of the national fisheries policy, guarantees compliance with fisheries laws and regulations, elaborates fisheries development plans and programs, coordinates the activities of the public and private sectors, manages fisheries financial credit, endorse reports and plans of companies in the fisheries sector, and commissions studies on the activity, management, and development of the fishing sector. Moreover, the SRP establishes actions to prevent, deter and eliminate illegal unreported and unregulated fishing Additionally, SRP represents Ecuador in international meetings including the IATTC. The SRP is also in charge of monitoring all landings and also run the observer program. The SRP is composed of the following Divisions: Fisheries Control Directorate (Dirección de Control Pesquero - DCP), Artisanal Fisheries Directorate (Dirección de Pesca Artesanal - DPA) and Industrial Fisheries Division (Dirección de Pesca Industrial - DPI).

**National Directorate of Aquatic Spaces (Dirección Nacional de los Espacios Acuáticos - DIRNEA)**

In May 2008, with executive decree No. 1111 the National Directorate of Aquatic Spaces was established as part of the General Navy Command (Comandancia General de Marina) and depends on the Ministry of Defence. The DIRNEA is

the national maritime authority in aquatic spaces and is responsible for on-the water fisheries enforcement and for satellite monitoring that it carries out in coordination with SRP.

**Advisory Council of Aquaculture and Fisheries (Consejo Consultivo de Acuicultura y Pesca)**

Created by the LODAP 2020, is the non-binding technical advisory body, responsible for monitoring, overseeing and evaluating public policies on aquaculture and fisheries, as well as promoting and promoting dialogue between public and private actors in matters of competition. The Advisory Council shall be chaired by the governing body for national aquaculture and fisheries policy. The Advisory Council is comprised by government officials and representatives of producer organizations, aquaculturists, fishermen, marketers, economic agents, and related representatives.

### 7.6.1.3 Institutions or bodies for fisheries research and NGOs

**IAATC**

The IATTC has its own scientific staff headed by a Coordinator of Scientific Research that provides scientific information to the SAC (See **Figure 7.6.1.2.1**).

**Ecuador**

The IPIAP was created on December 5th, 1960, it has its own legal structure, patrimony and financing resources and is ascribed to the Ministry of Production, Exterior, Investment and Fisheries. The IPIAP aims to provide information and scientific-technological knowledge to guarantee the rational use of hydrobiological resources and their ecosystems, providing management and conservation measures to the competent authorities, contributing with the sustainable development of the fishing and aquaculture sector.

## 7.6.2 Principle 3 Performance Indicator scores and rationales

#### PI 3.1.1 – Legal and/or customary framework

<table>
<tr><td colspan="2">PI 3.1.1</td><td colspan="3">The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:<br>• Is capable of delivering sustainability in the UoA(s);<br>• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and<br>• Incorporates an appropriate dispute resolution framework</td></tr>
<tr><td colspan="2">Scoring issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td colspan="4">Compatibility of laws or standards with effective management</td></tr>
<tr><td>Guide post</td><td>There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</td><td>There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</td><td>There is an effective national legal system and binding procedures governing cooperation with other parties that deliver management outcomes consistent with MSC Principles 1 and 2.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">The Antigua Convention of 2003 governs fishing for tuna and tuna like species on the high seas and in zones of national jurisdiction (Medley et al. 2021). The objective of the Antigua Convention is to ensure the long-term conservation and sustainable use of the fish stocks in the Convention area in accordance with the relevant rules of international law. The Antigua Convention explicitly recognizes the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the Rio Declaration on Environment and Development and Agenda 21, the Johannesburg Declaration and Plan of Implementation adopted by the World Summit on Sustainable Development (2002), the FAO Code of Conduct for Responsible Fisheries (1995), including the 1993 FAO Compliance Agreement and International Plans of Action adopted by FAO within the framework of the Code of Conduct, and the 1995 UN Fish Stocks Agreement (UNFSA). This promotes the implementation of these international agreements within its area of jurisdiction to deliver management outcomes consistent with MSC Principles 1 and 2. SG60 and SG80 are met. SG100 is not met because the</td></tr>
</table>

<table>
<tr><td colspan="2">PI 3.1.1</td><td colspan="3">The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:<br>• Is capable of delivering sustainability in the UoA(s);<br>• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and<br>• Incorporates an appropriate dispute resolution framework</td></tr>
<tr><td colspan="2"></td><td colspan="3">agreements between countries is by consensus and therefore co-operation is effectively not binding.<br><br>Ecuador ratified the UN Convention on the Law of the Sea (2012), the UN Fish Stocks agreement (2016), and the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2019).<br>The 1974 law was replaced in April 2020 by the Organic Law for the Development of Aquaculture and Fishing which consolidated and updated national law to ensure compliance with the international and regional rules applying to the conservation and management of fishing resources. The Resolutions and Recommendations made by the IATTC for the conservation of tunas are formally adopted by the Ecuadorian government (MPCEIP-SRP-2019-0027-A). Resolutions are translated into regulations through Ministerial agreements issued by the Under Secretariat for Fishery Resources. Ecuador’s national legal framework for fisheries and the management of fisheries subject to international cooperation meets SG 80.</td></tr>
<tr><td rowspan="3">b</td><td colspan="4">Resolution of disputes</td></tr>
<tr><td>Guide post</td><td>The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.</td><td>The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.</td><td>The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes, which is appropriate to the context of the fishery and has been tested and proven to be effective.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">IATTC<br>Several mechanisms exist for dealing with legal disputes at the international level. Part VII of the Antigua Convention establishes a framework for dispute resolution. Although this does not specify a concrete mechanism, it does define an avenue for arriving at a solution in the case of a difference between two or more members of the Commission. Disputes can be dealt with at the IATTC annual meetings of the Parties through consultation and conciliation. Technical disputes might be resolved by an appropriately composed expert or technical panel. As a last step, disputes might be resolved through either the International Court of Justice or the International Tribunal for the Law of the Sea (ITLOS), though this recourse is most likely to be used by states which have ratified the 1995 UN Fish Stocks Agreement (UNFSA).<br><br>Ecuador<br>The Ecuadorian judicial system is governed by statutory law, not by common law or judicial precedents. The General Organic Code of Procedures which came into force in 2016 and instituted a new procedural system for all trial proceedings, except criminal and constitutional matters. The Administrative Organic Code enacted in 2017 and amended on January 21, 2022, aims to regulate the exercise of the administrative function of public sector agencies, through mechanisms of extraordinary appeals and challenges. Likewise, Article 134 establishes that administrative claims and disputes for which no specific procedure is provided, will be resolved through an administrative procedure. Thus, despite there is no mechanism for the resolution of disputes apparent in Ecuador’s fisheries laws and related instruments, the Organic Administrative Code is the mechanism through which disputes in Ecuador’s fisheries law would be resolved.<br>SG60 and 80 are met because the management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes arising within the system which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA. SG 100 is not met because there is no evidence that the mechanism has been tested and proven to be effective in the context of the fishery.</td></tr>
<tr><td>c</td><td colspan="4">Respect for rights</td></tr>
</table>

| PI 3.1.1 | | The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:<br>• Is capable of delivering sustainability in the UoA(s);<br>• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and<br>• Incorporates an appropriate dispute resolution framework | | |
|---|---|---|---|---|
| | Guide post | The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. | The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. | The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | At the **IATTC** level, legal rights of people dependent on fishing for food or livelihood are protected through national interests of Parties to the Convention. The Convention deals with the rights of a State's access to resources rather than individuals. Thus, this SI is assessed only at National level.<br><br>**Ecuador**<br>Article 281 of Ecuador's constitution states: "Food sovereignty constitutes a strategic objective and an obligation of the state to ensure that individuals, communities, peoples, and nationalities achieve the self-sufficiency of healthy and culturally appropriate foods on a permanent basis". Furthermore, Ecuador, through the LODAP and its General Regulations, establishes the mechanisms to manage fishing resources, guaranteeing fishermen's access to the activity within a clear and accessible framework. Article 7, paragraph 42 and section II of the LODAP establishes the characteristics of artisanal fishing and indicates the duties of fishermen. Likewise, Article 7, paragraph 46, and Section II of LODAP states the characteristics of industrial fishing. Additionally, the General regulation of the LODAP (article 152 and 183) establishes the characteristics and regulations of the fiber-glass skiffs and the mother-ship vessels that fish with longline. Moreover, there are participatory processes implemented to design and evaluate the National Action Plans. Indeed, the swordfish PAN currently under review to be approved (as set out in the FIP of the fishery) provides opportunity to all stakeholders (including users with customary rights) to express their views and concerns in relation to fisheries management.<br><br>Both the international and national management systems meets the requirement for **SG60 and SG80**. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 3.1.2 – Consultation, roles, and responsibilities

| PI 3.1.2 | | The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Roles and responsibilities** | | | |
| | Guide post | Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are **generally understood**. | Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction. | Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction. |
| | Met? | **Yes** | **Yes** | **No** |

<table>
<tr><td colspan="2">PI 3.1.2</td><td colspan="3">The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">IATTC<br>Functions, roles and responsibilities are explicitly defined at the international level. The IATTC was established to define roles and responsibilities for its contracting parties and co-operating non-contracting parties. The performance of the Secretariat is sound and well regarded as both efficient and effective by the Parties.<br>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction meeting SG100.<br><br>Ecuador<br>At national level, the roles and responsibilities of organisations and individuals who are involved in the management process are defined in the LODAP and the Executive Decree 362, including the mechanisms to ensure the necessary interinstitutional coordination.<br>The highest authority in matters of fisheries management in the country is the Vice-Ministry of Aquaculture and Fisheries that is part of the Ministry of Production, Exterior, Investment and Fisheries. The Vice-Ministry regulates, promotes and manages the use of fishing and aquaculture activities, based on policies, strategies, standards and technical and legal instrumentation for this purpose. The Under Secretariat for Fishery Resources (SRP, Spanish acronym) is part of the Vice-Ministry of Aquaculture and Fisheries, and is responsible for the supervision and implementation of the of the national fisheries policy, guarantees compliance with fisheries laws and regulations, elaborates fisheries development plans and programs, coordinates the activities of the public and private sectors, manages fisheries financial credit, endorse reports and plans of companies in the fisheries sector, and commissions studies on the activity, management, and development of the fishing sector. The non-statutory National Tuna Plan establishes roles, responsibilities, and accountability against actions.<br><br>In May 2023, a Memorandum of Understanding (MOU) was signed between the Ecuadorian FIP members, including the swordfish fishery, and the Inter-American Tropical Tuna Commission to strengthen cooperation and improve data collection and delivery for further analysis to help assess target species status and analyze bycatch species.<br><br>Based on the above the team considers that in Ecuador, organizations and individuals in the management process are clearly identified and its functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction. Thus, SG60 and SG80 are met but not SG100.</td></tr>
<tr><td rowspan="3">b</td><td colspan="4">Consultation processes</td></tr>
<tr><td>Guide post</td><td>The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.</td><td>The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.</td><td>The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">IATTC<br>The IATTC holds a meeting every year, and specialist working groups (comprising scientists and specialists from the contracting parties) convene meetings on a regular (usually annual) basis. Information from these meetings is used by decision-makers and forms the basis of the management advice provided by IATTC. “Local knowledge” at the international level is assumed to refer to national information and experience. IATTC allows for participation by non-members and observers, including NGOs and ensures they have timely access to relevant information.<br><br>The IATTC management system demonstrates consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates</td></tr>
</table>

| PI 3.1.2 | | | | |
|---|---|---|---|---|
| | | **The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties** | | |
| | | consideration of the information obtained demonstrates consideration of the information obtained. SG 80 is therefore met.<br><br>**Ecuador**<br>The Organic Law of Transparency and Access to Public Information approved on May 18, 2004, establishes in Article 4, letter "e", that the transparent management of public information must be guaranteed, enabling citizen participation in decision making of general interest.<br><br>The LODAP, includes the Advisory Council of Aquaculture and Fisheries as part of the fisheries management system (Article 11). This Council is a forum for dialogue, consultation and agreement between the public and private sectors, and its objective is to advise the fishing sector on monitoring and compliance with internal agreements to facilitate efficient relations between the different actors in the production chain. With the approval of the LODAP and its regulations, it is established that the spaces for dialogue and participation for the NAPs are provided through dialogue roundtables. In 2023 started the first steps for the development of a Ecuador's Swordfish national plan with stakeholder input and consultative meetings. At the time of preparing this report, a proposal of PAN is under review.<br>Stakeholders are invited to participate in meetings that inform the Ecuadorian position on mater being discussed at IATTC meetings. **SG60 and SG80 are met**. However, as far as the team is aware the management system does not provide explanations on how the information collected through consultation is used or not used. SG100 is not met. | | |
| **c** | **Participation** | | | |
| | Guide post | | The consultation process **provides opportunity** for all interested and affected parties to be involved. | The consultation process **provides opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement. |
| | Met? | | **Yes** | **No** |
| Rationale | | **IATTC**<br>Consultation occurs at several levels within the **IATTC** management system. The opportunity to become a Contracting Party or Co-operating Non-contracting Party is open to all, including non-states. Membership has increased over time and there is a high level of participation.<br><br>**Ecuador**<br>According to article No. 95 of the Constitution citizens, individually and collectively, will participate as protagonists in decision-making, planning and management of public affairs. Moreover article No. 227 states that the public administration is a service to the community that is governed by the principles of effectiveness, efficiency, quality, hierarchy, decentralization, coordination, participation, planning, transparency and evaluation, coordination, participation, planning, transparency and evaluation. The LODAP, includes the Advisory Council of Aquaculture and Fisheries as part of the fisheries management system (Article 11). This Council is a forum for dialogue, consultation and agreement between the public and private sectors.<br><br>The General Regulation of the LODAP in the Chapter II Section I details the possibility of setting up dialogue roundtables for the fishing sector as an instrument for the participation of public-private sectors in decision-making process. Ensuring that the process is participatory, transparent, inclusive, multidisciplinary and scientifically based, for the design, socialization, dissemination of proposals of the National Action Plans of the fishing sector, to guarantee the sustainability of the fishery with responsibility and awareness of all actors. The roundtable dialogue must promote inclusive participation of all stakeholders in the governance of the fishery. It can provide recommendations to the leading agency of national aquaculture and fisheries policy appropriate measures for the management and management of the fishery, considering the biological-fishery, oceanographic, environmental, social and economic status.<br><br>Private sector stakeholders in the industrial tuna fishery tend to be members of one or more of three organizations: (i) the Association of Tuna Boat Owners (ATUNEC), (ii) the National Chamber of Fisheries (CNP), and (iii) the Chamber of Tuna Processors (CEIPA). The tuna industry is | | |

| PI 3.1.2 | The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties |
|---|---|
| | vertically integrated, and these organisations include most of the producers, processors, exporters and traders related to the Ecuadorian fisheries. Key NGOs engaged with the fishery are WWF, Conservation International and the International Seafood Sustainability Foundation (ISSF). Consultation processes provide an opportunity for all interested and affected parties to be involved **meeting SG80**. There is insufficient evidence to concluded that Ecuador facilitates the effective engagement of all interested and affected parties and therefore SG100 cannot be awarded. |
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |

### PI 3.1.3 – Long term objectives

| PI 3.1.3 | | The management policy has clear long-term objectives to guide decision-making that are consistent with the MSC Fisheries Standard, and incorporates the precautionary approach | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Objectives** | | | |
| | Guide post | Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the **precautionary approach,** are **implicit** within **management policy**. | **Clear** long-term objectives that guide decision-making, consistent with the MSC Fisheries Standard and the **precautionary approach**, are **explicit** within **management policy**. | **Clear** long-term objectives that guide decision-making, consistent with the MSC Fisheries Standard and the **precautionary approach**, are **explicit** within **and required by** management policy. |
| | Met? | **Yes** | **Yes** | **Yes** |
| Rationale | | The **IATTC** Antigua Convention, Article II has the states a clear long-term objective to "…ensure the long-term conservation and sustainable use of the fish stocks covered by this Convention, in accordance with the relevant rules of international law."<br>The IATTC Convention provides clear, long-term objectives that guide decision making under Principle 1. The long-term objectives for each stock are clear enough that the science-based advice and management of these stocks can be evaluated. Protection for all resources within the same ecosystem is provided for, consistent with Principle 2. In Article VII paragraph 1(f), the functions of the Commission provide for measures to protect all species belonging to the same ecosystem as the target stocks, to reduce bycatch, develop more "environmentally safe" fishing gears and apply the precautionary approach, all of which meet requirements under Principle 2. In addition, the Convention explicitly requires that the Commission promote the application of the provisions under the FAO Code of Conduct, which includes the ecosystem approach to fisheries management as well as many of the same requirements as the MSC Principles and Criteria.<br><br>Article 14 of the Constitution of the Republic of Ecuador establishes "The preservation of the environment, the conservation of ecosystems, biodiversity and the integrity of the country's genetic heritage, the prevention of environmental damage and the recovery of degraded natural spaces are declared to be in the public interest". Article 395 recognizes as environmental principles, in paragraph 1, "The State shall guarantee a sustainable model of development, environmentally balanced and respectful of cultural diversity, that conserves biodiversity and the capacity for natural regeneration of ecosystems and ensures the satisfaction of the needs of present and future generations". Finally, the Constitution of the Republic of Ecuador also embraces the precautionary principle in its article 396 and stipulates that the State will adopt the appropriate policies and measures that avoid negative environmental impacts, when there is certainty of damage. In case of doubt about the environmental impact of any action or omission, even if there is no scientific evidence of the damage, the State will adopt protective, effective and timely measures.<br><br>Article 2 of the LOPA indicates that one of its objectives is the protection, conservation, research, exploitation, and use of hydrobiological resources and their ecosystems, through the application of the fishing ecosystem approach in such a way that sustainable development is achieved and sustainable that guarantees access to food, in harmony with established principles and rights in the Constitution of the Republic. The general objectives of the Action Plans are to establish regulations based on scientific knowledge, to improve the processes of participation and control of the fisheries and to ensure the conservation of the target species and to minimize the impact of the activity on the environment.<br><br>Although the Antigua Convention is the overarching management policy for the UoAs, the gaps highlighted in Principle 1 cannot demonstrate that the long-term objectives are required by management policy for all UoAs. **SG100 is not met**. | | |
| Draft scoring range | | **≥80** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 3.2.1 – Fishery-specific objectives

| PI 3.2.1 | | The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC Principles 1 and 2 | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Objectives** | | | |
| | Guide post | **Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are **implicit** within the fishery-specific management system. | **Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are **explicit** within the fishery-specific management system. | **Well-defined and measurable short- and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are **explicit** within the fishery-specific management system. |
| | Met? | **Yes** | **Partial** | **No** |
| Rationale | | The swordfish fishery in **Ecuador's** EEZ and on the adjacent high seas is managed within the IATTC framework. The Resolutions and Recommendations made by the IATTC for the swordfish tuna in the EPO are formally adopted by the Ecuadorian government. Resolutions are translated into regulations through Ministerial agreements issued by the Under Secretariat for Fishery Resources.<br><br>**Ecuador**<br>The LODAP constitutes the overarching legal National framework in Ecuador. The purpose of this Law is the protection, conservation, research, exploitation and use of hydrobiological resources and their ecosystems, through the application of the fishing ecosystem approach in such a way that sustainable and sustainable development is achieved that guarantees access to food, in harmony with the principles and rights established in the Constitution of the Republic, and respecting traditional and ancestral knowledge and forms of production.<br><br>There are technical measures applicable to mothership vessels 'nodrizas' and fibers ('fibras') set out in the **Ministerial Agreement No. 407** of October 12, 2011. In its articles 1 and 3, defines the characteristics of longline fishing vessels, and establishes a maximum number of up to 6 smaller fiber-glass vessels that can be towed by mother ships during the tuna and swordfish fishing season. It also sets that at least 10% of the mother-ships shall have observers on board.<br><br>The team is aware that there is proposal for a **Swordfish NPOA** which aims, among other elements, to respond to the main problems associated with the fishery, promoting research, sustainable management of the fishery and its continuous evaluation, minimisation of its impacts on other species, habitats and the marine ecosystem, information and participation of stakeholders, improvement of control and deterrence of illegal fishing, among others. However, at the time of preparing this report the PAN is under consultation for publication.<br><br>In relation to P2, Article 152 of the LODAP prohibits targeting any species of elasmobranchs, as well as manufacture, transport, importation, commercialization of fishing gears used to target these resources, and shark finning. There are several Ministerial Agreements for ETPs (See **Section 7.5.1.4**).<br><br>**SG60 is met but SG80 is partially met**. Explicit long and short-term objectives are not necessarily always well-defined or precisely measurable, particularly in relation to achieving MSC Principle 1. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | **Information sufficient to score PI** | | |

### PI 3.2.2 – Decision-making processes

| PI 3.2.2 | | The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Decision-making processes** | | | |
| | Guide post | There are **some** decision-making processes in place that result in **measures** and **strategies** to achieve the fishery-specific objectives. | There are **established** decision-making processes that result in **measures** and **strategies** to achieve the fishery-specific objectives. | |
| | Met? | **Yes** | **Yes** | |
| Rationale | | **ICCAT**<br>Decision making functions of the IATTC are set out in Article IX of the Antigua Convention that came into force in 2010. Information used for decision-making is published. Decisions are made by consensus and there is no objection or opting out procedure. Resolutions are binding, but recommendations are non-binding. All management measures apply equally inside EEZ and on high seas. Parties enforce management measures within their own EEZ. Members can vote, but cooperating non-members are not entitled to take part in voting.<br><br>Clear evidence of the established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives is provided by a record evolving IATTC resolutions and recommendations. **SG60 & SG80 are met**. | | |
| **b** | **Responsiveness of decision-making processes** | | | |
| | Guide post | Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely and adaptive manner, and take some account of the wider implications of decisions. | Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner, and take account of the wider implications of decisions. | Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner, and take account of the wider implications of decisions. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | **IATTC**<br>The decision-making is transparent. IATTC resolves most disputes by consensus at its annual meetings. While the outcome of such decisions is transparent as it is published as a resolution from the annual meetings, and initial positions and the information used for the basis of the decision is available (as technical reports provided to the meeting or as proposals for resolutions from some Parties), exactly how a decision is reached is not always evident. The system makes sure that all Commission members are fully informed of the issues under consideration and are able to participate in informed decision-making.<br><br>The decision-making is adaptive in that decisions are evaluated by the various specialist meetings and feedback is provided to the Commission. The Commission responds appropriately by approving new resolutions addressing serious and other important issues. **SG60 & SG80 are met**. | | |
| **c** | **Use of precautionary approach** | | | |
| | Guide post | | Decision-making processes use the **precautionary approach** and are based on best available information. | |
| | Met? | | **Yes** | |
| Rationale | | Article IV of the **IATTC** Antigua Convention requires that the members of the Commission, directly and through the Commission, apply the precautionary approach, as described in the relevant provisions of the Code of Conduct and/or the 1995 UN Fish Stocks Agreement. Specifically, the Convention requires that Commission be more cautious when information is uncertain, unreliable, | | |

| PI 3.2.2 | | The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery | | |
|---|---|---|---|---|
| | | or inadequate and does not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures.<br><br>Article 4 of the **Ecuador's** LODAP states that the precautionary approach and the fishing ecosystem approach must be observed, without prejudice to those established in the Constitution of the Republic. Besides, Article No. 96 of the LODAP sets that fishery management measures will be adopted after a scientific technical report from the IPIAP, and socialization with the fishing sector based on the best scientific evidence available and ancestral knowledge in accordance with the population conditions of the resources and the state of the fisheries.<br>**SG80 is met.** | | |
| **d** | **Accountability and transparency of management system and decision-making process** | | | |
| | Guide post | Some information on the fishery's performance and management action is generally available on request to stakeholders. | **Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity. | Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | Article XVI of the Antigua convention requires the **IATTC** to promote transparency in the implementation of this Convention in its decision making processes and other activities.<br>Reports of the plenary sessions of meetings are published formally and are publicly available. All information available for the decision making is published, allowing any stakeholder to draw their own conclusions, and there is frequent feedback from NGOs, scientists and other stakeholders via participation in IATTC standing committees and working groups.<br>However, while reports are available, it is not clear that they provide comprehensive information on the fishery's performance and management actions and describe how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. There is no formal, detailed explanation linking the information provided to the decision that results. Decisions of the IATTC are presented in the resolutions, with minimal justification (Medley et al. 2021). **Only SG60 & SG80 are met**. | | |
| **e** | **Approach to disputes** | | | |
| | Guide post | Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery. | The management system or UoA is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges. | The management system or UoA acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges. |
| | Met? | **Yes** | **Yes** | |
| Rationale | | IATTC is the overarching management authority. Article XXV of the Antigua Convention sets out clear mechanisms for the resolution of disputes.<br>There is no evidence that other entities flout the law, with the notable exception of particular fishing companies and fishing vessels, which are listed on the IUU fishing list. Therefore, excluding these, IATTC and its Parties **meet SG60**. Given that there are no current outstanding judicial disputes and that so far members have avoided resorting to using international law to settle disputes (SCS, 2022), the management system **meets SG80**. | | |

| PI 3.2.2 | The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery |
|---|---|
| Draft scoring range | **≥80** |
| Information gap indicator | **More information sought:**<br>*- Check if there are court challenges affecting the fishery.*<br>*- Check if the management system complies in a timely fashion with judicial decisions arising from legal challenges.* |

### PI 3.2.3 – Compliance and enforcement

| PI 3.2.3 | | Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **MCS system** | | | |
| | Guide post | Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective. | A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules. | A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | **IATTC**<br>At the regional level, the IATTC seeks to improve compliance mainly via vessel registration, but procedures also include catch and effort monitoring and diplomatic and other pressures applied to nation states.<br><br>**Ecuador**<br>An important role for all Flag States is implementation of IATTC MCS requirements under their commitment to IATTC and this reflected in Ecuador's fisheries legislation.<br>According to the LODAP monitoring, control and surveillance (MCS) activities must be carried out in all places where fishing and related activities are developed and throughout all the phases of the productive chain of the fishing activity. The Ecuadorian Fisheries Authority must have free access to the facilities, vessels, docks and any other premises where the activity is carried out and must have access to the information required for the fulfillment of its attributions.<br><br>To ensure the MCS of fishing activities, the LODAP establishes diverse mechanisms such as:<br>- The implementation of MCS systems.<br>- Inspections of ports and vessels.<br>- Technical reports from government institutions such as the IPIAP, on-board observers and the Satellite Monitoring Center (Centro de Monitoreo Satelital- CMS).<br>- Fishing logbook, image recording system and a weighing system.<br><br>To track, identify and localize industrial and artisanal fishing vessels must have a tracking devise that has to be authorized by the National Defense entity, the information about the location of the vessels is managed by the Administration of the Monitoring Center (Administración del Centro de Monitoreo). The Administration of the Monitoring Center can share the tracking information with the IPIAP.<br><br>On the landing sites the SRP through the Directorate of Fisheries Control (DCP) carries out permanent monitoring of hydrobiological resources, applied 365 days a year under the framework of the "Monitoring, Control and Surveillance System (MCS)". All in situ procedures related to the MCS of fishery resources are applied through the Fisheries Inspectors at the national level, to maintain proper traceability of resources, in addition to strengthening the fight against IUU fishing (MPCEIP, 2021).<br><br>In October 2019, Ecuador received a yellow card from the European Union over shortcomings in the mechanisms that the country has put in place to ensure compliance with its international obligations as a flag, port and market state. The yellow card triggers a formal dialogue in which the Commission and the third country work together to solve all issues of concern. The actions taken by the Ecuadorian Government in this regard are summarized below:<br>• Ecuador has secured the allocation of resources for the next 3 years through the "Comprehensive and Sustainable Strengthening of the Aquaculture and Fisheries Sector" investment project, which will invest a total of $37.66 million by December 2025. This strategic investment aims to enhance institutional capacities in fishery management, boost productivity and competitiveness, and modernize the technological infrastructure for the Integrated Aquaculture and Fisheries System.<br>• Active work on the implementation of Memorandums of Understanding for the exchange of information on IUU fishing and have established mechanisms for ongoing monitoring | | | |

<table>
<tr><td>PI 3.2.3</td><td colspan="4">Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with</td></tr>
<tr><td></td><td colspan="4">and communication with the fishing authorities of other states to validate information provided by vessels.<br>• Implementation of the AMERP: Ecuador aligns its regulations with the AMERP, acting as a Flag State, Port State, and Coastal State. Ecuador participated in the 4th AMERP Meeting as the First Regional Vice President and will host the 5th Meeting in May 2025 in the city of Manta.<br>• Approval of the update of the National Control Plan.<br>• Strengthened operational capacity for the identification and application of monetary and complementary sanctions established in the new law through the hiring of officials to address old case backlogs.<br>• Updated and published information on the fishing fleet, harmonized controls with the EU Regulation 1005/2009.<br>• Interoperable processes for import authorization, and the SRP authorization prior to fish imports. Interagency collaboration and response capacity have been reinforced.<br>• Contracting of the Integrated Aquaculture and Fisheries System to transition from paper-based administration to an interoperable and auditable system. It is in its final phase before going live, significantly strengthening Ecuador’s capacity to comprehensively monitor the vast volumes of raw materials landed, imported, and processed in the country, with a record of movements throughout the entire value chain.<br>• Improvement in the physical and technological facilities of the Satellite Monitoring Center has been observed, along with the implementation of equipment for better monitoring, control, and surveillance.<br>• A new Fisheries Law passed in 2020.<br><br>The team concludes that Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective meeting SG 60. The monitoring, control and surveillance system has been implemented in the fishery and Ecuador is now demonstrating an ability to enforce relevant management measures, strategies and/or rules meeting SG 80.</td></tr>
<tr><td rowspan="3">b</td><td colspan="4">Sanctions</td></tr>
<tr><td>Guide post</td><td>Sanctions to deal with non-compliance exist and there is some evidence that they are applied.</td><td>Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.</td><td>Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">IATTC<br>IATTC established conservation management measures and related resolutions and enforcement is carried out by the national authorities. Blacklisting of non-member vessels (IUU lists) has become a widespread practice among all RFMOs including IATTC. There no trade sanctions against nation states, although theoretically these may be possible. Sanctions are only applied to fishing entities, such as IUU vessels and vessels that are detected as being non-compliant with resolutions).<br><br>Ecuador<br>In 2019 Ecuador received a yellow card from the European Union over shortcomings in the mechanisms that the country has put in place to ensure compliance with its international obligations as a flag, port and market state. The shortcomings noted by the European Union include:<br>• The legal framework in place is outdated and not in line with the international and regional rules applying to the conservation and management of fishing resources.<br>• Law enforcement is hampered by this outdated legal framework, inefficient administrative procedures and a lenient approach towards infringements. As a result, the sanctioning system is neither depriving the offenders from the benefits accruing from IUU fishing, nor deterrent.<br>• There are serious deficiencies in terms of control, notably over the activity of the tuna fishing and processing industries.</td></tr>
</table>

<table>
<tr><td colspan="2">PI 3.2.3</td><td colspan="3">Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with</td></tr>
<tr><td colspan="2"></td><td colspan="3">
<ul><li>After finding that the country’s regulations and procedures to combat IUU fishing do not comply with international and regional standards applicable to the conservation and management of fishery resources. In order to comply with the EU’s observations, the Ecuadorian government has updated the legal framework (LODAP and its general regulations) establishing the application of sanctions with deterrent effect for illegal fishing activities, categorized from minor, serious to very serious, as well as determining a table of fines.</li></ul>
After the notification of the yellow card, Ecuador established a two-year action plan with three priority areas: IUU fishing, coercive measures and the promotion of the application of international standards.<br><br>
With the enactment of the LODAP in 2020, the aim is to have an updated legal framework, which considers the application of sanctions and dissuasive infractions. Chapter VI of the LODAP details the sanctioning regime applicable to fishing activities. Likewise, the SRP through the Fisheries Control Directorate has established greater control and surveillance at ports and shipping zones.<br><br>
The following information was extracted from the 1st surveillance report of Tunacons fishery as a Condition (3.2) is open:<br>
‘At the first surveillance audit Ecuadorian management authorities (SRP) provided:
<ul><li>A description of the administrative sanction system</li><li>A Classification of infractions and sanctions that are in force with the new Fisheries Law and Regulations.</li><li>Details of infractions since the new fishing law came into force in 2020, generally and by the UoA.</li><li>Number of investigations resulting in a sanction</li><li>Amounts collected for the sanctions imposed, and</li><li>Non-monetary sanctions linked to infractions (cancellation of fishing permits, criminal prosecution for illegal activities, etc.)</li></ul>
Evidence of both monetary and non-monetary sanctions being imposed in each year from 2020 to 2023 was provided as well as the number of reoffending vessels each season. We note that:
<ul><li>Although financial administrative penalties are being imposed, only a small fraction of that amount has been paid. This is explained as being due to fishing companies pursuing appeals in the courts that can be time consuming and delay the final resolution of cases.</li><li>Non-financial penalties including gear and catch confiscation, company suspensions and vessels bans are commonly imposed on the tuna fleet -some 366 through 2023 (noting 2023 figures are still being complied).</li><li>The UoC received some, yet relatively sanctions,</li><li>The number of vessels being sanctioned a second time appears to be decreasing for 2020-to 2023 suggesting the scheme may be providing a deterrence.´</li></ul>
The conclusion of the team was that the progress is ‘on target’. It is expected to close the condition in the fourth year (2025). Therefore, the score for this SG is only 60.
</td></tr>
<tr><td rowspan="3">c</td><td colspan="4">Compliance (information)</td></tr>
<tr><td>Guide post</td><td>Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.</td><td>Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.</td><td>There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.</td></tr>
<tr><td>Met?</td><td>Yes</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">Rationale</td><td colspan="3">IATTC<br>The IATTC has a permanent working group on compliance that reviews and monitors compliance with IATTC management measures (IATTC-COR 2014). As well as undertaking analysis of information on compliance and reporting the findings to the IATTC, the working group also recommends measures to promote compatibility among the national fisheries management measures, addressing matters related to compliance with fisheries management measures.</td></tr>
</table>

| PI 3.2.3 | | Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with | | |
|---|---|---|---|---|
| | | **Ecuador**<br>The following justification was extracted from the PCR of the Tunacons fishery '*Ecuador Available information from the NOAA's 2021 finding of a positive certification with respect to IUU and that Ecuador has taken appropriate corrective action to address the IUU fishing activities for which it was identified in 2019 (inadequate compliance with IATTC Resolution C-11-07) provides evidence to demonstrate fishers comply with the management system including, when required, providing information of importance to the effective management of the fishery. However, the confidential nature of much of the information in relation to this Scoring Issue and concerns documented by the EU in its awarding of the yellow card mean that there is not a high degree of confidence that fishers comply with the management system under assessment, preventing SG 100 being met. SG 60 and SG 80 requirements are met.*' | | |
| **d** | **Compliance (outcome)** | | | |
| | Guide post | | There is no evidence of systematic non-compliance | |
| | Met? | **Yes / No** | **No** | **Yes / No** |
| Rationale | | **IATTC** and **Ecuador**, Non-compliance with conservation measures is likely opportunistic or possibly down to ignorance of the resolutions and/or the lack of sanctions. Non-compliance does not appear to be systematic and does not threaten the sustainability of the fishery. However, this SG should be assessed in detailed during a full assessment. SG80 is not met. | | |
| Draft scoring range | | **60-79** | | |
| Information gap indicator | | **More information sought** | | |

## PI 3.2.4 – Monitoring and management performance evaluation

| PI 3.2.4 | | There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system | | |
|---|---|---|---|---|
| Scoring issue | | **SG 60** | **SG 80** | **SG 100** |
| **a** | **Evaluation coverage** | | | |
| | Guide post | There are mechanisms in place to evaluate **some** parts of the fishery-specific management system. | There are mechanisms in place to evaluate **key** parts of the fishery-specific management system. | There are mechanisms in place to evaluate **all** parts of the fishery-specific management system. |
| | Met? | **Yes** | **Yes** | **No** |
| Rationale | | The IATTC has mechanisms in place to evaluate the management system as demonstrated by the various committees and working groups of IATTC that meet regularly and report their findings to the Commission. As well as the annual Commission meetings, regular meetings include those for the Scientific Advisory Committee, the Committee for the Review of Implementation Measures and the International Review Panel.<br><br>**SG60 and SG80** requirements **are met** as there are mechanisms in place to evaluate key parts of the fishery-specific management system. SG100 is not met as it is not clear that these arrangements cover all parts of the fishery-specific management system. | | |
| **b** | **Internal and/or external review** | | | |
| | Guide post | The fishery-specific management system is subject to **occasional internal** review. | The fishery-specific management system is subject to **regular internal** and **occasional external review**. | The fishery-specific management system is subject to **regular internal and external** review. |
| | Met? | **Yes** | **Yes** | **No** |

| PI 3.2.4 | There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system |
|---|---|
| Rationale | The Commission has overall responsibility for developing and implementing a fishery specific management system, Members are bound by the arrangements in the management system and required to implement these in domestic legislation and policy.<br><br>The IATTC is subject to regular internal review. SG60 is met.<br><br>The IATTC has carried out an external performance review in 2016 (Moss-Adams 2016). This implies that the RFMO **meets SG80** with respect to "occasional external" review. However, the management system is not subject to regular internal and external review, thus SG 100 is not met. |
| Draft scoring range | **≥80** |
| Information gap indicator | **Information sufficient to score PI** |

# 6. Appendices

## 8.1. Evaluation processes and techniques

### 8.1.1. Site visits

No site visit was done during the preassessment.

### 8.1.2. Recommendations for stakeholder participation in full assessment

- **Government and Regulatory Bodies**
  - **Ecuador:** Subsecretaría de Recursos Pesqueros (SRP) and Instituto Nacional de Pesca (INP) and other organism indicated in **Section 7.7.1.1**.
  - **High seas:** Inter-American Tropical Tuna Commission (IATTC).

- **Fishing Industry**
  - Ecuadorian industrial and artisanal fishing associations.
  - Companies involved in tuna processing and exports, if applied.

- **Environmental Organizations**
  - World Wildlife Fund (WWF) – EPO tuna program.
  - Oceanic Society or similar organizations active in marine conservation in the region.
  - ISSF.

- **Scientific and Research Bodies**
  - IATTC scientific advisors for tuna stock assessment and ecosystem data.
  - Universidad de Guayaquil, Universidad del Valle (Colombia), or Universidad de Panamá, with marine biology or fisheries research programs.

- **Market Stakeholders**
  - Retailers and buyers of certified tuna products that can be an active stakeholder for traceability.

- **Observer Programs and Monitoring Groups**
  - IATTC Regional Observer Program representatives.
  - Electronic Monitoring (EM) service providers (if applicable).

- **CABs**
  - MSC-overlaping Fisheries certified.

## 8.2. Harmonised fishery assessments

In accordance with FCP PB1.3.1, CABs assessing overlapping fisheries shall ensure consistency of outcomes so as not to undermine the integrity of MSC fishery assessment. Overlapping fisheries are those which target the same P1 stock, operate in the same geographical area, impact the same P2 scoring elements or are subject to management by the same jurisdictions. Subsequently, these fisheries will require harmonization of some, or all of the PI/SIs of the MSC P1, P2, and P3 among the overlapping MSC UoAs. **Table 8.2.1** shows how to determine the PIs that are subject to harmonisation. Currently there are no fisheries with swordfish certified as P1. Therefore, no harmonisation of P1 is necessary.

**Table 8.2.1**: MSC directions for harmonisation between overlapping MSC fisheries

| PIs /SIs | Harmonise? | Comments |
|---|---|---|
| All P1 PIs | Yes | P1 always considers the impacts of all fisheries on a stock, so any fisheries which have the same P1 species (stocks) shall be harmonised. |
| PI 2.1.1a | Partially | For stocks that are 'main' in both UoAs, harmonise status relative to PRI (at SG60, 80 and 100), and if below PRI, harmonise cumulative impacts at SG80 (not at SG60) |
| PI 2.2.1a | Partially | For stocks that are 'main' in both UoAs, harmonise status relative to BBL (at SG60, 80 and 100), and if below BBL, harmonise cumulative impacts at SG80 (not at SG60). |
| PI 2.3.1a | Partially | Harmonise recognition of any limits applicable to both UoAs (at SG60, 80 and 100), and cumulative effects of the UoAs at SG80 and SG100 (not at SG60). |
| PI 2.4.1b | Partially | Harmonise recognition of VMEs where both UoAs operate in the same 'managed area/s' (as in SA3.3.5). |
| PI 2.4.2a, c | Partially | Harmonise scoring at SG100, since all fishery impacts are considered (not at SG60 or 80). |
| All P2 PIs | Yes, if -> | Two UoAs are identical in scope, even if the UoCs are different (e.g., separate clients). |
| PIs 3.1.1-3 | Yes, if -> | Both UoAs are part of the same larger fishery or fleet or have stocks in either P1 or P2 which are at least partially managed by the same jurisdiction/s (nation states RFMOs or others) or under the same agreements. Harmonisation may sometimes be possible for those management arrangements that apply to both UoAs (noting the limitations accepted in the GPB3). |
| PIs 3.2.1-4 | Yes, if -> | Both UoAs have stocks within either P1 or P2 which are at least partially managed by the same jurisdiction/s (nation states, RFMOs or others) or under the same agreements. Harmonisation is needed for those management arrangements that apply to both UoAs, e.g., at the RFMO level but not the national level in the case of two separate national fleets both fishing the same regional stock. |

All certified fisheries operating in the Eastern Pacific Ocean FAO 77 & 87 are listed in **Table 8.2.2. However, none of them have swordfish as the target species (P1).**

**Table 8.2.2**: Overlapping Units of Assessment in the Eastern Pacific Ocean, status and PIs subject to harmonization. Source: MSC website and Harmonization database.

| Fishery name | Unit of Assessment | Certification status | Certification date | Performance Indicators to harmonise |
|---|---|---|---|---|
| F1: AGAC four oceans Integral Purse Seine Tropical Tuna Fishery | 3 tuna stocks:<br>Yellowfin Eastern Pacific Ocean stock<br><br>Skipjack tuna Eastern Atlantic<br><br>Bigeye tuna Eastern Pacific Ocean stock | Certified | 08/12/2021 | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 All PIs that apply to tuna species wholly IATTC: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |
| F2: Atún Sostenible EPO Panamá Tuna Fishery | 2 tuna stocks:<br>Skipjack Eastern Pacific Ocean stock<br><br>Yellowfin Eastern Pacific Ocean stock | Certified | 28/05/2024 | No P1 harmonization is needed.<br>P2 no common main species. Harmonization not needed.<br>P3 all PIs that apply to tuna either wholly IATTC: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |
| F3: Dae Hae Pacific Yellowfin, Bigeye, and Albacore Longline | 2 tuna stocks:<br>Bigeye Eastern Pacific Ocean stock (UoA5)<br><br>Yellowfin Eastern Pacific Ocean stock (UoA6) | Certified | 09/09/2024 | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 All PIs that apply to tuna wholly IATTC: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |
| F4: Eastern Pacific Ecuador Purse Seine Tropical Tuna Fishery (FSC and FAD set fishery) | 2 tuna stocks:<br>Skipjack Eastern Pacific Ocean stock<br><br>Yellowfin tuna Eastern Pacific | Certified SKJ & YFT | 21/12/2022 | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 all PIs that apply to tuna either wholly or partially at regional and Ecuador governance level: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |
| F5: Eastern Pacific Ocean tropical tuna - purse seine (TUNACONS) fishery | 3 tuna stocks:<br>Yellowfin Eastern Pacific Ocean stock (UoA1,2,8,9)<br><br>Skipjack Eastern Pacific Ocean stock<br><br>Bigeye tuna Eastern Pacific Ocean stock | Certified | 07/07/2022 (SKJ & YFT)<br><br>5/3/2025 (BET) | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 all PIs that apply to tuna either wholly or partially at regional and Ecuador governance level: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |

| | | | | |
|---|---|---|---|---|
| F6: Fortuna Pacific longline albacore, bigeye and yellowfin tuna fishery | 2 tuna stocks:<br>Bigeye Eastern Pacific Ocean stock (UoA4)<br><br>Yellowfin Eastern Pacific Ocean stock (UoA6) | Certified | 26/06/2024 | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 All PIs that apply to YFT & BET wholly IATTC: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |
| F7: US Pacific Tuna Group Purse Seine FSC and FAD Set Fishery | 3 tuna stock:<br>Yellowfin Eastern Pacific Ocean stock<br><br>Skipjack Eastern Pacific Ocean stock<br><br>Bigeye Eastern Pacific Ocean stock | Certified | 08/06/2022 (YFT)<br><br>08/12/2023 (SKJ)<br><br>14/05/2025 (BET) | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 All PIs that apply to tuna wholly IATTC: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |
| F8: Sajo WCPO and EPO bigeye, yellowfin, and albacore tuna longline | 2 tuna stock:<br>Bigeye Eastern Pacific Ocean stock (UoA5)<br><br>Yellowfin Eastern Pacific Ocean stock (UoA6) | Certified | 19/11/2024 | No P1 harmonization is needed.<br>PIs P2 the only main species is BET.<br>P3 All PIs that apply to tuna wholly IATTC: 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3 & 3.2.4. |

**Table 8.2.3**: Overlapping Units of Assessment

| **Supporting information** | |
|---|---|
| Kiwa has no participated in any harmonization meeting of EPO species. **Table 8.2.4** was completed with the most updated information. | |
| **Has there been an Annual Harmonisation meeting of which the results will be adopted?** | *Yes / No* |
| **Date of annual harmonisation meeting** | *DD / MM / YY* |
| **If applicable, describe the meeting outcome** | |
| *e.g. Agreement found among teams or lowest score adopted.* | |

**Table 8.2.4**: Scoring differences of the overlapping fisheries for the P2 primary main species (BET) and P3.

| Performance Indicators (PIs) | F1 2nd SV | F2 (PCR) | F3 PCR | F4 2nd SV | F5 PCR | F6 PCR | F7 PCR | F8 PCR |
|---|---|---|---|---|---|---|---|---|
| **PI 2.1.1 BET** | 80 | N/A | 80 | 80 | 80 | 80 | 80 | 80 |
| **PI 3.1.1** | 80 | 80 | 85 | 80 | 80 | 85 | 80 | 85 |
| **PI 3.1.2** | 85 | 80 | 85 | 85 | 80 | 85 | 95 | 80 |
| **PI 3.1.3** | 80 | 100 | 85 | 90 | 100 | 90 | 90 | 90 |
| **PI 3.2.1** | 80 | 80 | 85 | 90 | 90 | 75 | 95 | 80 |
| **PI 3.2.2** | 80 | 85 | 80 | 80 | 85 | 75 | 85 | 80 |
| **PI 3.2.3** | 75 | 70 | 70 | 70 | 75 | 60 | 80 | 65 |
| **PI 3.2.4** | 90 | 80 | 80 | 85 | 80 | 80 | 80 | 80 |

**Table 8.2.5**: Rationale for scoring differences

| **If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination (FCP v2.3 Annex PB 1.3.2.1).** |
|---|
| N/A |
| **If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.3 Annex PB 1.3.2.2).** |
| N/A |

**Table 8.2.6** Principle 2 elements to be assessed the cumulative impacts.

| Outcome Performance Indicator | Element | Cumulative impact? | Rationale |
|---|---|---|---|
| **2.1.1 Primary species(main)** | Bigeye tuna | No | Stock is highly likely to be below the PRI. |

## 8.3. Assessment Team – biographies/summaries of CVs (optional)

*The CAB may include in an appendix to the report biographies and/or summaries of CVs of the assessment team.*

## 8.4. References (Bibliography)


IATTC Res. C-02-03 Capacity of the tuna fleet operating in the Eastern Pacific Ocean [revised]

IATTC Res. C-03-05 (Data Provision) requires that pertinent data are provided annually, including total catch in numbers, and weight if available, as well as fishing effort.

IATTC Res. C-13-01. Multiannual Program for the Conservation of Tuna in the Eastern Pacific Ocean during 2014-2016. Inter-American Tropical Tuna Commission 85th Meeting. Veracruz (Mexico). 10-14 June 2013. Resolution C-13-01.

IATTC Res. C-16-02. Harvest Control Rules for Tropical Tunas (Yellowfin, Bigeye, and Skipjack). 90th Meeting of the Inter-American Tropical Tuna Commission, La Jolla, California, 27 June–1 July 2016. Resolution C-16-02.

IATTC Res. C-17-01, 2017. Conservation of Tuna in the EPO during 2017 (as amended by Res C-17-02). 91st Extraordinary Meeting of the Inter-American Tropical Tuna Commission, La Jolla, California, 7–10 February 2017. Resolution C-17-01.

IATTC Res. C-17-02. Conservation Measures for tropical Tunas in the EPO during 2018-2020 and amendment to Resolution C-17-01. 92nd Meeting of the Inter-American Tropical Tuna Commission, Mexico, 24-28 July 2017. Resolution C-17-02.

IATTC Res. C-20-06. Resolution on the Conservation Measures for Tropical Tunas in the Eastern Pacific Ocean During 2021 Pursuant to Resolution C-20-05. 96th Meeting of
the Inter-American Tropical Tuna Commission–Extraordinary, (Videoconference), 22 December 2020. Resolution C-20-06.

IATTC Resolution C-21-04 – Conservation measures for tropical tunas in the eastern Pacific Ocean during 2022-2024. Inter-American Tropical Tuna Commission
98th Meeting 18-22 October 2021. https://www.iattc.org/GetAttachment/e3dc0a7e-e73c-4b8e-889e-a4cd2cdd7b8b/C-21-04-Active_Tuna-conservation-in-the-EPO-
2022-2024.pdf

IATTC, 2022. Document IATTC-100-01 Report on the tuna fishery, stocks, and ecosystem in the eastern pacific ocean in 2021inter-american tropical tuna commission 100th meeting Phoenix, Arizona USA. 01-05 August 2022. Available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjYmKPHvNz5AhURhM4BHdkAVMQFnoECB0QAQ&
url=https%3A%2F%2Fwww.iattc.org%2FGetAttachment%2F6aff9a86-590c-4f24-b13b-a929eb4065df%2FIATTC-100-01%2520-%2520The%2520tuna%2520fishery%2C%2520stocks%2C%2520and%2520ecosystem%2520in%2520the%2520Eastern%2520Pacific%2520Ocean%2520in%25202021&usg=
AOvVaw0BG2SXCWms6JstxPCsd4Q2

IATTC Res. C-23-06. Amendment to Resolution C-16-02 on Harvest Control Rules for Tropical Tunas (Yellowfin, Bigeye, And Skipjack).

IATTC Res. C-24-01. Conservation Measures for Tropical Tunas in the Eastern Pacific Ocean During 2025-2026.

AIDCP (2024). Report on the International Dolphin Conservation Program, Document AIDCP-49-02 Rev. Agreement on the International Dolphin Conservation Program, 49th Meeting of the Parties, November 2024. Available online: AGREEMENT ON THE INTERNATIONAL DOLPHIN CONSERVATION PROGRAM

AIDCP (2022). Report on the International Dolphin Conservation Program, 45th Meeting of the Parties. Document AIDCP-45-01. Agreement on the International Dolphin Conservation Program, La Jolla, California. Available Online: https://www.iattc.org/en-US/Event/DetailMeeting/Meeting-AIDCP-45

Aires-da-Silva & Lennert-Cody., C., 2020. *DOCUMENT SAC-11-08-REV. RISK ANALYSIS FOR MANAGEMENT OF THE TROPICAL TUNA FISHERY IN THE EASTERN PACIFIC OCEAN, 2020.33.*, IATTC. Available at: https://www.iattc.org/Meetings/Meetings2020/SAC-11/Docs/_English/SAC-11-08-REV- 23-Oct-2020-MTG_Risk analysis for management.pdf.

Akroyd, J., Gascoigne, J. & Medley, P.A.H., 2020. *ISSF 2020-09: An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria*,

Alexandre Aires-da-Silva, y M. Juan L. Valero Mark. N. Maunder Carolina V. Minte-Vera Cleridy LennertCody Marlon H. Román Jimmy Martínez-Ortiz Edgar J. Torrejón-Magallanes, 2016. *EVALUACIÓN EXPLORATORIA DE LA POBLACIÓN DE DORADO (CORYPHAENA HIPPURUS) EN EL OCÉANO PACÍFICO SUDESTE*, IATTC DOCUMENTO SAC-07-06a(i). https://www.iattc.org/getattachment/ddb7f196-2f3b-4283-8faf-49572fffd197/SAC-07-06a(i)-REV- 12-Jan-18_Evaluacion-del-dorado.pdf.

An, S.-I., Kim, J.-W., Im, S.-H., Kim, B.-M. & J.-H. Park (2012). Recent and future sea surface temperature trends in tropical pacific warm pool and cold tongue regions. Climate Dynamics, V.39, pp. 1375-1383.

Braulik, G. & R. Reeves (2018). Stenella longirostris (errata version published in 2019). The IUCN Red List of Threatened Species 2018: e.T20733A156927622. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T20733A156927622.en. Accessed on 18 May 2022.

Braulik, G., Jefferson, T.A. & G. Bearzi (2021). *Delphinus delphis* (amended version of 2021assessment). The IUCN Red List of Threatened Species 2021: e.T134817215A199893039. https://dx.doi.org/10.2305/IUCN.UK.2021- 2.RLTS.T134817215A199893039.en. Accessed on 18 May 2022.

Fiedler, P.C & L.D. Talley (2006). Hydrography of the eastern tropical Pacific: A review. Progress in Oceanography, V. 69, pp. 143-180. https://www.researchgate.net/profile/Paul_Fiedler/publication/222433675_Hydrography_of_the_Eastern_Tropical_Pacific_a_review/links/5ebac9da299bf1c09ab65c07/Hydrography-of-the-Eastern- Tropical-Pacific-a-review.pdf.

Fiedler, P.C. & M. Lavin (2006). Introduction: a review of eastern tropical Pacific oceanography. Progress in Oceanography, V. 69, pp.94-100.

Francis, M. & E. Jones (2017). Movement, depth distribution and survival of spinetail devilrays (*Mobula japanica*) tagged and released from purse-seine catches in New Zealand. Aquatic Conservation Marine and Freshwater Ecosystems, V. 27, pp. 219-236. Available online:

https://www.researchgate.net/publication/299544778_Movement_depth_distribution_and_survival_of_spinetail_devilrays_Mobula_japanica_tagged_and_released_from_purse-seine_catches_in_New_Zealand.

Ganachaud, A., Sen Gupta, A., Brown, J.N., Evans, K., Maes, C., Muir, L.C. & F.S. Graham (2013). Projected changes in the tropical Pacific Ocean of importance to tuna fisheries. Climate Change, V. 119, pp. 163-179. Available online: https://hal.archives-ouvertes.fr/file/index/docid/757642/filename/Ganachaud-et-al-CC-2012-revised.pdf.

Griffiths, S. & L. Fuller (2019a). An updated ecosystem model of the Eastern Tropical Pacific Ocean: analysis of ecological indicators and the potential impacts of FAD fishing on ecosystem dynamics. Inter-American Tropical Tuna Commission, Scientific Advisory Committee, Tenth meeting, San Diego,13-17 May 2019.

Griffiths, S. & L. Fuller (2019b). Ecosystem considerations. Inter-American Tropical Tuna Commission, Scientific Advisory Committee, Document SAC-10-14. Tenth meeting, San Diego, 13-17 May 2019. Available online: https://www.iattc.org/Meetings/Meetings2019/SAC-10/Docs/_English/SAC-10-14_Ecosystem%20considerations.pdf.

Griffiths, S., Fuller, L., Valeri, J.L., Minte-Vera, C., Xu, H. & C. Lennert-Cody (2021). Using an updated ecosystem model of the Eastern Tropical Pacific Ocean to explore potential impacts of increased fishing effort on floating objects. Document SAC-12-13. IATTC Scientific Committee, 12th Meeting. 21 pp. Available online: https://www.iattc.org/GetAttachment/1e05f345-0d81-4c5d-b8c4-145b77d30178/SAC-12-13%20-%20Ecosystem%20model%20of%20the%20EPO%20progress%20report.

Hammond, P.S., Bearzi, G., Bjørge, A., Forney, K.A., Karkzmarski, L., Kasuya, T., Perrin, W.F., Scott,M.D., Wang, J.Y., Wells, R.S. & B. Wilson (2012). *Stenella longirostris* ssp. *orientalis*. The IUCN RedList of Threatened Species 2012: e.T133712A17838296. https://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T133712A17838296.en. Accessed on 18 May 2022.

IATTC, 1992. AIDCP - La Jolla Agreement. Available at: https://www.iattc.org/getattachment/3393b4d0-08b9-42c5-8ab6-efdaa70f331b/La Jolla Agreement.

IATTC, 2021. *Report on the tuna fishery, stocks, and ecosystem in the Eastern Pacific Ocean in 2020. 98th Meeting of the Inter-American Tropical Tuna Commission*,

IATTC (1992). Agreement for the conservation of dolphins. “The La Jolla Agreement”. IATTC, La Jolla, CA, USA. 5 pp. Available online: https://www.iattc.org/getattachment/3393b4d0-08b9-42c5-8ab6-efdaa70f331b/La%20Jolla%20Agreement

IATTC (2006). Technical workshop on calculating $N_{MIN}$ for the dolphin stocks of the Eastern Pacific Ocean. IATTC Special Report 14. IATTC, L Jolla, CA, 40 pp. Available online: https://iattc.org/GetAttachment/e7f3fa92-a122-4d70-bcb2-c7472aeb4c2d/Technical%20workshop%20on%20calculating%20NMIN%20for%20the%20dolphin%20stocks%20of%20the%20eastern%20Pacific%20Ocean.

IATTC (2010). Convention for the strengthening of the Inter-American Tropical Tuna Commission established by the 1949 Convention between the United States of America and the Republic of Costa Rica (“Antigua Convention”). 21 pp.

https://www.iattc.org/getattachment/593fe044-9e3c-440b-8acf-e676d16b6618/Antigua%20Convention%20-%20text.

IATTC (2016) Document SAC-07-inf c(d) Description of reported catch data for non-target species: does sufficient data exist to produce a comprehensive ecological risk assessment? Leanne Duffy, Cleridy Lennert-Cody, Nickolas Vogel, Joanne Boster, Joydelee Marrow

IATTC (2018a). Tunas, billfishes and other pelagic species in the Eastern Pacific Ocean in 2017. https://www.iattc.org/PDFFiles/FisheryStatusReports/_English/No-16-2018_Tunas%20billfishes%20and%20other%20pelagic%20species%20in%20the%20eastern%20Pacifi c%20Ocean%20in%202017.pdf.

IATTC (2019a). Report on the tuna fishery, stocks and ecosystem in the Eastern Pacific Ocean in 2018. https://www.iattc.org/PDFFiles/FisheryStatusReports/_English/No-17-2019_Tuna%20fishery,%20stocks,%20and%20ecosystem%20in%20the%20eastern%20Pacific%20Oc ean%20in%202018.pdf.

IATTC-SAB (2009). Updated estimates of $N_{MIN}$ and stock mortality limits. Document SAB-07-05. International Dolphin Conservation Program, Scientific Advisory Board, 7th Meeting, La Jolla, CA. 12 pp. Available online: https://www.iattc.org/getattachment/88ea75ff-1285-43ad-82ce-06402c209d06/SAB-07-05_Updated-estimates-of-Nmin-and-Stock-Mortality-Limits.pdf.

IATTC-SAC (2020a). Stock status indicators for tropical tunas in the Eastern Pacific Ocean. IATTC Scientific Advisory Committee 11th Meeting (provided for video meeting). Document SAC-11-05. Available online: 11th Meeting of the Scientific Advisory Committee | IATTC

IATTC-SAC (2022). Ecosystem considerations. Document SAC-13-10. Scientific Advisory Committee 13th Meeting, 16-20 May 2022. 49 pp. Available online: SAC-13-10 Ecosystem considerations (iattc.org)

IATTC-SAC (2022b). Dolphin research activities: progress report. Document SAC-13 INF-F. Scientific Advisory Committee 13th Meeting, 16-20 May 2022. 5 pp. Available online: https://www.iattc.org/GetAttachment/abd86323-ed89-4fd8-8d45-5ad6314e1bf0/INF-F.%20Dolphin%20research%20activities%20%E2%80%93%20progress%20report

IATTC, 2022. *Stock Assessment Report 23 / STATUS OF THE TUNA AND BILLFISH STOCKS IN 2021*, INTER-AMERICAN TROPICAL TUNA COMMISSION. Available at: https://www.iattc.org/PDFFiles/StockAssessmentReports/_Spanish/No-20-2019_Condicion de los stocks de atunes y peces picudos en 2018.pdf.

Leeper, E., 1976. Major research effort probes tuna-porpoise bond. *BioScience*, 26, pp.533–584.

Maunder, M. (2019). Updated indicators of stock status for skipjack tuna in the eastern Pacific Ocean. IATTC SAC-10, San Diego, California (USA) 13-17 May 2019. IATTC. SAC 10-09. https://www.iattc.org/Meetings/Meetings2019/SAC-10/10th-Meeting-Scientific-AdvisoryCommitteeENG.htm. Maunder, M., Xu, H., Minte-Vera, C., Valero, J.L., Lennert-Cody, C.E. and A. Aires-da-Silva (2022). Skipajck tuna in the Eastern Pacific Ocean, 2021: interim assessment. Document SAC-13-07, IATTC Scientific Advisory Committee 13th meeting, 16-20th May 2022, La Jolla, CA, USA. 67 pp. Available online: https://www.iattc.org/GetAttachment/0acfc999-fbcd-4b07-9e8d-fc5f85fd88e8/SAC-13- 07%20-%20Skipjack%20tuna%20interim%20assessment%202022

Xu & Lennert-Cody., C., 2019. *EL ATÚN PATUDO EN EL OCÉANO PACÍFICO ORIENTAL, 2019: EVALUACIÓN DE REFERENCIA:63.*, IATTC. Available at:

https://www.iattc.org/Meetings/Meetings2020/SAC-11/Docs/_Spanish/SAC-11-06-MTG_Evaluacion de referencia de atun patudo 2019.pdf.

Xu, H., Mark N. Maunder & C. Lennert-Cody (2022). Stock status indicators (SSIs) for tropical tunas in the Eastern Tropical Pacific Ocean. Document SAC-13-06 Corr. IATTC Scientific Advisory Committee 13th meeting, 16-20th May 2022, La Jolla, CA, USA. 11 pp. Available online: https://www.iattc.org/GetAttachment/22511b5b-ba2b-4126-9ba2-0bffee89f4d5/SAC-13-06%20-%20Stock%20status%20indicators%20(SSIs)%20for%20tropical%20tunas%20in%20the%20EPO

**Principle 2**

Félix-Salazar, L. A., Marín-Enríquez, E., Aragón-Noriega, E. A., & Ramirez-Perez, J. S. (2024). Analysis of the swordfish *Xiphias gladius* Linnaeus, 1758 catches by the pelagic longline fleets in the Eastern Pacific Ocean. *Journal of Marine Science and Engineering, 12*(3), 496. https://doi.org/10.3390/jmse12030496

https://gk.city/2022/01/24/el-palangre-galapagos-uso/

Martínez-Ortiz, J., Aires-da-Silva, A. M., Lennert-Cody, C. E., & Maunder, M. N. (2015). The Ecuadorian artisanal fishery for large pelagics: Species composition and spatio-temporal dynamics. *PLoS ONE, 10*(8), e0135136. https://doi.org/10.1371/journal.pone.0135136

Corte Constitucional del Ecuador. (2024, November 28). *Judgment No. 95-20-IN/24* (Case No. 95-20-IN). Quito, Ecuador

eyJjYXJwZXRhIjoidHJhbWl0ZSIsInV1aWQiOiI3MTU4Zjg4Ny0wMDQ2LTQ5M2UtOTRlOC05YjZhZmJlOTYzZWQucGRmIn0=

FishSource - Pelagic thresher - Eastern Pacific Ocean

Evaluacion-Stock-Dorado.pdf

Agreement MPCEIP-SRP 2022-0078-A; IATTC Res C-15-04

Pronouncement of WWF-Ecuador after the confirmation of illegality of the cargo seized with shark fins in Hong Kong | WWF

2020 National Action Plan for the Conservation and Management of Sharks of Ecuador (PAT-EC)

Pronouncement of WWF-Ecuador after the confirmation of illegality of the cargo seized with shark fins in Hong Kong | WWF

Kiszka, Jeremy & Braulik, Gill. (2018). Stenella attenuata - THE IUCN RED LIST OF THREATENED SPECIES™.

Jiménez, P. J., Alava, J. J., Castro, C., Samaniego, J., & Fair, P. (2018). *Stranding of small cetaceans with missing fins raises concerns on cetacean conservation in Ecuador: Bycatch or targeted fisheries?* International Journal of Fisheries Science and Research, 2(1), 1006.

Appendices | CITES

CMS01.qxd

About AIDCP | IATTC

https://www.telecomunicaciones.gob.ec/wp-content/uploads/2017/04/CODIGO-ORGANICO-DEL-AMBIENTE.pdf?

Decreto-0ejecutivo-752-Ecuador-Environmental-Code-Regulation-ApanishS.pdf

cms_nlp_ecu_acuerdo_0004_2014.pdf

cms_nlp_ecu_acuerdo_196_1990.pdf

Wells, R.S., Scott, M.D. 1999. Bottlenose dolphin Tursiops truncatus (Montagu, 1821). In Handbook of Marine Mammals, Volume VI. The Second Book of Dolphins and Porpoises, Ridgway SH, Harrison R (eds). Academic Press: San Diego, CA; pp. 137-182

Moura, A.E., Shreves, K., Pilot, M., Andrews, K.R., Moore, D.M., Kishida, T., Moller, L., Natoli, A., Gaspari, S., McGowen, M., Chen, I., Gray, H., Gore, M., Culloch, R.M., Kiani. M.S.Willson, M.S., Bulushi, A., Collins, T., Baldwin, R., Wilson, A., Minton, G., Ponnampalam L, Hoelzel, A.R. 2020. Phylogenomics of the genus Tursiops and closely related Delphininae reveals extensive reticulation among lineages and provides inference about eco-evolutionary drivers. Mol. Phylo & Evol., 146, 106756.

Gnone, G. (2023). *Progress report regarding bottlenose dolphin (Tursiops truncatus) Conservation Management Plan (CMP) in the ACCOBAMS Area* (ACCOBAMS-SC15/2023/Inf10). Fifteenth Meeting of the Scientific Committee of ACCOBAMS, 10–11 May 2023, Tunis, Tunisia. Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS).

Félix, F., & Burneo, S. F. (2020). Imminent risk of extirpation for two bottlenose dolphin communities in the Gulf of Guayaquil, Ecuador. *Frontiers in Marine Science, 7*, 537010. https://doi.org/10.3389/fmars.2020.537010

Mitigating cetacean bycatch in coastal Ecuador_ Governance challenges for small-scale fisheries

The-Marine-Mammal-Protection-Act-as-Amended-Through-2023.pdf

False Killer Whale | NOAA Fisheries

Food and Agriculture Organization of the United Nations (FAO) (2018). *FAO Technical Guidelines for Responsible Fisheries – Guidelines for Bycatch Management and Reduction of Discards.* Rome.

Inter-American Tropical Tuna Commission (IATTC) (2023). Resolution C-23-07:

Inter-American Tropical Tuna Commission (IATTC) (2024). Resolution C-24-05: Conservation Measures for Sharks and sustainable management of sharks.

Ministerio de Acuacultura y Pesca (2019). Resolution SRP-2019-0019-A: Prohibition of Targeting *Aetobatus laticeps* and *Myliobatis longirostris*.

Secretaría de Recursos Pesqueros (2010). Agreement 093: Prohibition of Targeting Mobulid Rays and Shark Finning Practices in Ecuadorian Waters. Ministry of Agriculture, Livestock, Aquaculture and Fisheries of Ecuador.

MPCEIP-SRP-2022-0078-A

(C-Res-19-05.pdf

(CIT-COP10-2022-R6_ENG_Leatherback_EP_17.June.2022_ADOPTED.pdf

RESOLUCIÓN No. MAAE-SPN-2021-001. APRUÉBESE Y OFICIALÍCESE EL PLAN DE ACCIÓN PARA LA CONSERVACIÓN DE TORTUGAS MARINAS EN ECUADOR 2021 - 2030 - 27 de Julio de 2021 - Registro Oficial - Legislación - VLEX 873479416

**Principle 3 References**

Ecuadorian Ministerial Agreement MPCEIP-SRP-2021-0194-A.

Ecuadorian Ministerial Agreement No. 124/2014

European Commission 2019. Questions and Answers – Illegal, Unreported and Unregulated (IUU) fishing and issues at stake in Ecuador https://ec.europa.eu/commission/presscorner/detail/sl/QANDA_19_6037

IATTC, 2018. Document COR-09-01, Compliance with IATTC Resolutions in 2017, IATTC Committee for the Review of Implementation of Measures Adopted by the Commission, 9th Meeting, August 21-22, 2018.

Medley, P.A.H, J. Gascoigne and G. Scarcella. 2021. An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria (Version 8). ISSF Technical Report 2021-01. International Seafood Sustainability Foundation, Washington, D.C., USA

Moss-Adams 2016. Inter-American Tropical Tuna Commission and Agreement on rhe International Dolphin Conservation Program: Performance Review June 20, 2016. http://www.tuna-org.org/Documents/IATTC-AIDCP-Performance-Review-Final-ReportENG.pdf

NOAA Fisheries 2021. Report to Congress: Improving International Fisheries Management August 2021. https://www.fisheries.noaa.gov/foreign/international-affairs/identification-iuu-fishing-activities#findings-and-analyses-of-foreign-iuu-fishing-activities

# 9. Template information and copyright

The Marine Stewardship Council's 'MSC Pre-Assessment Reporting Template v3.4' and its content is copyright of "Marine Stewardship Council" - © "Marine Stewardship Council" 2023. All rights reserved.

*The CAB should delete the table below:*

Table 1: Template version control

| Version | Date of publication | Description of amendment |
|---|---|---|
| 1.0 | 15 August 2011 | Date of first release |
| 1.1 | 31 October 2013 | Updated in line with changes to CR v1.3 |
| 2.0 | 08 October 2014 | Confirmed background sections (Section 3) as optional (use of 'may' statements)<br><br>Modified Table 6.3 to create a simplified scoring sheet to be completed in place of full evaluation tables<br><br>Made amendments to PIs based on Fishery Standard Review changes (e.g. removed original PIs 1.1.2, 3.1.4 and 3.2.4). |
| 2.1 | 9 October 2017 | Inclusion of optional full evaluation tables |
| 3.0 | 17 December 2018 | Release alongside Fisheries Certification Process v2.1 |
| 3.1 | 29 March 2019 | Minor document changes for usability |
| 3.2 | 25 March 2020 | Release alongside Fisheries Certification Process v2.2 |
| 3.3 | 26 October 2022 | Release alongside Fisheries Certification Process v2.3 |
| 3.4 | 01 May 2023 | Added optional vessels list section 5.2. |

A controlled document list of MSC program documents is available on the MSC website (https://www.msc.org/for-business/certification-bodies/supporting-documents).

Marine Stewardship Council

Marine House

1 Snow Hill

London EC1A 2DH

United Kingdom

Phone: + 44 (0) 20 7246 8900

Fax: + 44 (0) 20 7246 8901

Email: standards@msc.org