ANABAC ATLANTIC UNASSOCIATED PURSE SEINE YELLOWFIN TUNA FISHERY

Announcement Comment Draft Report June 2020

Conformity Assessment Body (CAB)	Bureau Veritas Certification Holding SAS
Assessment team	Gemma Quilez, Carmen Morant, Carola Kirchner
Fishery client	ANABAC (Asociación Nacional de Armadores de Buques Atuneros Congeladores)
Assessment Type	Initial Assessment

1 Contents

2 Glossary

Concepts and terms:

B_{MSY}	Biomass at MSY
B_{lim}	Level of biomass that should be avoided considering that beyond such limits, the sustainability of the stock may be in danger
B_{target}	Management objective based on a level of biomass that should be achieved and maintained;
$B_{threshold}$	Level of biomass reflecting the precautionary approach that triggers pre-agreed management actions to reduce the risk of breaching the limits. Thresholds should be set sufficiently far away from limits so that there is low probability that the limits will be exceeded
BRP	Biological Reference Points
CAB	Conformity Assessment Body (in the case of this particular assessment the CAB is BV)
CoC	Chain of Custody
COC	Code of Conduct
CPC	Contracting Party (ICCAT) Convention
CPUE	Catch per Unit Effort
ETP	Endangered, Threatened and Protected
f/v	Fishing vessel
F_{MSY}	Fishing mortality at MSY
F_{target}	Management objective based on a fishing mortality rate that should be achieved and maintained
FAD	Fish Aggregating Device
FCR	(MSC) Fisheries Certificacion Requirements
FOB	Floating object
FSC	Free swimming school
HCRs	Harvest Control Rules. Decision rules that aim to achieve the target reference point and avoid the limit reference point by specifying pre-agreed management actions when $B_{THRESHOLD}$, F_{TARGET} or B_{LIM} are breached
PCDR	(MSC) Public Comment Draft Report
PR	Peer Reviewer
PRI	Point of Recruitment Impairment
PRDR	(MSC) Peer Review Draft Report
MCS	Monitoring, Control and Surveillance
MPA	Marine Protected Area
MSE	Management Strategy Evaluation
MSY	Maximum Sustainable Yield
PRI	Point where Recruitment would be Impaired
Rec	(ICCAT) Recommendation
UoA	Unit of Assessment
UoC	Unit of Certification
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System

Institutions, organization, bodies, agreements and programmes:

AGAC	(Spanish) Association of Large Tuna Freezers
ANABAC	National (Spanish) Association of Ship owners of Freezer Tuna Vessels
AOTTP	Atlantic Ocean Tropical Tuna Tagging Programme
BV	Bureau Veritas
COC	ICCAT Conservation & Management Measures Compliance Committee
EPBR	ICCAT Enhanced Program for Billfish Research
FAO	Food and Agriculture Organization of the United Nations
ICCAT	International Commission for the Conservation of Atlantic Tunas
ISSF	International Seafood Sustainability Foundation
MSC	Marine Stewardship Council
OPAGAC	Organisation of (Spanish) producers of frozen tuna
PSMA	The (FAO) Port State Measures Agreement
PWG	Permanent Working Group for the improvement of ICCAT Statistics and Conservation Measures
RFMOs	Regional Fisheries Management Organizations (e.g. ICCAT)
SCRS	ICCAT Standing Committee on Research & Statistics
SICA	Central American Integration System
SIRPAC	Integrated Central American Fish and Aquaculture Register System

SMTYP	ICCAT Small Tunas Year Program
SRDCP	ICCAT Shark Research and Data Collection Programme
STACFAD	ICCAT Standing Committee on Finance & Administration
SWGSM	ICCAT Standing Working Group to enhance dialogue between fisheries scientists and managers
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks
TWG	Joint (RFMOs) Management Strategy Evaluation (MSE) Technical Working Group
WWF	World Wildlife Fund

3 Executive summary

To be drafted at Announcement Comment Draft Report stage

The executive summary shall include:

- Date and location of site visit.
- The main strengths and weaknesses of the client's operation.
- The draft determination / determination reached with supporting justification.

Reference(s): FCP v2.1 Section(s) 7.12, 7.18, 7.21

The client group is formed by ANABAC (Asociación Nacional de Armadores de Buques Atuneros Congeladores) and the 3 companies that belong to ANABAC (PEVASA, ATUNSA & ECHEBASTAR). Currently, a total of 8 vessels from 2 of ANABAC's members are included in the UoA (**Table 5.1.2**). See **Section 5.1.1** for further details.

The fishery operates in the tropical eastern Atlantic Ocean (FAO areas 34 and 47), which extends along the African coast from Cape Blanco in Mauritania to the Tigres Peninsula on the coast of Angola (**Figure 5.1.1**). See **Section 5.1.1** for further details.

Henceforth, the term 'Client' will be used to refer to them.

This Announcement Comment Draft Report (ACDR) provides details to the client on the assessment of the ANABAC Atlantic unassociated purse seine yellowfin tuna fishery against the MSC Principles and Criteria for Sustainable fishing v2.01.

This report was prepared by Bureau Veritas Iberia. The assessment team for this fishery was comprised of Carola Kirchner (P1 expert), Carmen Morant (P2 expert), Gemma Quílez (P3 expert who also acted as team leader).

The ACDR was prepared mainly with the information delivered by the client as set out in FCP 7.10.1. The Client Document Checklist was used. Additionaly, other sources of desk information such as a pre-assessment performed in 2017 were consulted. At this stage a site visit is not needed.

Strengths:

- A major advancement in the current yellowfin assessment was the development of a joint longline index using high resolution catch and effort information from the main longline fleets operating in the Atlantic.
- The yellowfin stock status is not overfished (24% probability of overfished status), with no overfishing (43% probability) taking place.
- The stock is above or fluctuating around the MSY level; B_{2018}/B_{MSY} is 1.17 (0.75-1.62)
- The fishing mortality estimate of F_{2018}/F_{MSY} is 0.96 (0.56-1.5), which is just below the fishing mortality at MSY.
- A TAC of a 110 000t is in place.
- The assessed vessels are listed on the ISSF ProActive Vessel Register and they are implementing all the PVR measures (also audited by MRAG).
- Since 2012, the assessed fleet has signed the OPAGAC/ ANABAC Code of Good Practices ensuring that all fishing trips have scientific observers on board. The implementation of this Code of conduct is being annually verified by AZTI and includes other relevant measures such as detailed guidelines and training on turtles and sharks release manoeuvres.
- In 2020 the assessed fleet has been certified in conformity with the Spanish Standard on Tuna from Responsible fishing, UNE195006:2016.
- The observer program on board the assessed vessels provides detailed information on fishing operations and catch composition, including fate of those catches (retained, released alive, discarded dead).

- Sets on free swimming tuna school (FSC or unassociated sets) is a highly selective fishery since discards (both release alive and discarded dead) account for less than 1.5% of total catches and, in turn, the three tropical tuna species (yellowfin, skipjack and bigeye tuna) account for more than 99% of the landings.
- The client has implemented a traceability system on board to segregate catches from FSC sets and FOB sets (sets on floating objects). The vessels will be audited against the MSC CoC on board before the publication of the PCR.
- FSC sets show a low rate of interactions with protected sharks, sea turtles and whales, and a good part of them (or 100% in the case of whales and turtles) is released alive.
- The UoC fishery has negligible habitat impacts, as the purse seine is fished in deep pelagic water and does not touch the seabed.
- The UoC fishery has minimal ecosystem impacts because the catches of the apex predators (P1 target species, P2 primary, secondary and ETP species) are relatively small, and do not upset the ecosystem balance or trophic relationships, Additionally, because the UoC does not include FOB or associated sets (FADS), there are not issues related to FAD impacts on habitat or ecosystems.
- All the countries involved in the assessed fishery (flag country of the assessed vessels, countries in whose EEZ the UoA operates, countries where the UoA offloads) are ICCAT CPCs and have signed UNCLOS.

Weaknesses:

- There is only a 75% certainty that the stock is above the MSY level
- No reference points have been adopted by ICCAT yet.
- No full management strategy evaluations have taken place.
- For all models, there are large uncertainties in the value of biomass and fishing mortality at any point in the history, including 2018, therefore it can be deduced that there is not a good understanding of the inherent uncertainties.
- Recently the TAC has been over caught, because the TAC has not been allocated by gear/flag.
- 12 large whales were reported captured in FSC sets between 2014 and 2018 according to data collected by observers on board the UoC. This is in accordance with current ICCAT procedures; however, these catches are avoidable and can be eliminated by not intentionally setting on whales as it is stated in the Client's 2019 Code of Good Practices.Neither Cape Verde nor some of the other countries where the assessed fleet operates have signed or ratified the UNFSA.

4 Report details

4.1 Authorship and peer review details

Gemma Quílez, holds a Biology degree from Barcelona University (Spain), an MSc in Natural Resource Management from Leicester University (UK) and a PhD in Marine Biology from Newcastle upon Tyne University (UK).
She has around 20 years of experience working in Marine Biology, Marine Ecology, Marine Conservation Biology and Fisheries. In 1998, she did her MSc thesis on neritic and oceanic fish larvae from the Irish Sea. From 1999 to 2001 she worked at the ICM-CSIC (Marine Science Institute) of Barcelona (Spain) on trophic ecology of pelagic species larvae and participated in different oceanographic cruises on board the RV García del Cid. In 2004, while doing her PhD on Marine Invasive species, she was employed at the Fisheries Research Institute of Kavala, Greece, to conduct a study on trophic ecology of anchovy larvae. Also, during her PhD (2001-2006), she participated on several research cruises on board the RV Bernicia. Once she finished her PhD she went to work on marine invasive species for the Smithsonian Environmental Research Center (USA) until 2010.

From 2010 until 2016, she worked as fisheries policy officer for the Mediterranean Programme of WWF (World Wide Fund for Nature) in Barcelona, Spain. As such she worked on fisheries regional and international policy processes (e.g. GFCM, ICCAT, MedAC), mostly on Atlantic and Mediterranean bluefin tuna and at ICCAT, both at a scientific and policy level. She also participated in the creation and in the following functioning of the co-management committee of the Catalan sandeel fishery.

Since 2010 until present she has been working studying the biology, ecology and population dynamics of Atlantic and Mediterranean bluefin tuna and being deeply involved in the stock assessment of the species at ICCAT level.
In addition, from 2008 until 2018 she has been one of the two the Spanish representatives at two ICES working groups (WGBOSV - Working Group on Ballast and Other Ship Vectors, and WGITMO - Working Group on Introductions and Transfers of Marine Organisms).

Her experience (over 8 years) studying the biology, ecology and population dynamics of Atlantic bluefin tuna, deeply involved with ICCAT, as well as her previous work on trophic ecology of pelagic species larvae, proves her capacity to meet the qualification and competency criteria for PC3 (i) Fishing impacts on aquatic ecosystems. Her 6 years as WWF fisheries officer working on fisheries policy processes (mostly on Atlantic and Mediterranean bluefin tuna) and on the co-management of the Catalan sandeel, proves her capacity to meet the qualification and competency criteria for PC3 (ii) Fishery management and operations. She complies with the current Annex PC of the MSC Fisheries Certification Process v2.1. She does not have a conflict of interest with the fishery.

Dr. CAROLA KIRCHNER. Dr Kirchner has been working in the field of fisheries for the last 24 years. Her highest qualification is a PhD. Her PhD focussed on the population dynamics and stock assessment of a linefish species. She also completed her MBA part-time through the University of Cape Town. Her research thesis focused on the Namibian hake fishery, where she not only indicated areas of resource rent loss, but also presented a new method of providing bio-economic advice to the fishing industry and management. Included in the thesis was an evaluation of Namibia's post-independence fisheries policies. Dr Kirchner worked for the Ministry of Fisheries in Namibia for 18 years, where she was responsible for the stock assessment and management advice for most commercial species (eg. Hake, Horse mackerel and Sardine). These fisheries differ vastly, from long-lived species (Orange roughy) to the short-lived Sardine. Also, different gear types were used between these fisheries; bottom trawl, purse-seine and handline. Dr Kirchner has over the years built up international relationships, for example she was involved in the stock assessment and management of southern Atlantic Albacore tuna through ICCAT. Further, she worked for two years in the stock assessment and modelling section of the Secretariat of the Pacific Community (SPC). There, her main role was to support the Parties of the Nauru agreement (PNA) members to maintain the compliance to the MSC certification, by evaluating reference points and harvest control rules. In addition, she was working on a regional bio-economic model that aims to evaluate and optimize the various fishing activities and includes all four major tuna resources in the Pacific as in Skipjack, Yellowfin, Bigeye and Albacore tuna.
Her 18 years at the Ministry of Fisheries and Marine Resources of Namibia and her work at the Secretariat of the Pacific Community ensure that she meets the qualification and competency criteria established in PC3 on (i) fish stock assessment, (ii) fish stock biology and (iii) fishing impacts on aquatic ecosystem. Furthermore, her experience in Namibian fisheries administration supports the qualification and competency criteria established in PC3 for (iv) fishery management and operations.

Carmen Morant is a marine scientist who holds a MSc in Marine Science and a Msc in Environmental Science from the *University of Cadiz*, also a Postgraduate Degree in Environmental Management and Auditing in Marine Science and Technology from *Polytechnic University of Catalonia* (2008).
From 2011 to 2019 she worked as a freelance PAM and MMO on a wide range of projects from seismic and geographical surveys to off-shore wind farms, or oil and gas prospects.
She worked for over 6 years as a Fisheries Observer with the BFT implementing ICCAT (European) regulations, not just on board purse seiners but also in ports and BFT farms, analysis the bycatch of all different species. During these years, she collaborated during 2 years with TRAGSA for the Spanish General Marine Secretariat, carrying out regular surveys of fish stocks, monitoring number of individuals, size, weight, origin, tagging, and preparing reports and evidence for the European Fishing Commission.
Carmen worked for an NGO in California targeting fishing anglers in an awareness program. This experience was complemented with her work both in Mexico and Costa Rica, where she undertook some research for local NGOs in how the local fishing industry impacted the sea turtles or the impact of whale watchers on marine mammals.
Carmen joined the team in 2020 as P2 expert and has collaborated on the "Brasil-Ceará Skipjack, Yellowfin and Big eye Tuna associated-school handline Fishery"

4.2 Version details

To be drafted at Announcement Comment Draft Report stage

Table 4.2 – Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	**Version 2.1**
MSC Fisheries Standard	**Version 2.01**
MSC General Certification Requirements	**Version 2.4**

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

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

5.1.1 Unit(s) of Assessment

To be drafted at Announcement Comment Draft Report stage

The report shall include a statement of the CABs determination that the fishery is within scope of the MSC Fisheries Standard. For geographical area, the CAB should include stock region, common name of the body of water (e.g. North Sea), FAO statistical area(s), and any local fisheries management area(s) (e.g. ICES divisions VI, VII and VIIIabc).

Reference(s): FCP v2.1 Section 7.4

Fishery within the scope of the MSC fisheries certification

Bureau Veritas Certification confirms that this fishery is within the scope of the MSC fisheries certification sought as:

- It is a non-enhanced 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 destructive practices
- The tuna fisheries in the Atlantic are regulated by the International Commission for the Conservation of Atlantic Tunas (ICCAT), of which Belize, Cape Verde and Spain (the flagging States of the assessed purse seine vessels) are Contracting Parties since 19/07/2005, 11/10/1979 and 14/11/1997, respectively. The evaluated fishery takes place both in international waters and in the EEZs of different West African coastal countries (all of them ICCAT Contracting Parties) with whom ANABAC, on behalf of its members, signs direct agreements with the governments of those countries to guarantee access. Therefore, and according to FCP 7.4.3.1, the fishery is not conducted under any controversial unilateral exemption to an international agreement.
- Belize has been a member of the International Labour Organization (ILO) since 1981. The country has ratified 50 Conventions, of which 35 are in force, including the 8 fundamental Conventions and 2 of the 4 governance Conventions.
  Cape Verde has been a member of the ILO since 1979. The country has ratified 15 Conventions, of which 14 are in force, including the 8 fundamental Conventions and 2 of the 4 governance Conventions.
  Spain has been a member of the ILO from 1919 to 1941 and since 1956. The country has ratified 133 Conventions, of which 87 are in force, including the 8 fundamental Conventions and the 4 governance Conventions.
- The CAB is not aware of any of the fishing operators included in the UoA having been prosecuted for forced labour in the last 2 years.

Besides, Bureau Veritas has checked that:

- There are two other certified fisheries with the Atlantic yellowfin tuna assessed under P1: the Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery (assessed also by Bureau Veritas) and the US North Atlantic swordfish, yellowfin, and albacore tuna fishery (assessed by MRAG Americas). Therefore, in accordance with Annex PB3.1 and PB3.2, BV and MRAG-Americas will have to engage in a harmonisation process (details provided in **Section 9.8**).
- Furthermore, there are other MSC-certified (or under assessment) fisheries managed by ICCAT (see ¡Error! No se encuentra el origen de la referencia..**1**). Therefore, in accordance with PB3.3 it will be necessary to ensure consistency of outcomes in certain P3 PIs.
- There are no catches of non-target species that are inseparable or practically inseparable (IPI) from the target stock
- In 2017, MRAG performed a pre-assessment of the fishery including in the UoA sets of FSC and FOBs.No other pre-assessment reports have been written by other parties. BV has checked the pre-assessment. The fishery has not previously failed an assessment and has no certificate withdrawn.

Unit of Assessment (UoA)

According to the UoA definition given by MSC in its MSC-MSCI Vocabulary and the information collected during and after the site visit, BV concludes that the UoA presented in
Table5.1.1 meets the MSC fisheries requirements while also suits client's needs.

Table 5.1.1 shows the unit of Assessment defined for the ANABAC atlantic unassociated purse seine yellowfin tuna fishery. In the case of this fishery the UoA matches with the Unit of Certification as explained in **Section 5.1.2**.

Table 5.1.1 – Unit(s) of Assessment (UoA)

UoA 1	Description
Species	Yellowfin tuna (*Thunnus albacares*)
Stock	Yellowfin tuna (*Thunnus albacares*), Atlantic Ocean stock.
Geographical area	FAO areas 34 and 47 (**Figure 5.1.1**). See below for further details.
Harvest method / gear	Purse seiners, targeting yellowfin tuna (*Thunnus albacares*) in free schools. See below for further details.
Client group	The client group is formed by ANABAC (Asociación Nacional de Armadores de Buques Atuneros Congeladores) and the 3 companies that belong to ANABAC (PEVASA, ATUNSA & ECHEBASTAR). Currently, a total of 8 vessels from 2 of ANABAC's members are included in the UoA (**Table 5.1.2**). See below for further details.
Other eligible fishers	There are no other eligible fishers. See below for further details.

Client group

All companies of the fishing vessels described here are members of the national Association of purse seine vessel owners (ANABAC). ANABAC was established in 1974 with the objective of representing the interests of Spanish companies dedicated to the tropical tuna fishery. Currently ANABAC integrates 3 groups of Spanish ship owners located in Bermeo: ATUNSA, PEVASA and Echebastar. A total of 19 vessels are associated to ANABAC, all of which operate in tropical waters of the Atlantic or Indian Ocean. **Table 5.1.2** shows the vessels (a total of 8 vessels) and companies included in the UoA which operate in the Eastern Atlantic Ocean.

Table 5.1.2 ANABAC f/v and the corresponding shipping companies which operate in the Eastern Atlantic Ocean. Source: Client.

Vessel name	Shipping company
EGALUZE	ATUNEROS CONGELADORES Y TRANSPORTES FRIGORIFICOS S.A. (ATUNSA)
ALBONIGA	ATUNEROS CONGELADORES Y TRANSPORTES FRIGORIFICOS S.A. (ATUNSA)
ZUBEROA	ATUNEROS CONGELADORES Y TRANSPORTES FRIGORIFICOS S.A. (ATUNSA)
PLAYA DE NOJA	PESQUERIA VASCO MONTAÑESA S.A. (PEVASA)
PLAYA DE BAKIO	PESQUERIA VASCO MONTAÑESA S.A. (PEVASA)
PLAYA DE RIS	PESQUERIA VASCO MONTAÑESA S.A. (PEVASA)
EGALABUR	ATUNSA CV LDA
PLAYA DE AZKORRI	SEA BREEZE VENTURES LIMITED (PEVASA)

The ATUNEROS CONGELADORES Y TRANSPORTES FRIGORIFICOS (ATUNSA) Group integrates different companies that provide different services in relation to fishing and canning, ATUNSA, N.V. and ATUNSA CV LDA are those companies. Egaluze, Alboniga, Zuberoa and Egalabur, vessels from ATUNSA Group, were built between 1983 and 2013 (see **Table 5.1.3**). The f/v Zuberoa was originally named Agur Zuberoa which name was changed in 1996. Until 2008, Zuberoa was being moving from the Indian Ocean to the Atlantic Ocean. However, since 2008 it has been operating exclusively in the Atlantic Ocean. The other f/v have been operating exclusively in the Eastern Atlantic since their deployment (FAO 34 and 47).

Table 5.1.3 Technical characteristics of the vessels included in the UoA. Source: Client.

Vessel name	Call sign	IMO	Flag	Port of Registry	Gross Tonnage	Net Tonnage	T.R.B.	Length (m)	Beam (m)	Moulded Depth	Year built	Certificate of Classification
EGALUZE	EFHD	8109620	Spain	Bermeo	912	274	703.05	46.70	10.7	5.05	1983	36L028
ALBONIGA	EDKU	8613267	Spain	Bermeo	940	282	692.56	47.63	10.7	7.40	1987	37U692
ZUBEROA	EGVV	8906456	Spain	Bermeo	2172	652	1520.63	68.33	13.6	9.05	1991	38T450
PLAYA DE NOJA	EFAO	8806955	Spain	Bermeo	2110	633	1586.32	66.00	13.6	9.05	1989	37B951
PLAYA DE BAKIO	EGWJ	9010345	Spain	Bermeo	2101	630	1575.01	67.37	13.6	9.05	1991	38C527
PLAYA DE RIS	EAKV	9684548	Spain	Bermeo	2591	777	1718.81	75.89	14.2	6.55	2013	24259V
EGALABUR	D4GX	9710995	Cape Verde	S.Vicente	2863	858	1919.00	76.60	14.7	9.50	2013	23923F
PLAYA DE AZKORRI	V3ML9	9476111	Belize	Belize City	2548	764	1781.80	74.98	14.2	9.05	2008	12705M

Similarly, SEA BREEZE VENTURES LIMITED Company is part of the PESQUERIA VASCO MONTAÑESA (PEVASA) Group. Playa de Noja, Playa de Bakio, Playa de Ris and Playa de Azkorri are the f/v under the PEVASA Group. Those vessels were built between 1989 and 2013, and their technical characteristics are shown in **Table 5.1.3**. Playa de Noja f/v was originally built in 1989 and started fishing in the Indian Ocean under the name of Felipe Ruano. In 2012, was renamed with the current name and moved to the Atlantic Ocean where it has been operating exclusively since 2015. The f/v Playa de Bakio also moved from the Indian Ocean in 2010 and remain in the Atlantic Ocean since then.

The UoA fishing fleet consists of industrial purse seine fishing vessels operating in the Eastern Atlantic Ocean and varying in length from around 45 m to 80 m (**Table 5.1.3**).

Geographical area

These vessels operate in the tropical eastern Atlantic Ocean (FAO areas 34 and 47), which extends along the African coast from Cape Blanco in Mauritania to the Tigres Peninsula on the coast of Angola (**Figure 5.1**). The fishing area covers both international waters (high seas) as well as the EEZs (exclusive economic zones) of coastal West African states.

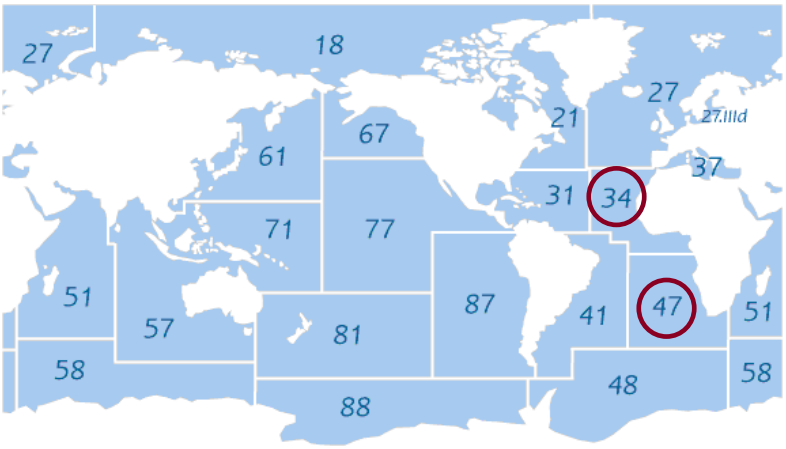


Figure 5.1.1 ANABAC vessels operate in the eastern Atlantic Ocean (FAO areas 34 and 47).

In addition, these vessels also have support vessels to provide various services, mainly related to fish aggregating devices maintenance as well as to ensure the provision supplies (supply vessels called: ATUNSA group (Arene, Artike and Garbola) and PEVASA group (Altarri and Zilarri). Since the fleet includes long distance freezer vessels that carry out prolonged fishing trips (of about 30-35 days duration); ANABAC fleet contract consignees in landing ports to help managing the vessels, the crew and landing and exporting operations.

Fishing method and gears

The fishing vessels included in the UoC are purse seiners alternating two different types of fishing operations: (i) sets on free swimming tuna schools (**hereafter FSC sets**); and (ii) sets on floating objects (**hereafter FOB sets**). See the following **section Fishing operations** for more details on these two fishing operations performed by the assessed vessels.

According to the criteria established by the client only FSC sets are included in the UoC, while FOB sets are excluded from the assessment (see **section Definition of FSC and FOBs** for a detailed definition of FSC/FOB and the scope of the certification regarding fishing operations). Detailed data on the UoC catch and bycatch composition for each of the fishing types have been recorded by observers since 2014.

The basic purse seine fishing operation, termed a cast or a drop, involves encircling a tuna school within a long panel of net that is floated on the surface and weighted along the bottom (**Figure 5.1.2**). The purse seine according to the FAO International Statistical Classification of Fishing Gear and code (Bjordal, 2005), consists of a set of flexible structures (with netting around 1700 m long by 200 m of vertical drop) whose design has been optimized to surround schools of tuna and develop a sink rate as fast as possible (**Figure 5.1.2**). The gear is suspended from floats with netting below the surface. Most of the modern tropical tuna purse seiners fishing in the Atlantic have nets of around 1,500-1,850 m long and with a depth of 250-280 m. A steel cable running along the bottom of the net is tightened to 'purse' the net and trap the school inside.

The purse seine used by the ANABAC fleet vary according to the size of the vessel but are generally 250 – 280 metres (m) deep and 1,500 – 1,800 m in length. The nylon mesh size is around 50 mm. The net lengths are divided into separate panels, which can be replaced when the nets are damaged. The first sets of the day usually commence at around 3 or 4 am and is usually completed at around 10 am. Each set lasts around 1 hour for unsuccessful sets and 2 to 2.5 hours on large, successful hauls. Depending on opportunities, there may be up to 3 sets in a day, but a single set is more normal. Trip lengths may last from 30 to 40 days. Vessels fish all the year round, with 2-3 weeks every two years for servicing and refitting.

The fishery is carried out entirely in the epipelagic ecosystem, always above 120 m depth. While the net has a mean depth of 260 m, due to the way of operating with the purse line (a drawstring) to close the bottom of the seine, it never operates more than 120 m deep. The fishery is conducted always in waters considerably deeper (up to several thousand meters). Therefore, purse seiners never meet the benthic habitat or affect vulnerable marine habitats and it only interacts with the water column. There are no cases recorded by the observers or in the logbooks of damage to the fishing gear due to interactions with the seabed. There is no lost fishing gear.

Searching for the fish schools and assessing their size and direction of movement is an important part of the fishing operation. Purse seine fleets are equipped with sophisticated electronics, such as echo sounders, sonar, and track plotters to locate and track schools, assessing their size and movement and keeping in touch with the school while it is surrounded with the seine net. This includes a modern communications network that is closely related to the remote sensing systems, which provide satellite information to help locate the schools of fish associated with floating objects fitted with beacons, hence allowing the fishermen to plan their fishing strategy in advance. The bridge is also fitted with radar (even radar for detecting birds as these are often associated with schools of tuna) and other positioning and detection systems. Crows nests may be built on the masts for further visual support. A very heavy boom, which carries the power block, is fitted at the mast. On the deck are three drum purse seine winches and a power block, with other specific winches to handle the heavy boom and net. Vessels are usually equipped with a skiff.

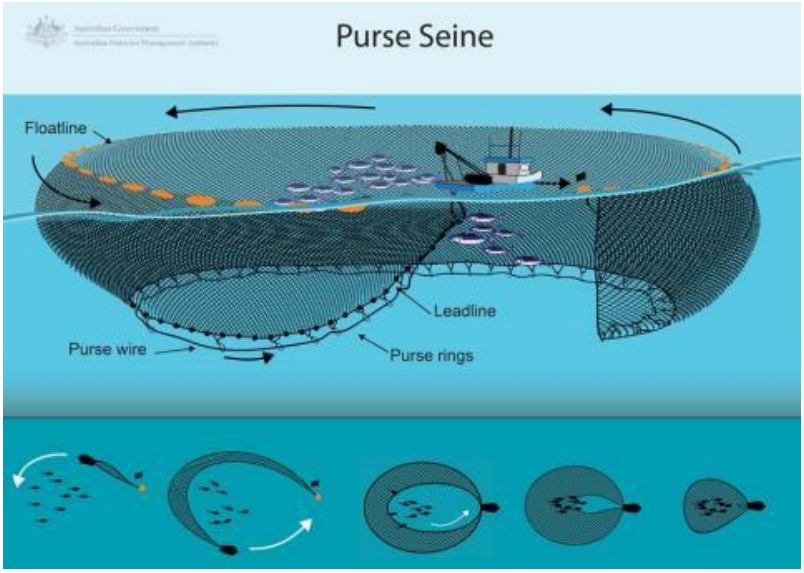


Figure 5.1.2 The basic purse seine fishing operation.© Australian Fisheries Management Authority. Source: Client.

Once captured, the net is drawn up beside the vessel and fish are transferred aboard, where the catch is immediately frozen at around -20°C in a super-chilled brine solution, thus, making it suitable for canning or direct consumption. Modern purse seiners are large industrial vessels with a fish well capacity up to 3,000 m^3, although the number of wells and their capacity will vary according to vessel size. Note that some vessels store tuna distinguishing those fished in a similar fishing trip on free schools and on FAD associated schools to respond to (or anticipate) a market demand for 'FAD – free' tuna (see **section 6.2** for further details).

Fishing operations

Purse seine fisheries target tunas that are swimming at or just below the surface. In the open ocean tunas naturally aggregate in free-swimming schools (free schools) schools aggregating near drifting natural or purpose-built devices (Fish Aggregating Devices or FADs or FOBs). These techniques are usually opportunistic, that is vessels catch tuna from both free and associated schools during fishing trips, but most vessels use FADs to some extent. However, this practice varies from vessel to vessel.

At the beginning of this modern fishery, purse seiners targeting tropical tunas performed sets on free swimming tuna schools and sets on schools associated with drifting floating objects (e.g. logs) or large and slow animals such as whale sharks, since no fish aggregating devices were used at that time. The yellowfin tuna was then the dominating species in the catches. In the 1990s, the use of drifting or anchored FADs to catch tunas was introduced in industrial tuna fisheries. Since then, the use of FADs has spread in the Atlantic, Indian and Pacific to the point of now most of the catches of yellowfin, bigeye and mainly skipjack come from sets performed on FADs.

Fishers have learnt to exploit this association behaviour and deploy purpose-built fish aggregating devices (FOBs) into the ocean to increase and expedite catches. FADs have evolved over the last six to seven years to reduce the potential for turtle and shark entanglement through the use of 'sausage nets' rather than hung net panels. ISSF and other organisations including the producer organisations ANABAC is advocating for the greater use of non-entangling materials, rather than nets.

Since ICCAT Rec 11-01 for a multi-year conservation and management program for bigeye and yellowfin, it is mandatory to record in the logbook whether the set was done on FSC or FOB (and also, to characterize the type of floating object), later revisions of this program have been adding more requirements regarding the information to be provided in relation to the FOB sets (e.g., Rec 14-01, 16-01). Currently, purse seine vessels are limited to use 350 active FADs in the Atlantic Ocean (ICCAT Recommendation 19-02) (see **section 7.4.1.2** for details on ICCAT Recommendations). Furthermore, a distinction is usually made between the two school types due to differences in the species composition of the catch, although skippers will generally target a mixture of free and associated schools during fishing trips.

The eight assessed vessels record their catch and effort in the logbook and by observers (observer coverage accounts up to 100% of the fishing trips performed by the vessels since 2012).

From logbook data, total sets corresponding to FSC and FOB shows that 73.52% of the total sets between 2014 and 2018 were FOB sets, while the remaining 26.48% were FSC (**Table 5.1.4**). Some differences regarding the number of

sets can be found between the logbook and the observers records (**Table 5.1.5**) and those could be related to the fact that observers only recorded positive sets and the 100% observer coverage was really established from 2015. Despite this, the percentage by each fishing operation is similar in both data sets (**Tables 5.1.4** and **5.1.5**).

Table 5.1.4 Sets performed by the assessed vessels during the period 2014-2018 from logbook data. Source: Client.

School type		Total	%
Number sets	FOB	7,307	73.52%
	FSC	2,632	26.48%
Total		9,939	

Table 5.1.5 Details of the type of positive sets recorded by observers between 2014 and 2018. Source: Client.

School type		2014	2015	2016	2017	2018	Total	%
Number sets	FOB	263	1,253	1,184	1,076	837	4,613	76.25%
	FSC	64	574	435	153	218	1,437	23.75%

The superiority on FOB sets is also consistent with the contribution of each type of fishing operation to the total volume landed by the assessed vessels (**Table 5.1.6** and **Figure 5.1.3**). **Table 5.1.6** shows catch species composition for each type of fishing operation during the period 2014-2018. Almost 81% of the total volume caught corresponded to FOB sets (214,279 t), whereas FSC sets accounted for the remaining 19% (50,667 t). Average annual production (total landings of YFT, SKJ and BET) for the assessed vessels during the period 2014-2018 was around 10 Kt for FSC and 40 Kt for FOB sets.

Table 5.1.6 Logbook total catches by type of fishing operation for the period 2014-2018 and average annual production (YFT+SKJ+BET+Other tuna) for the assessed vessels. Source: Client.

Common name	Scientific name	FSC catches	FOB catches	% spp FSC	% spp FOB
Yellowfin tuna	*Thunnus albacares*	34,847	43,273	**68,78%**	**20,19%**
Skipjack tuna	*Katsuwonus pelamis*	13,306	138,266	**26,26%**	**64,53%**
Bigeye tuna	*Thunnus obesus*	1,957	26,543	**3,86%**	**12,39%**
Other tuna		557	6197	**1,10%**	**2,89%**
	Total	50,667	214,279		
	%	19.1	80.9		
Average annual production (t)		**10,022**	**41,616**		

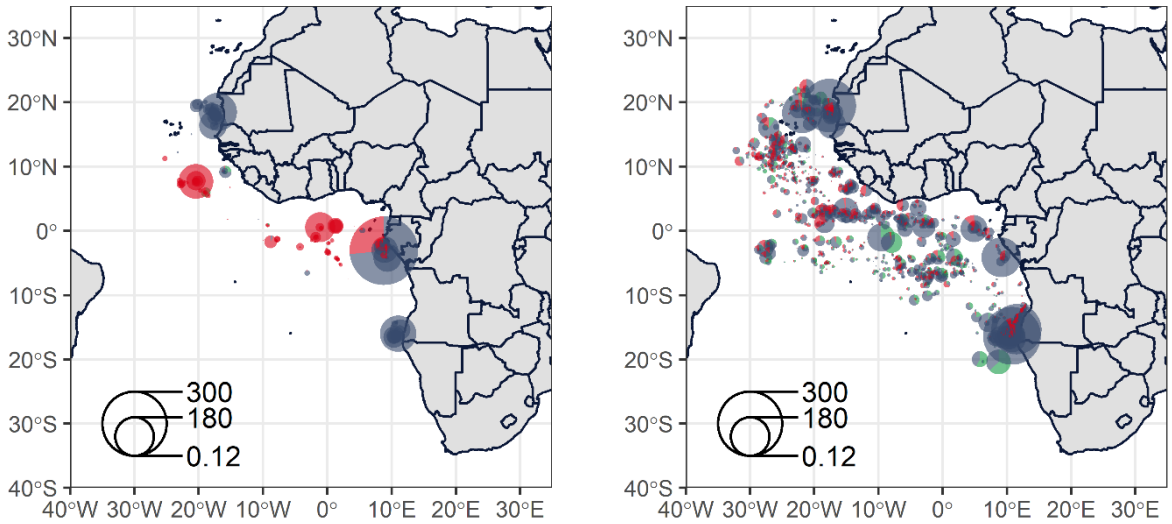


Figure 5.1.3 Catch species composition observed during 2018 by observers for the FSC sets (left panel, 206 observed sets) and FOB set (right panel, 828 observed sets). Each pie chart represents one single set, the set species composition (red: yellowfin, blue: skipjack and green: bigeye), and the volume retained scaled to the maximum catch. Source: Client.

Species composition of the catches varies significantly depending on the type of fishing operation, although in both cases the 3 tropical tunas comprised almost 100% of the total volume caught. Catches on FSC sets comprises around 69% of yellowfin, followed by skipjack (27%) and bigeye tuna (4%). These ratios change for FOB sets, where skipjack comprises around 66% of the total catch, followed by yellowfin (21%) and bigeye tuna (13%). For the 3 tropical tunas total catches, **Figure 5.1.4** shows that yellowfin tuna catches present more balance between FSC and FOB fishing operations: 45% of the yellowfin caught by the assessed fishery correspond to FSC, while FOB sets count for approximately 55%. Most of the catches of skipjack (91%) and bigeye tuna (93%) correspond to FOB sets.

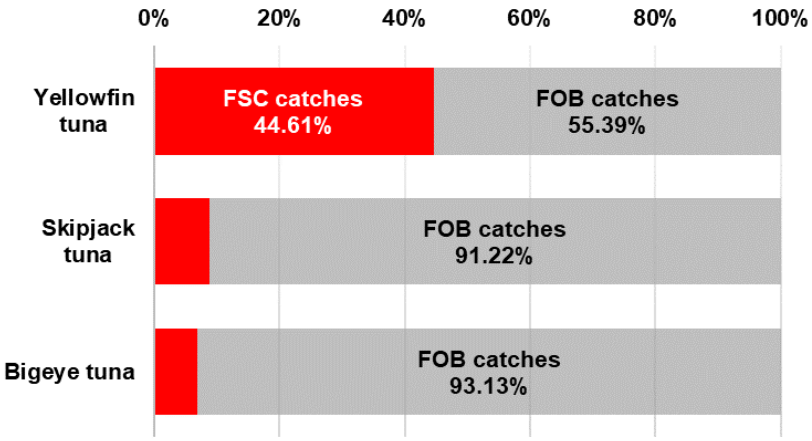


Figure 5.1.4 Percentage of the logbook catches for each of the commercial species according to each type of sets (FSC in red and FOB in grey). Source: Client.

Definition of FSC and FOBs

For the purposes of this assessment, and in accordance with the provisions established in Annex 3 of the ICCAT Rec 16-01, all types of floating or anchored objects affecting the behaviour of tuna schools will be considered as floating objects (FOBs), including (**Table 5.1.7**):

Table 5.1.7 Codes, names and examples of different types of floating object that should be collected in the ICCAT fishing logbook as a minimum data requirement. Source: ICCAT Rec 16-01

Code	Description	Example
DFAD	Drifting FAD	Bamboo or metal raft
AFAD	Anchored FAD	Very large buoy
FALOG	Artificial log resulting from human activity (and related to fishing)	Nets, wreck, ropes
HALOG	Artificial log resulting from human activity (not related to fishing)	Washing machine, oil tank
ANLOG	Natural log of animal origin	Carcasses, whale shark
VNLOG	Natural log of plant origin	Branches, trunk, palm leaf

According to Rec 16-01 during fishing activities carried out in association with floating objects, multiple details of the operation must be recorded in a specific 'FAD logbook' provided in Annex 2 of that Recommendation. Also, CPCs with purse seine and bait boat vessels fishing for tropical tunas in association with floating objects, shall submit to the Executive Secretary annual Management Plans for the use of such devices by vessels flying their flag.

Unlike for other RFMOs, ICCAT does not consider that sets resulting in the capture (and later release) of a large whale have to be considered as FOB sets. However, in the case of the assessed fishery, the observers do not classify the set type when collecting the data; instead, the classification of the set type is done a posteriori by AZTI using the species composition of the set. Therefore, for the purpose of this assessment all sets performed on any kind of the different types of floating objects described in **Table 5.1.7**, including large whales, will be considered as FOB sets, while sets

performed on free swimming schools will be considered as unassociated sets or FSC sets. In addition, it is worth noting that since 2019, the Code of Good Practices reflects that sets on large whales are unintentional and release mitigation measures have been implemented.

According to the criteria established by the client, only FSC sets will be assessed while FOB sets will be excluded from the assessment. Detailed data on species composition of the catches and interactions with ETP species is available through observer's reports since 2014 (see **section 7.3.5**)

Other eligible fishers

Other eligible fishers exist in cases where a client enters into assessment with the aim of initially certifying only part of a fishery, but also wishes to have the possibility of expanding the UoC at a later data by the mechanism of certificate sharing (see FCP G7.5). According to FCP 7.5.7 the CAB shall identify if there are other eligible fishers or other entities that may share the certificate as new client group members. However, the client's intention to share the certificate with other companies outside the client group is a pre-requisite for the existence of 'other eligible fishers' according to the MSC FCP. In this case, ANABAC expressed that they are not interested in that possibility, therefore there are no other eligible fishers.

5.1.2 Unit(s) of Certification

To be drafted at Client and Peer Review Draft Report stage

The report shall include a justification for any changes to the proposed Unit(s) of Certification (UoC).

Reference(s): FCP v2.1 Section 7.5

The unit of assessment (UoA) defines the full scope of what is being assessed and is therefore equal to or larger than the UoC. If it is larger this means it will include "other eligible fishers". As in this case the are no other eligible fishers (see above), the UoC is equal to the UoA defined in **Table 5.1.1**.

Table X – Unit(s) of Certification (UoC)

UoC 1	Description
Species	
Stock	
Geographical area	
Harvest method / gear	
Client group	
Other eligible fishers	

5.2 Assessment results overview

5.2.1 Determination, formal conclusion and agreement

To be drafted at Final Draft Report
To be completed at Public Certification Report

The report shall include a formal statement as to the certification determination recommendation reached by the assessment team on whether the fishery should be certified.

The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.

Reference(s): FCP v2.1 Section 7.21

5.2.2 Principle level scores

To be drafted at Client and Peer Review Draft Report

The report shall include scores for each of the three MSC principles in the table below.

Reference(s): FCP v2.1 Section 7.17

Table X - Principle level scores

Principle	UoA 1	UoA 2	UoA 3	UoA 4
Principle 1 – Target species				
Principle 2 – Ecosystem impacts				
Principle 3 – Management system				

5.2.3 Summary of conditions

To be drafted at Client and Peer Review Draft Report

The report shall include a table summarising conditions raised in this assessment. Details of the conditions shall be provided in the appendices. If no conditions are required, the report shall include a statement confirming this.

Reference(s): FCP v2.1 Section 7.18

Table X – Summary of conditions

Condition number	Condition	Performance Indicator (PI)	Related to previous condition?
			Yes / No / NA
			Yes / No / NA
			Yes / No / NA

5.2.4 Recommendations

To be drafted at Client and Peer Review Draft Report stage

If the CAB or assessment team wishes to include any recommendations to the client or notes for future assessments, these may be included in this section.

6 Traceability and eligibility

6.1 Eligibility date

The report shall include the eligibility date and the justification for selecting this date, including consideration of whether the traceability and segregation systems in the fishery are appropriately implemented.

Reference(s): FCP v2.1 Section 7.8

6.2 Traceability within the fishery

To be drafted at Announcement Comment Draft Report stage

The report shall include a description of the tracking, tracing and segregation systems within the fishery and how these systems will allow any products sold as MSC certified to be traced back to the Unit of Certification.

The report shall include an evaluation of the robustness of the management systems related to traceability.

The report shall include any traceability references, including hyperlinks to publicly-available documents.

The report shall include a description of the factors that may lead to risks of non-certified seafood being mixed with certified seafood prior to entering Chain of Custody using the table below. For each risk factor, there shall be a description of whether the risk factor is relevant for the fishery and, if so, a description of the relevant mitigation measures or traceability systems in place.

Reference(s): FCP v2.1 Section 7.9

6.2.1 Traceability and segregation systems on board

As explained in **section 5.1.1** – Fishing methods and gears - some vessels store tuna distinguishing those fished in a similar fishing trip on free schools and on FAD associated schools to respond to (or anticipate) a market demand for 'FAD – free' tuna. Fish are generally frozen in a brine mix once in the wells and offloaded to carriers and transported directly to the major tuna markets worldwide or directly into marketing or processing facilities when in ports in Africa (mainly in the Ivory Coast and Ghana). Abidjan (Ivory Coast) is the port where most of the landings occur. However, landings at the port of Mindelo (Cape Verde) and Dakar (Senegal) are also frequent. Further, the ports of Las Palmas, Puebla del Carabiñal and Vigo (in Spain) can also be used for landing when vessels move there to carry out a major overhaul, regular safety inspections and/or for maintenance works.

As mentione above, and due to commercial reasons, the assessed fleet has segregated FAD-free tuna catches from those which are not FAD-free caught in different occasions since 2016. In order to do so, the companies followed the procedures described below. However, it could be necessary to develop and implement an internal protocol detailing how to identify, record, store and offload FAD-free catches.

Below, the procedure details the different operational procedures to be adopted at the different stages in order to ensure traceability and segregation of catches originating from FAD sets from those caught from free swimming tuna schools (or unassociated sets). The procedure starts by defining FAD and FAD-FREE catches:

1. Once the vessel has performed a set on a free swimming tuna school, the captain shall identify it as 'free swimming school' ('banco libre' in Spanish) at the logbook and record at least the following information: date, time, position, species, estimated size category and weight, and the fish hold/s where the catch will be stored. A fish hold plan will be elaborated and keep updated during each fishing trip for this purpose.
2. Fish holds containing FAD FREE shall not be mixed with catches coming from sets on FADs. In the event that both types of products are mixed, then the FAD-FREE denomination would be lost. Only 100% FAD-FREE fish holds will be accepted.
3. During offloading, fish holds classified as FAD-FREE shall be offloaded separately and avoid mixing with fish from other fish holds.
4. In case of transfer to the merchant or container, the fish FAD FREE will be separated by a separation network so that it can be identified and unloaded at the destination. In case of unloading to the local factory, the fish FAD FREE will be offloaded in separate and identified boxes. In the case of transhipment onto a reefer or container the FAD-FREE product shall be segregated by appropriate means (e.g. using net), so that it can be identified

at destination. In case of offloading the product directly to a processing plant, the FAD-FREE product shall be offloaded in separate trucks and/or boxes and stored separately.

5. The captain of the fishing vessel, the observer, the consignee, the captain of the reefer or the person responsible for offloading at a processing plant or container shall verify, in a document issued for that purpose, that the fish caught and stored in identified fish holds is indeed FAD-FREE. This document identifies the FAD-FREE fish and guarantees its traceability and segregation.

According to the procedures, the following responsibilities are allocated:

- Captain of the fishing vessel: responsible for the allocation of the FAD FREE denomination to the catches.
- Observer: as a true guarantee that an external and independent entity has been present during the catch and storage of FAD FREE product in separate fish holds.
- Consignee: as a true guarantee that an external and independent entity has been present during the offloading of the FAD-FREE fish and verifies the offloaded / trans-shipped volumes
- Reefer captain: as a true guarantee that an external and independent entity verifies that the FAD-FREE product has been stored in a particular hold of the reefer and segregated from other products using a net. A reefer hold plan indicating the location of the FAD-FREE product will be elaborated to ensure its identification at destination.
- Person responsible for offloading at a local factory or container: as a true guarantee that an external and independent entity has been present during the offloading of the FAD-FREE product at the local factory or container and certifies that it has been offloaded and loaded into the container separately or during the transport and storage at the factory.

Finally, as a guarantee of transparency the protocol also establishes that a customer or a third party may request at any time evidence that the catch is indeed FAD-FREE fish. Thus, it is very important to assign the FAD-FREE fish in the following documents:

- ✓ Fish hold plan (Plano de cubas)
- ✓ Logbook
- ✓ Reefer's Hold plan or Container's plan
- ✓ FAD FREE declaration signed by the fishing captain, the observer, the consignee and the reefer captain (in the case of transhipment) or other person in charge (in the case of offloading to processing plant or containers)

In addition, the client has requested to Bureau Veritas the certification against the MSC Chain of Custody Scheme for the vessels included in the UoC. In the meantime, the client is preparing a specific protocol for MSC-certificated catches in order to be prepared in case the assessment yields a positive result. This protocol follows exactly the same operational procedures but establishing that only the FAD-FREE Yellowfin tunas will be considered as MSC-certificated product. Further, this protocol will address specific MSC Chain of Custody requirements (i.e. reporting changes, non-conforming products…).

6.2.2 Determination of risk associated to traceability factors prior to entering CoC

In accordance with MSC requirements, **Table 6.2.2** includes a description of factors that may lead to risks of non-certified fish being mixed with certified fish prior to entering CoC. For each risk factor, there is a description of whether the risk factor is relevant for the fishery, and if so, a description of the relevant mitigation measures or traceability systems in place.

Table 6.2.2 – Traceability within the fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? If Yes, please describe: - If this may occur on the same trip, on the same vessels, or during the same season; - How any risks are mitigated.	*YES* These purse seiners included in the UoC target both free-swimming tuna schools (also known as FAD-free tuna or unassociated tuna) and tuna associated to Fishing Aggregation Devices (FADs) within the same fishing trip. Only sets on free swimming tuna schools were included in the current assessment.

	Therefore, the risk associated with mixing catches from sets associated to FADs with certified catches from unassociated sets is relevant. As explained above, the client has been tracing and segregating catches from both types of catches since 2016 due to commercial reasons and they have developed and implemented operational procedures to ensure it. However, the CAB, following the MSC additional guidance for tuna fisheries, called for the Chain of Custody to be required at sea due to the high risk of mixing and/or substitution.
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, please describe: - If this may occur on the same trip; - How any risks are mitigated.	*NO* The vessels included in the UoC operate in the East and Southeast Central Atlantic (FAO 34 and 47), both in International waters and in the EEZ of different West African coastal countries. The Atlantic yellowfin is considered to be a single stock for the entire Atlantic Ocean. The assessed vessels are licensed by ICCAT to fish within the Convention Area. All geographical information related to fishing operations carried out during fishing trips is recorded in the electronic logbooks. VMS data are sent and continuosly transmitted to the respective Fisheries Monitoring Centres of each vessels CPC. Furthermore, to facilitate the monitoring and tracking of all ANABAC vessels, all VMS data is also transmitted to the General Secretariat of Fisheries in Madrid who are responsible to transform the data to a standardize format and send it to ICCAT. Every entrance and exit from the different EEZs are notified to the States where vessels are operating, and VMS are continuosly transmitting.
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities. - Transport - Storage - Processing - Landing - Auction If Yes, please describe how any risks are mitigated.	*YES* During transport both FAD FREE and FAD product could be mixed. However, the protocol states that: Fish holds containing FAD FREE shall not be mixed with catches coming from sets on FADs. In the event that both types of products are mixed, then the FAD-FREE denomination would be lost. Only 100% FAD-FREE fish holds will be accepted. During the rest of activities, the protocol explained above includes measures to avoid any possible risks: During offloading, fish holds classified as FAD-FREE shall be offloaded separately and avoid mixing with fish from other fish holds. In case of transfer to the merchant or container, the FAD FREE fish will be separated by a separation network so that it can be identified and unloaded at the destination. In case of unloading to the local factory, the FAD FREE fish will be offloaded in separate and identified boxes. In case of offloading the product directly to a processing plant, the FAD-FREE product shall be

	offloaded in separate trucks and/or boxes and stored separately. The captain of the fishing vessel, the observer, the consignee, the captain of the reefer or the person responsible for offloading at a processing plant or container shall verify, in a document issued for that purpose, that the fish caught and stored in identified fish holds is indeed FAD-FREE. This document identifies the FAD-FREE fish and guarantees its traceability and segregation. The measures explained will be audited against the MSC Chain of Custody to determine if the risk is negligible or not.
Does transhipment occur within the fishery? If Yes, please describe: - If transhipment takes place at-sea, in port, or both; - If the transhipment vessel may handle product from outside the UoC; - How any risks are mitigated.	*YES* The purse seiners included in the UoC target both free swimming tuna schools (also known as FAD-free tuna or unassociated tuna) and tuna associated to Fishing Aggregation Devices (FADs) within the same fishing trip. The catch from each set is stored in chilled fish holds. Even though transhipment only occurs at port, during transhipment there is a risk of mixing catches from sets on FADs with certified catches from unassociated sets. As explained above the client has been tracing and segregating catches from both types of catches due to commercial reasons and they have developed and implemented operational procedures to ensure it. According to these procedures, in the case of transhipment onto a reefer or container the FAD-FREE product shall be segregated by appropriate means (e.g. using net), so that it can be identified at destination.
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	ANABAC will be audited against MSC Chain of Custody against the Default CoC Standard (multi-site certificate). The eight vessels will be audited on board, and therefore, factors that may lead to risks of non-certified fish being mixed with certified fish will be analysed prior to entering CoC.

6.3 Eligibility to enter further chains of custody

To be drafted at Announcement Comment Draft Report stage
To be completed at Public Certification Report stage

The report shall include a determination of whether the seafood product will be eligible to enter certified chains of custody, and whether the seafood product is eligible to be sold as MSC certified or carry the MSC ecolabel.

The report shall include a list of parties, or category of parties, eligible to use the fishery certificate, and sell product as MSC certified.

The report shall include the point of intended change of ownership of product, a list of eligible landing points, and the point from which subsequent Chain of Custody certification is required.

If the CAB makes a negative determination under FCP v2.1 Section 7.9, the CAB shall state that fish and fish products from the fishery are not eligible to be sold as MSC certified or carry the MSC ecolabel. If the client group includes other entities such as agents, unloaders, or other parties involved with landing or sale of certified fish, this needs to be clearly stated in the report including the point from which Chain of Custody is required.

Reference(s): FCP v2.1 Section 7.9

The MSC-certified fish caught by the vessels included in the UoC can be transhipped in African ports (mainly Abidjan, Mindelo or Dakar) onto reefers or containers for its transportation to Spain, or (occasionally) they can also be landed in Spanish ports for its transportation in trucks to the processing plant.
In the first case, change of ownership to a party not covered by the fishery certificate only happen after transportation (when the product reaches the processing plant) while in the second case it happens at landing (before being offloaded onto the trucks or containers). Eligible transhipment and landing points are presented below:

Type of operation	Place	Jurisdiction
Transhipment (to reffer or container)	Abidjan	Ivory Coast
	Mindelo	Cabo Verde
	Dakar	Senegal
Landing (to a processing plant)	Vigo	Spain

The client group (ANABAC associated companies and vessels described in Table 5.1.2) are the only ones eligible to use the MSC fishery certificate and sell products as MSC certificated. CoC should commence prior to the first point of change of ownership since the vessels included in the UoC are required to have their own on-board MSC-CoC certificate.

The Company will not make use of the ecolabel as whole frozen yellowfin tuna is not a customer facing product. This product needs further processing to reach the customer as canned tuna or fresh tuna loins. At this point, the change of ownership will take place.

6.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to enter further chains of custody

To be drafted at Announcement Comment Draft Report stage
To be completed at Public Certification Report stage

Where IPI stocks are present, the report shall include an evaluation of the species, stock, proportion and weight of the catch of IPI stock(s) and their eligibility to enter further chains of custody. The report shall include a justification of how requirements in FCP Annex PA are met for any catches of IPI stock(s).

Reference(s): FCP v2.1 Section 7.5

No IPI stocks have been identified by BV during the assessment.

7 Scoring

7.1 Summary of Performance Indicator level scores

To be drafted from Announcement Comment Draft Report

The report shall include a completed copy of the Fishery Assessment Scoring Worksheet.

Reference(s): FCP v2.1 Section 7.17

Principle	Component	Performance Indicator (PI)		Draft scoring range <60,60-79, ≥80
One	Outcome	1.1.1	Stock status	**≥80**
		1.1.2	Stock rebuilding	**NA**
	Management	1.2.1	Harvest strategy	**≥80**
		1.2.2	Harvest control rules & tools	**60-79**
		1.2.3	Information & monitoring	**≥80**

		1.2.4	Assessment of stock status	**≥80**
Two	Primary species	2.1.1	Outcome	**≥80**
		2.1.2	Management strategy	**≥80**
		2.1.3	Information/Monitoring	**≥80**
	Secondary species	2.2.1	Outcome	**≥80**
		2.2.2	Management strategy	**≥80**
		2.2.3	Information/Monitoring	**≥80**
	ETP species	2.3.1	Outcome	**≥80**
		2.3.2	Management strategy	**≥80**
		2.3.3	Information strategy	**60-79**
	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	**≥80**
		3.2.2	Decision making processes	**≥80**
		3.2.3	Compliance & enforcement	**60-79**
		3.2.4	Monitoring & management performance evaluation	**≥80**

7.2 Principle 1

7.2.1 Principle 1 background

The report shall include a summary of the fishery based on the topics below, referencing electronic or other documents used:

- An outline of the fishery resources including life histories as appropriate.
- An outline of status of stocks as indicated by stock assessments, including a description of the assessment methods, standards, and stock indicators, biological limits, etc.
- Information on the seasonal operation of the fishery.
- A brief history of fishing and management.

Any information used as supporting rationale should be provided in the scoring tables.

The report shall indicate whether the target species is key Low-Trophic Level (LTL). If there are multiple Principle 1 species, the report shall indicate which are key LTL.

Reference(s): FCP v2.1 Annex PA, Fisheries Standard v2.01

7.2.1.1 Stock structure and mixing

Yellowfin tuna is a cosmopolitan species distributed mainly in the tropical and subtropical oceanic waters of the three oceans. The exploited sizes typically range from 30 cm to 170 cm FL. Juvenile yellowfin tuna form mixed schools with skipjack and juvenile bigeye, and are mainly limited to surface waters, while larger fish form schools in surface and sub-surface waters (ICCAT 2016b).

Although the distinct spawning areas might simply separate stocks, or substantial heterogeneity in the distribution of yellowfin tuna, a single stock for the entire Atlantic is currently assumed. This assumption is based upon information such as observed transatlantic movements indicated by conventional tagging and longline catch data that indicates yellowfin are distributed continuously throughout the tropical Atlantic Ocean. Movement rates and timing, migratory routes, and local residence times remain uncertain, but recent tagging activities (e.g. AOTTP) offer insights. In addition, some electronic tagging studies in the Atlantic as well as in other oceans suggest that there may be some degree of extended local residence times and/or site fidelity (ICCAT, 2019a).
There has been a significant decrease in the size composition since the 1990s, with large yellowfin largely disappearing from the catch. Purse seine catches of yellowfin have been moving northward in the eastern Atlantic since the 1970s, which may be attributed to an environmental variable or a response to prey movement. Similar northward movements have been observed in other fisheries, such as billfish in the western Atlantic.

Tagging data indicated that there are substantial movements of fish between the western Atlantic (from the U.S./Canada coast and the Gulf of Mexico) towards the Gulf of Guinea, and these movements are likely related to size/age of fish. (ICCAT 2016b)

7.2.1.2 Catches

Yellowfin tuna have been exploited by three major gears (longline, baitboat and purse seine fisheries) and by many countries throughout its range. Detailed data are available since the 1950s. Overall Atlantic catches declined by nearly half from the peak in 1990 (193,584 t) to 106,288 t estimated for 2013 but increased to an average of 140,143 t during 2016-2018 (ICCAT, 2019a). The most recent catch is given in **Figure 7.2.1.1.**

In the eastern Atlantic, purse seine catches declined between 1990 and 2007 (129,144 t to 47,961 t) but have subsequently increased to 90,250 t in 2018. Baitboat catches declined between 1990 (19,717 t) and 2018 (7,255 t). Longline catches, which were 10,253 t in 1990, declined to 5,031 t in 2018. In the western Atlantic, purse seine catches (predominantly from Venezuela) were as high as 25,749 t during the mid-1980s but have since declined to 3,008 t in 2018. Baitboat catches also declined since a peak in 1994 (7,094 t), and for 2018 were estimated to be 943 t. Since 1990, longline catches have generally fluctuated between 10,000 t and 20,000 t.

Since 2005, catches were either below or around 110,000 t. Rec.14-01 (ICCAT, 2014a) implemented a TAC of 110,000 t for 2012 and subsequent years. The overall catches in 2012 (114,937 t), 2013 (106,288 t) and 2014 (113,414 t) were just above this TAC, but since 2015 catches have been significantly above this level (128,298 t). Also, a catch of 148,874

t was recorded in 2016, 135,865 t for 2017, and 135,689 t for 2018, all an overage of the TAC (ICCAT, 2019a). The distribution of these catches by major gear type, from 2010-2014, is shown in **Figure 7.2.1.2.**

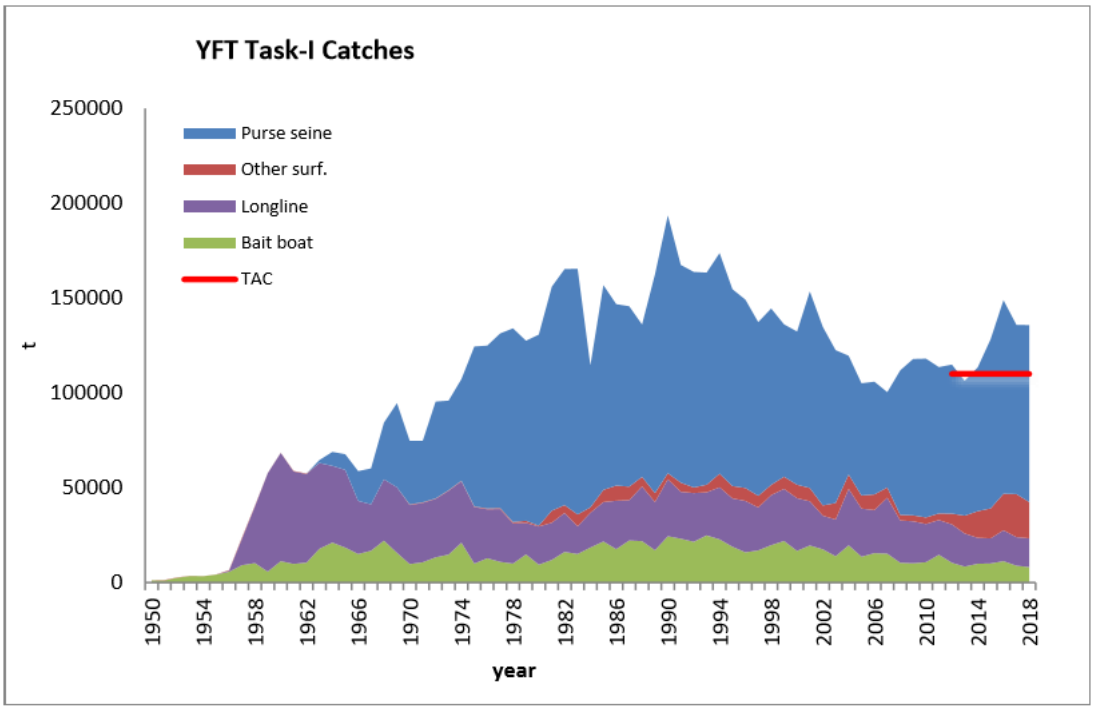


Figure 7.2.1.1 Yellowfin tuna total catch 1950 – 2018 by main fishing gear group.

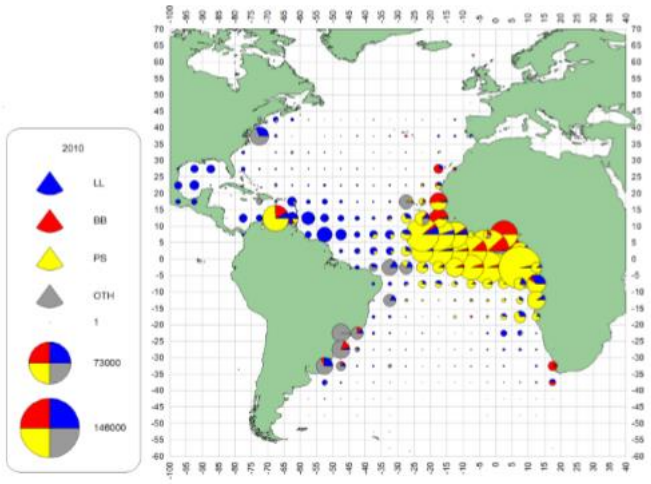


Figure 7.2.1.2 Catches by major gear type from 2010-2017, reproduced from (ICCAT, 2019a). LL (blue)-Longlines; BB (red)-Bait boats; PS (yellow)-Purse seines; oth (Grey) - Others. (ICCAT, 2016b)

7.2.1.3 Biological background

Spawning on the main fishing grounds, the equatorial zone of the Gulf of Guinea occurs primarily from December to April. Spawning also takes place in the Gulf of Mexico, the south eastern Caribbean Sea and off Cabo Verde, although the peak spawning can occur in different months in these regions. The relative importance of the various spawning grounds is unknown (ICCAT 2016c).

A recent study in the eastern Atlantic Ocean further described the reproductive traits of female yellowfin tuna including, sex ratio, and size at maturity, spawning seasonality, fish condition and fecundity. Size at 50% maturity was estimated at 103.9 cm fork length when cortical alveoli were used as a maturity threshold; however, a larger size at 50% maturity

was estimated when more advanced oocytes were used. The conclusions of this research were incorporated in the 2016 stock assessment of yellowfin tuna (ICCAT, 2016c).

Tagging studies of yellowfin in the Pacific and Indian Oceans suggest that natural mortality is age-specific and higher for juveniles than for adults. Nevertheless, uncertainties remain as to the exact parameterization of the age-specific natural mortality function. An age-specific natural mortality function (e.g. Lorenzen) was developed and applied to the 2016 assessment of yellowfin tuna. The implied natural mortality based on the t_{max} of 18 is 0.35 yr-1, which is lower than the 2016 assessment assumption of 0.54 yr-1 based on a t_{max} of 11 years.

The most recent stock assessment does not consider sex-specific natural mortality or growth, yet there are disparities in average size by gender. Males are predominant in the catches of larger sized fish (over 145 cm), which could result if large females experience a higher natural mortality rate, perhaps as a consequence of spawning. In contrast, females are predominant in the catches of intermediate sizes (120 to 135 cm), which could result from differential growth (e.g. females having a lower asymptotic size than males) (ICCAT 2016c).
It is generally agreed that growth rates are relatively slow initially, increasing at the time the fish leave the nursery grounds. This interpretation is supported by analyses of size frequency distributions as well as tagging data. Regardless, questions remain concerning the most appropriate growth model for Atlantic yellowfin tuna, as analyses of hard part growth increments support somewhat different growth patterns.

7.2.1.4 Indices

Four indices of abundance were used in various stock assessment model runs used to develop management advice (**Figure 7.2.1.3**). A major advancement in this assessment was the development of a joint longline index using high resolution catch and effort information from the main longline fleets operating in the Atlantic (Japan, US, Brazil, Korea and Chinese Taipei). The indices were developed for 3 regions, but only two were used in the assessment: the North Atlantic (Region 1), and the tropical area (Region 2). A new echosounder-based buoy associated index (BAI) index was developed and was assumed to represent the abundance of juvenile yellowfin tuna. An index of larger yellowfin tuna (>80 cm, 10 kg) in free schools for the EU purse seine fleet (EUPSFS index) was also used.
The recent average weight in European purse seine catches, which represent the majority of the landings, had declined to about half of the average weight of 1990. This decline is at least in part due to changes in selectivity associated with fishing on floating objects beginning in the 1990s, which was observed in the increased catches of small yellowfin. A declining trend in average weight and a corresponding increase in the catch of small yellowfin is also evident in eastern tropical baitboat catches. Longline mean weights and catch at size have been more variable.

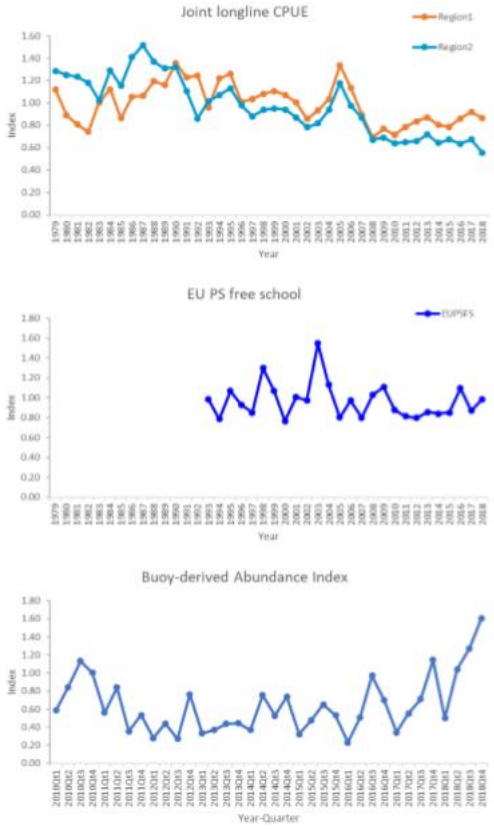


Figure 7.2.1.3 Annual abundance indices used for the Atlantic yellowfin tuna stock assessment reference cases. Regions 1 and 2 for joint longline mean the area of index that are northern and tropical areas, respectively. Buoy-derived abundance index was used only in Stock Synthesis and joint longline index in region 1 only for JABBA. Reproduced from (ICCAT, 2019a).

7.2.1.5 Stock assessment methods (ICCAT, 2019c)

7.2.1.5.1 Stock Synthesis

An initial assessment of the Atlantic yellowfin tuna stock using Stock Synthesis 3.3 (Methot and Wetzel, 2013) was conducted prior to the 2019 Yellowfin Tuna Stock Assessment Meeting as agreed in the 2019 Yellowfin Tuna Data Preparatory Meeting. The full assumptions and data inputs to this model are described in Walter et. al (2019).
The key assumptions and configurations of the initial "preliminary reference model" were as follows. The preliminary reference model was constructed as a model with 4 seasons and a timeframe from 1950 – 2018. Fleets are partitioned to represent homogenous fishing areas. However, this model does not have explicit movement between the areas and hence functions as a non-spatial, one-area model. The model starts in 1950 and assumes that the stock starts at virgin or near virgin conditions.

Natural mortality Natural mortality (M) was parameterized by age according to Lorenzen (2005), scaling to the growth curve. This was conducted internally to the model to be consistent with the growth treatment in the model by assuming a value of natural mortality of 0.35 assigned to age 5 (baseline M), consistent with the Then et al. (2017) estimator of M, and assuming a maximum age of 18. This treatment differs from the 2016 assessment where growth was scaled externally with a baseline M=0.55 based on a maximum age of 11 and scaled according the Gascuel et al.(1992) size at age.
The resulting M-at-age vector is defined below:
Age 0 Age 1 Age 2 Age 3 Age 4 Age 5 Age 6 Age 7 Age 8 Age 9+
M 1.3 0.66 0.48 0.4 0.37 0.35 0.34 0.34 0.34 0.33
Natural mortality was initially included in the grid of uncertainty, and during the data preparatory meeting two alternative values, upper and lower M vector were proposed. However, these values were considered very low and high for yellowfin biology dynamics, and therefore it was restricted to a range of values 20% above and below the baseline M (0.28 and 0.42, respectively). A likelihood profile on M suggested that all values of M greater than 0.35 were equally probable.

Following an evaluation of the growth of yellowfin recaptured in the AOTTP the Richards functional form for the growth model was elected but the values estimated internally by stock synthesis using the US/GOM age data were fixed. Parameters were fixed to avoid introducing additional instability in the model. The weight of Atlantic yellowfin tuna in kilograms was estimated from straight fork length in centimeters as: WL = (2.1527x10-5) SFL2.976 (Caverivière 1976) Fecundity was modeled as a direct function of female body weight. The maturity at length was based on Diaha et al. (2015), with 50% maturity at 115 cm SFL. The sex ratio was assumed to be 50:50 males-females. Birth date was adjusted to the first month of each season (January, April, July, October). Growth for yellowfin was estimated using recent otoliths sampling (GOM/US East Coast), that included age validation based on bomb-radiocarbon techniques. A major difference in the biological information is the new maximum age assumption of Age 18 for Atlantic yellowfin tuna, compared to the assumptions in previous assessments where maximum age was assumed to be 11. This has important implications for the estimate of natural mortality. Growth was estimated internally in stock synthesis using the US/GOM age data, assuming a Richards growth model, and a given size at minimum size of age sampling (0.38 year) of 25 cm SFL.

For the 2019 assessment, the model used 25 different fleets. Fleet structure was largely the same as in 2016 with some exceptions. First, a new fleet was assigned to the emerging handline fishery off northern Brazil. Next, the longline fleet-areas were adjusted to coincide with the geographical areas of the joint longline index. This change applies to both catch by area/fleet and the size information. Time blocks were proposed based on the Hoyle et al. (2019) influence plots that indicate a substantial shift in fleet composition, likely associated with the observed changes in selectivity. Time blocks on selectivity are as follows 1950-1979 (early shallow sets), 1980-1991 (transition to deeper sets and BET targeting), 1992-2004 (deep sets) and between 2005-2018 to coincide with the apparent change in selectivity to target larger BET.

A major advance in this assessment was the development of a joint longline index using high resolution catch and effort information from the main longline fleets operating in the Atlantic (Japan, US, Brazil, Korea and Chinese Taipei). The index was developed for 3 regions; North Atlantic, tropical area and South Atlantic based on the size distribution of the catches for these fleets. This index was linked to the Japan longline fleet composition size data for estimating selectivity, as this fleet represents the majority of the size composition in region 2 after removal of the Chinese Taipei data from 2005-2018, and because it has had consistent size sampling. The buoy associated index (BAI) index was modelled as linked to respective seasonal PS FAD fleets, which improved fit to the index. The EUPSFS index was linked to the PS

EU FSC 91 season 1 where much of the catch comes from. Indices were input as annual indices, except the BAI index that maintained their seasonal information, with a mean CV=0.2 for the LL indices and 0.3 for the BAI and EUPSFS indices but allowed to vary with the interannual variability in the estimated standard error of the index. The hindcasting diagnostic indicated better predictions of CPUE trend when the model included all indices of abundance.

Length composition was input with an initial sample size equal to the ln(N) to decrease the weight of multiple samples within a fleet, season, and year combination. Preliminary results indicated that size composition data has a large influence in the model fit and results. During the meeting further down weighing of the size composition to 0.5*ln(N) resulted in similar results but showed improvement in the fits and diagnostic test results. Thus, a lambda of 0.5*ln(N) was used to weight the size composition data in all accepted runs.

A Beverton-Holt stock recruitment relation was assumed to model the number of recruits as a function of spawning stock biomass. Virgin recruitment (R0) was freely estimated and steepness (h) was fixed at a value of 0.8 for the preliminary reference model and at 0.9 for the uncertainty grid. Profiling on steepness indicated that there was insufficient information in the data to freely estimate it. Annual variation in recruitment (SigmaR) was estimated in the stock synthesis models on the basis of a likelihood profile which supported estimation. The estimated total annual recruitment was distributed across the four seasons according to seasonal allocations estimated in the model. Deviations in annual recruitment were estimated from 1979 to 2017. The lognormal bias correction (-0.5σ2) for the mean of the stock recruit relationship was applied during the period 1972 to 2017 with the recommended bias correction ramp applied to each model according to Methot and Taylor (2011). The reference model fit tended to produce unusually large recruitment peaks in 2017 and 2018, due primarily to the information from the BAI index that is treated as a recruitment index. Noting that there is no size composition data in 2018 in this model to corroborate or contrast with these high recruitment estimates, it was decided to fix the 2018 estimates of recruitment to the stock recruitment curve rather than estimate them. Not estimating the recruitment deviation for 2018 substantially improved the reference model diagnostics.

Input variance adjustments were iteratively adjusted according to recommendations in Francis (2011). A set of diagnostics were run to evaluate model performance including fits to indices of abundance, length composition residuals, retrospective analysis, hindcasting, likelihood profiling, Age Structured Production Model (ASPM) analysis, jitter analysis and sensitivity runs on influential parameters.

7.2.1.5.2 Surplus production model MPB

Merino et. al (2019) presented preliminary results from fitting the biomass production model mpb (Kell, 2016) to the YFT data using catch data and the joint LL R2 index for 1979-2018 (run 1). Updating the data from what was available in the 2019 Data Preparatory meeting with the most recent catch data made available by the Secretariat caused notable changes in the perception of stock status.
Overall, the model had difficulty converging and diagnostics were relatively poor. Concerns were raised over the fact that the model appears unstable. The model finds a solution only if strict constraints are imposed on the search space for r (intrinsic growth rate) and K (carrying capacity), and when the model did find a solution, that solution does not correspond to the minimum in the likelihood profile, suggesting poor convergence. The following points were discussed: a) mpb has difficulty explaining the observed catch given the continuous decline in the CPUE, b) there are population dynamics and selectivity components that a biomass model simply cannot accommodate. Unconstrained, the model tends to go to values of intrinsic growth rates r that are extremely low. It is therefore necessary to impose some level of constraint on the parameters. It is defensible from a biological standpoint to constrain K on the left-hand side and leave r unconstrained and expect the improvement of the estimation of r. It was also recommended to free up the B_0 parameter as a potential solution for improving the fit. Freeing up B_0 had almost no impact. Another proposal to improve the fit was to include the EUPSFS index. Adding the PS index led to a slight improvement in the pattern of residuals for the indices in the most recent years and showed more stability in the jackknife analysis, with almost no change to the hindcasting and retrospective analyses. Finally, the reference case (run 2) using two indices: Joint LL R2 and EUPSFS, was used as the base case, as this was the scenario with better diagnostics.

7.2.1.5.3 Bayesian surplus production model JABBA

Sant' Ana et.al (2019) presented results from JABBA, a Bayesian surplus production model.
Four scenarios were presented: a) base case (joint LL R2 with stock synthesis 2016 r prior), b) run 1 (joint LL R2 with FishLife r prior), c) run 2 (joint LL R2 + BAI with stock synthesis 2016 r prior), d) run 3 (joint LL R2 + BAI with FishLife r prior). FishLife r prior refers to a prior estimated using biological parameters available at FishLife database (www.fishbase.se/yellowfin_tuna) and size composition data used in stock synthesis in a model approach to derive surplus biomass parameters from age structure population dynamic model (Winker et al., 2018). This approach has been used in other ICCAT and tRFMOs assessments previously, with the objective of making comparable the runs between biomass surplus production models and length-age based integrated models such stock synthesis. In all scenarios, the model appeared to converge properly, though the inclusion of the BAI index worsened the diagnostics. Overall, the management quantities estimated were comparable across runs. The JABBA base case run was updated using an r prior based on the 2019 stock synthesis run results. Concern was raised that the priors may be having too

much influence on the results. Even the “uninformative” prior chosen for run 5 appeared to have information due to its lognormal shape. A new run was created using the FishLife prior but with increased CV. Increasing the CV from 0.3 to 0.6 allowed the model more freedom to adapt to the data and the model converged on a value of r close to the one estimated by stock synthesis. This gave the Group confidence that the value estimated for r in the JABBA model is consistent with the information present in the integrated assessment.

Following the observation that K and r appear highly correlated and that r is consistently being estimated at a value that is lower than that indicated by the prior, a question was raised on whether there is something inherent to mbp and JABBA that causes these models to favor lower values of r. It is not known if this observed propensity to favor lower r values is a true property of the model or simply a result of the data.
It was recommended to try a sensitivity run with ASPIC, whose properties are well studied, to check if the model results in similar estimates for r. ASPIC is not able to control the estimation of r the same way as JABBA or mbp, and when used with the available indices it leads to implausibly low estimates of r.

Regarding indices, the appropriateness of using the echosounder CPUE (BAI) in a production model was questioned as it reflects only the dynamics of recruits and therefore this index was removed. The impact of adding three new indices: EUPSFS, joint LL R1 and joint LL R3 over the Joint R2 index was tested. All other indices except for the EUPSFS, showed evidence of lack of randomness of timeseries residuals. Still, anytime more than one index was used, the conflict between indices consistently translated into a positive trend in the residuals in the earlier years and a negative trend in the residuals in the most recent years. The shortcomings of each index were highlighted. Both LL and PS indices have shortcomings, such as changes in targeting, and technological advances that are difficult to properly account for. But, based on the diagnostics, the quality of the fit was best when using only the Joint LL R2 index. Two additional sensitivity runs were selected to contrast results using the stock synthesis prior vs. the FishLife prior. The JABBA runs utilizing the Venezuelan longline index (VEN LL) showed a poor fit to VEN LL index, with a residual trend in the index fit as well as an increase in RMSE for the overall model fit. The runs including the VEN LL index were not used for the uncertainty matrix.

Another issue common to all runs was the increasing trend observed in the process error over the last decade. In state-space models, like JABBA, the observation error is accounted for in the fit to the indices, but the process error component represents all other processes that are not directly controlled or observed in the data used to modelling (e.g. growth, recruitment, catchability, catch, etc.). The change in selectivity could possibly cause this pattern in the process error. Considering this one could attempt to solve this in the production model by accounting for some autoregressive structure in q.

The results from mpb and JABBA were compared. Though the Bayesian model showed better model convergence and diagnostics, both models resulted in similar parameter estimates, giving confidence in the population dynamics being estimated.

7.2.1.6 State of the stock

A full stock assessment was conducted for yellowfin tuna in 2019, applying two production models (JABBA, MPB) and one age-structured model (Stock Synthesis) to the available catch data through 2018. The four Stock Synthesis model runs, were regarded as representing alternative recruitment, and steepness hypotheses. Likewise, the JABBA runs addressed different hypotheses about initial priors for r, and about which indices of abundance were representing the population. Finally, the base case selected for MPB estimated biomass and fishing mortality trends that varied somewhat from JABBA. The Group decided that, in order to capture this uncertainty in the population dynamics for developing the management advice, it was best to incorporate results from all of the accepted model runs.

The trend in the estimated biomass (relative to B_{MSY}) for all models shows a general continuous decline through time. Stock Synthesis runs suggest a few periods of large increases in spawning biomass associated with episodes of high recruitment. The model estimates that such very high recruitments have happened three times in the period 1960 to 2017. Production models show much less pronounced increases in total biomass at the equivalent times. Note, however, that for all models there are large uncertainties in the value of biomass at any point in the history, including 2018. Most model runs lead to biomasses at the end of 2018 above the level that produces MSY (**Figure 7.2.1.4**).

Estimates of historical fishing mortality (relative to F_{MSY}) show similar trends for all models. For most model runs, fishing mortality increased progressively until the early 1980s, it varied in level until the mid-1990s, after which it declined gradually until the mid-2000s. Since the mid-2000s, the fishing mortality has had a generally increasing trend with fluctuations until 2018. Overall the models estimate that the fishing mortality in 2018 was near the fishing mortality that would produce MSY. Again, for all models there are large uncertainties in the value of fishing mortality at any point in the history, including 2018 (**Figure 7.2.1.5**).

It is important to note that the Stock Synthesis model is the only one used that can provide estimates of recent recruitment. Recruitments were not estimated to vary from the stock-recruit relationship for 2018, due to the large uncertainty in terminal year recruitment estimates. The estimate of recruitment in 2017 is also more uncertain than for previous years, in part because there is no 2018 size frequency data to corroborate or contrast with it. Stock Synthesis models which use the buoy index suggest very high recruitment in 2017, whereas models that do not use the buoy index suggest that recruitment in 2017 was above average but not particularly high.

Equal weight was given to surplus production model and integrated assessment model results. Within surplus production models, JABBA and MPB were also given equal weight. Each run within a modeling platform (JABBA, and Stock Synthesis) were also given equal weight. For the combined results (MPB, JABBA, SS) used to develop management advice, the median estimate of B_{2018}/B_{MSY} is 1.17 - and the median estimate of F_{2018}/F_{MSY} is 0.96 -. The median MSY estimated is 121,298 t. Combining the results of all models provides a way to estimate the probability of the stock being in each quadrant of the Kobe plot in 2018 (**Figure 7.2.1.6**). The corresponding probabilities are 54% in the green (not overfished not subject to overfishing), 21% in the orange (subject to overfishing but not overfished) 2% in the yellow (overfished but not subject to overfishing) and 22% in the red (overfished and subject to overfishing). In summary, the results point to a stock status of not overfished (24% probability of overfished status), with no overfishing (43% probability of overfishing taking place).

It should be cautioned that the differences between the 2016 and 2019 assessment results are not due to stock recovery. In fact, the 2019 models indicate that the stock biomass declined between 2014 and 2018. Instead, the perceived improvement is more likely due to changes in key data inputs (M, growth, indices) and the suite of models applied (JABBA, MPB, SS).

The catch reports for 2018 were incomplete, at the time when the assessment was conducted with 42% of the total catch being estimated using the average from the previous three years by CPC and gear type. Furthermore, no size data for 2018 were available at the time of the assessment. The 2018 estimated catch assumed for the stock assessment was 131,042 t. This was revised upwards to 135,689 t after additional reporting, a 3.5% change (there still remains an estimated 5% non-reported catch, for which in general the average of the last three years has been assumed). It was not possible to rerun the stock assessment results with the new 2018 catch estimates; however, a change of this magnitude is not expected to have substantial implications.

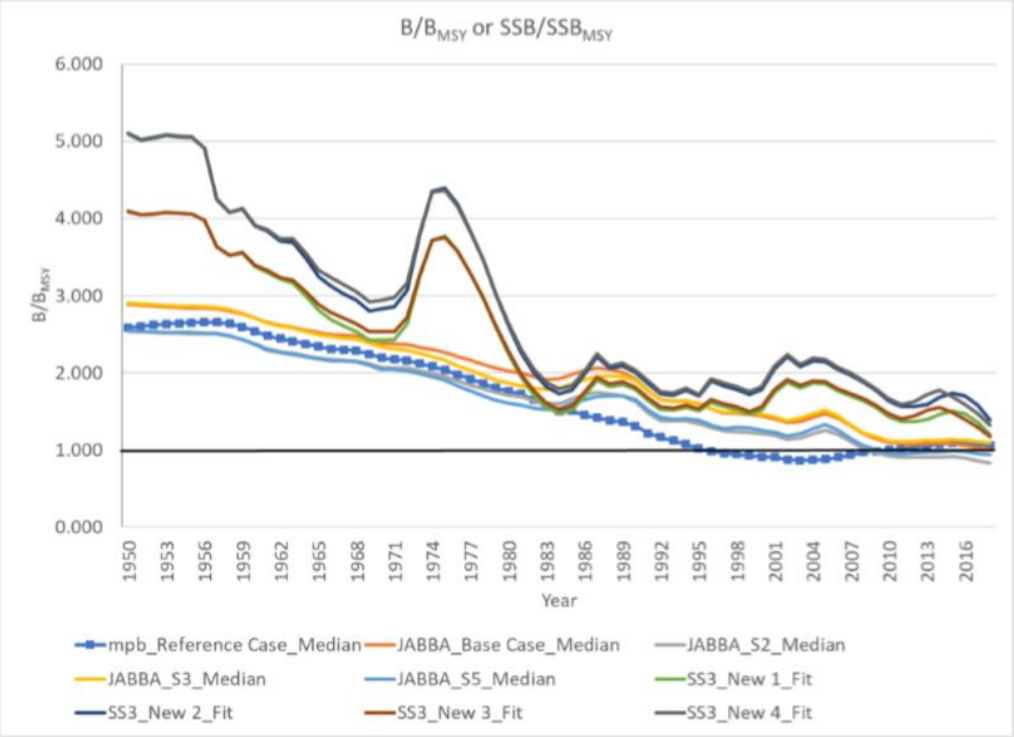


Figure 7.2.1.4 Trends in biomass relative to the level that produces MSY (black line) for the model runs used to develop management advice. Reproduced from (ICCAT, 2019a).

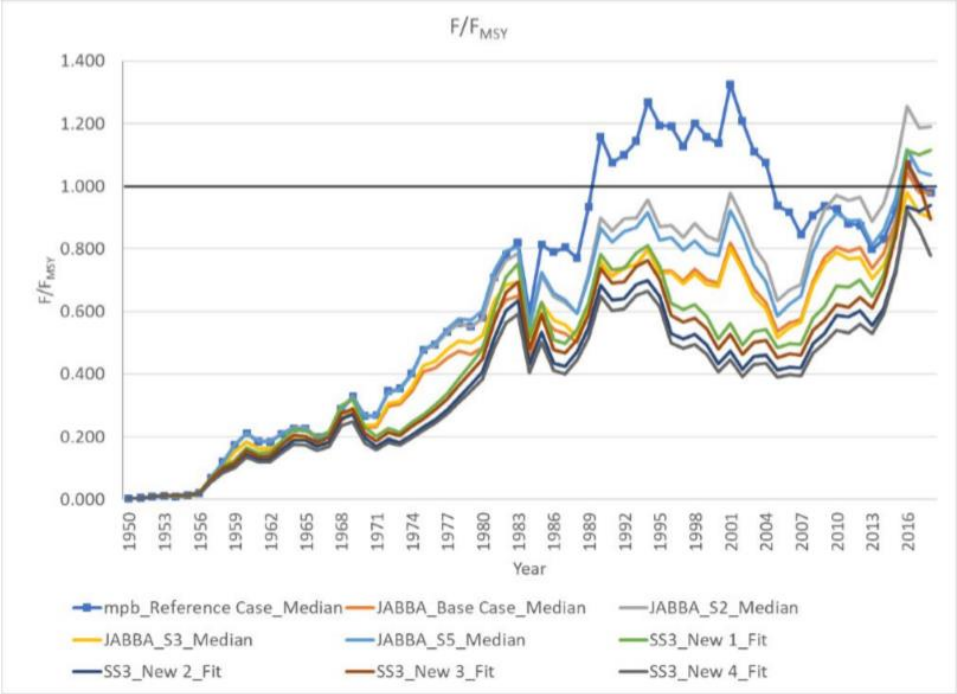


Figure 7.2.1.5 Estimates of relative fishing mortality (F/F_{MSY}) obtained for all model runs used to develop the management advice.

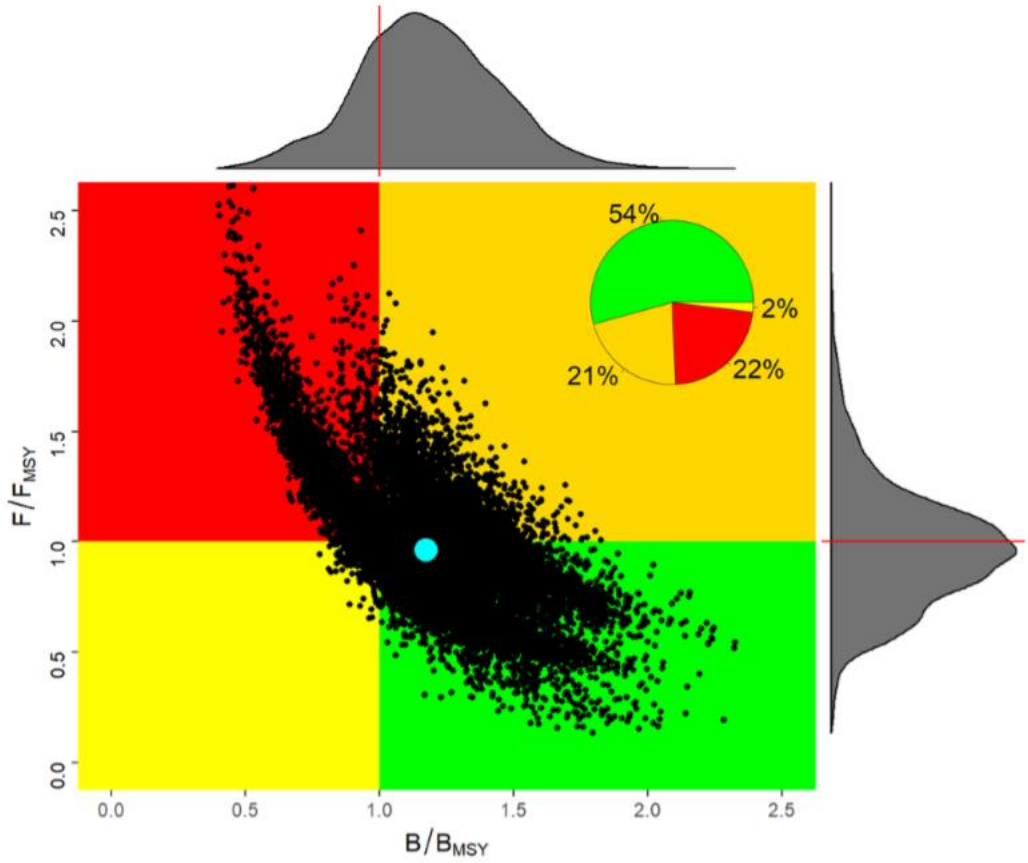


Figure 7.2.1.6 Kobe Phase Plot and marginal density for all models (used to develop management advice) combined. Reproduced from (ICCAT, 2019a).

7.2.1.7 Projections (ICCAT, 2019c)

Each of the models (i.e. stock synthesis, MPB, and JABBA) using the following general specifications were projected.
Projection interval: The Group agreed to make projections over a 14-year interval, 2020-2033, which corresponds to two generation times of yellowfin tuna.
2019 Catch: Fixed at 131,042 t, the same catch as was estimated for 2018.
Constant catch projections were made at 0 t, and 60,000 – 150,000 t, by 10,000 t intervals: 11 catch scenarios in total.
For stock synthesis setting, - Recruitment: Based on the estimated stock recruitment relationship with no recruitment deviations.
Selectivity and fleet allocations: It is necessary to specify the selectivity pattern for projections. The appropriate pattern is model specific. Use average of the last three years of the model (2016-2018).
For stock synthesis uncertainty grid, the statistical uncertainty of catch projections was estimated using 2,500 multivariate normal (MVN) iterations for each model of the grid (run1 (Reference Case), run 2, run 3, and run 4) for each constant catch scenario. Due to the technical problem in MVN approach, the values of F/F_{MSY} more than 4 or B/B_{MSY} less than 0.2 were replaced to 4 or 0.2. The projections in runs 1, 2 ,3, and 4 showed that the median of MVN iterations could maintain the stock above B_{MSY} level and below F_{MSY} by 2033 with the constant catches less than 110,000 t, 120,000 t, and 130,000 t. However, the projections in runs 1 and 2 clearly indicate that constant catch higher than 140,000 t leads to population crash in later years.
Catch projections from the 5000 iterations developed from the MPB-Reference Case were carried out. The projections with MPB showed that according to the median of 5000 bootstrap iterations, constant catches less than 130,000 t could maintain the stock at or above B_{MSY} level and below F_{MSY} through 2033.
Catch projections from 36,000 MCMC iterations were conducted for each JABBA Reference Cases (Base Case, S2, S3, and S5). The projections with JABBA in Base Case, S3, and S5 showed that according to the median of MCMC iterations, constant catches less than 130,000 t. could rebuild (S5) or maintain the stock at or above the B_{MSY} level and below F_{MSY} through 2033 with constant catches less than 120,000t.
Combined catch projections from 9 runs (JABBA (Base Case, S2, S3, and S5), MPB, Stock Synthesis (runs 1, 2, 3 and 4) were provided at constant catches ranging 0 t and from 60,000 to 150,000 t. In the projection results from the Stock Synthesis and JABBA models, some iterations were predicted with exceptionally small biomass ratios and extremely high F ratios indicating the potential for stock collapse. Thus, probability of biomass being less than 20% of the biomass that supports MSY was calculated for each projection year and catch scenario (**Table 7.2.1.1**). The probability increased with higher catch levels and in later projected years. The probabilities more than 1% or 10% were observed with the constant catch more than 110,000 t or 140,000 t, respectively. The highest probability was 23.3% with 150,000 t constant catch in 2033. It should be noted that the reference chosen, 20% of biomass that supports MSY, was selected for informational purposes and has not been adopted formally by the SCRS for tropical tunas.

Table 7.2.1.1 Estimated probabilities of biomass the Atlantic YFT stock levels < 20% of BMSY in the combined projections of JABBA (Base Case, S2, S3, and S5), MPB, Stock Synthesis (runs 1-4) in a given year for a given catch level (0, 60,000 – 150,000 t). This result was used to develop the management advice of Atlantic YFT stock.

TAC	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
60000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
70000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
80000	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
90000	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%
100000	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.3%	0.3%	0.4%	0.4%	0.5%	0.5%	0.6%	0.6%
110000	0.0%	0.0%	0.1%	0.1%	0.2%	0.4%	0.6%	0.7%	0.8%	0.9%	1.0%	1.2%	1.4%	1.5%
120000	0.0%	0.0%	0.1%	0.3%	0.5%	0.7%	1.0%	1.2%	1.5%	1.8%	2.1%	2.4%	2.6%	2.9%
130000	0.0%	0.1%	0.2%	0.5%	0.8%	1.2%	1.6%	2.1%	2.6%	3.0%	3.5%	3.9%	4.3%	4.7%
140000	0.0%	0.1%	0.3%	0.7%	1.2%	1.8%	2.6%	3.2%	4.0%	4.8%	10.4%	12.2%	12.9%	13.4%
150000	0.0%	0.1%	0.3%	1.0%	1.7%	2.7%	3.7%	4.8%	11.9%	12.7%	15.9%	21.3%	22.1%	23.3%

The combined projections show that 120,000 t constant catch will maintain more than 50% probability of being in green quadrant through 2033 (**Figure 7.2.1.7** and **Table 7.2.1.2**).

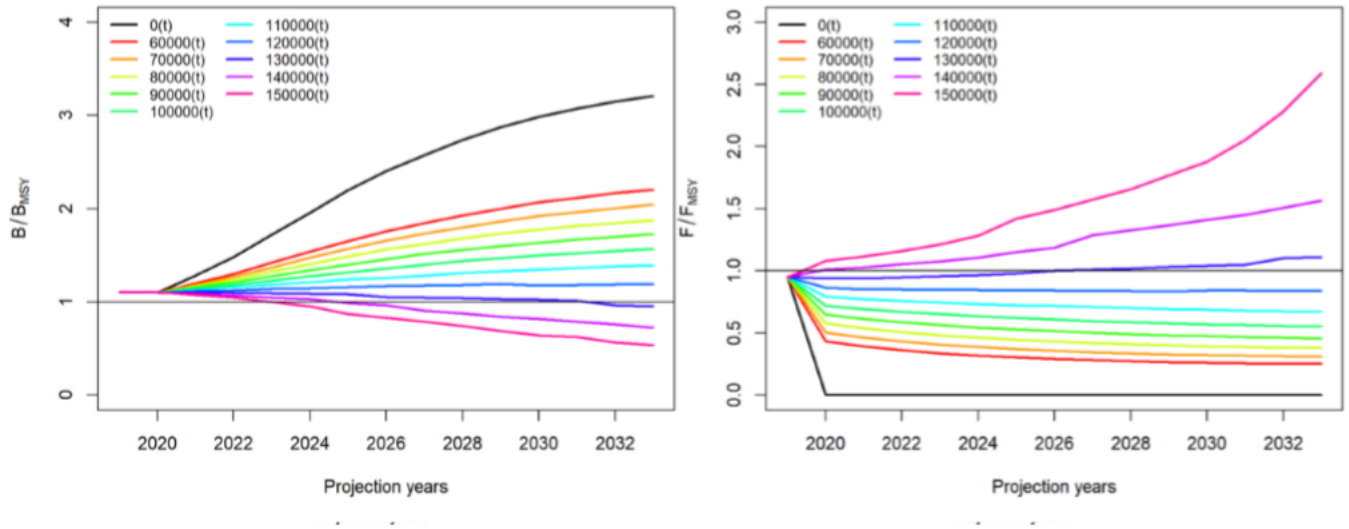


Figure 7.2.1.7 Trends of projected relative biomass (left panel, B/BMSY) and fishing mortality (right panel, F/FMSY) of Atlantic yellowfin stock under different TAC scenarios (0, 60000 – 150000 t) from JABBA, MPB, and SS3 using 9 runs (JABBA (Base Case, S2, S3, and S5), MPB, Stock Synthesis (runs 1-4)). Each line represents the median of 20000 iterations by projected year. In 2019, the catch was assumed 131,042 t, equal to the 2018 estimated landings (ICCAT, 2019a).

Table 7.2.1.2 Estimated probabilities of the Atlantic YFT stock (a) being below F_{MSY} (overfishing not occurring), (b) above B_{MSY} (not overfished) and (c) above B_{MSY} and below F_{MSY} (green zone) in a given year for a given catch level (0, 60,000 – 150,000 t), based upon the combined projections of JABBA (Base Case, S2, S3, and S5), MPB, Stock Synthesis (runs 1-4). This result was used to develop the management advice of Atlantic YFT stock.

a) Probability that $F \leq F_{MSY}$

TAC | Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0	100	100	100	100	100	100	100	100	100	100	100	100	100	100
60000	99	99	100	100	100	100	100	100	100	100	100	100	100	100
70000	98	99	99	99	100	100	100	100	100	100	100	100	100	100
80000	96	97	98	98	99	99	99	99	99	100	100	100	100	100
90000	93	95	96	97	97	98	98	98	98	99	99	99	99	99
100000	88	90	92	93	94	95	95	95	96	96	97	97	97	97
110000	81	84	85	86	87	87	88	88	89	90	90	90	90	90
120000	71	72	72	73	73	74	74	74	74	74	70	70	70	70
130000	60	59	58	56	55	53	50	49	47	46	46	45	39	39
140000	48	46	43	39	36	32	30	26	24	23	22	21	21	19
150000	39	35	30	25	22	17	15	13	13	12	11	10	10	8

b) Probability that $B \geq B_{MSY}$

TAC | Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0	64	84	95	99	100	100	100	100	100	100	100	100	100	100
60000	64	75	85	92	96	97	98	99	99	99	100	100	100	100
70000	64	74	83	90	94	96	97	98	98	99	99	99	100	100
80000	64	72	79	86	91	94	96	97	97	98	98	99	99	99
90000	64	70	77	82	87	90	92	94	95	96	97	97	98	98
100000	64	68	73	78	82	85	87	89	91	92	93	94	94	95
110000	64	67	69	72	75	77	79	81	83	84	85	86	86	87
120000	64	65	65	67	68	68	69	70	71	71	68	69	69	69
130000	65	63	62	61	60	59	56	56	55	53	52	51	46	45
140000	64	61	59	56	54	49	46	40	37	34	31	29	27	25
150000	64	60	55	50	45	37	32	27	23	20	18	13	12	8

c) Probability that $F \leq F_{MSY}$ and $B \geq B_{MSY}$

TAC | Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0	64	84	95	99	100	100	100	100	100	100	100	100	100	100
60000	64	75	85	92	96	97	98	99	99	99	100	100	100	100
70000	64	74	83	90	94	96	97	98	98	99	99	99	100	100
80000	64	72	79	86	91	94	96	97	97	98	98	99	99	99
90000	64	70	77	82	87	90	92	94	95	96	97	97	98	98
100000	64	68	73	77	82	85	87	89	90	92	93	94	94	95
110000	64	66	69	72	75	77	79	81	82	83	84	85	86	86
120000	63	63	64	65	65	66	66	67	67	68	65	65	66	66
130000	58	57	56	54	52	50	47	46	45	44	43	42	38	38
140000	48	45	42	38	35	31	29	26	24	22	21	20	20	19
150000	39	34	30	25	21	17	15	13	12	12	11	10	9	7

7.2.1.8 Management recommendations

The Atlantic yellowfin tuna stock was estimated to be not overfished, and no overfishing was occurring. Maintaining catch levels at the current TAC of 110 000 t is expected to maintain healthy stock status through 2033 (ICCAT, 2019a). **Table 7.2.1.3** below summarises main outputs from the fishery advice and most relevant management measures in effect.

Table 7.2.1.3. Management measures and stock status for Atlantic Yellowfin tuna. Source: ICCAT 2019a

ATLANTIC YELLOWFIN TUNA SUMMARY

Estimates	Mean (90% confidence intervals)
Maximum Sustainable Yield (MSY)	121,298 t (90,428 - 267,350 t)[1]
2018 Yield	135,689 t
Relative Biomass[2]: B_{2018}/B_{MSY}	1.17 (0.75 - 1.62)
Relative Fishing Mortality: F_{2018}/F_{MSY}	0.96 (0.56 - 1.50)

2018 Total Biomass[3]	729,436 t
Stock Status (2018)	Overfished: No[4]
	Overfishing: No[5]

[Rec. 16-01]
- No fishing with natural or artificial floating objects during January and February in the area encompassed by the African coast, 20º W, 5ºN and 4ºS.
- TAC of 110,000 t (since Rec. 11-01).
- Specific authorization to fish for tropical tunas for vessels 20 meters or greater
- Specific limits of number of longline and/or purse seine boats for a number of fleets
- Specific limits on FADs, non-entangling FADs required

1) Minimum and maximum values of 90%LCI and 90%UCI among all runs by the Stock Synthesis, JABBA, and MPB
2) SSB (Stock Synthesis) or exploited biomass (production models)
3) Mean of the central estimates of the SS, JABBA and MPB models
4) (24% probability of overfished status)
5) (43% probability of overfishing taking place)

7.2.1.9 Management measures

The main management measures set out in Recommendation 14-01 (ICCAT 2014a), 15-01 (ICCAT 2015a) and 16-01 (ICCAT, 2016a) are listed below.

- Contracting Parties and Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs) whose vessels fish bigeye and/or yellowfin tunas in the Convention area shall implement the Multi-annual Management and Conservation Program initiated in 2012.
- The Commission shall establish and maintain an ICCAT record of authorized tropical tuna vessels. Fishing vessels 20 meters LOA or greater not entered into this record are deemed not to be authorized to fish, retain on board, tranship, transport, transfer, process or land bigeye and/or yellowfin and/or skipjack tunas from the Convention area.
- The annual TAC for 2012 and subsequent years of the Multi-annual program is 110,000 t for yellowfin tuna and shall remain in place until changed based on scientific advice. If the total catch exceeds the TAC for yellowfin tuna the Commission shall review the relevant conservation and management measures in place.
- Each CPC shall ensure that its vessels 20 meters LOA or greater fishing bigeye and/or yellowfin and/or skipjack tunas in the Convention area record their catches in accordance with the requirements set out in Annex 1 of Rec 14-01 and in the Recommendation by ICCAT Concerning the Recording of Catch by Fishing Vessels in the ICCAT Convention Area (Rec 03-13 in (ICCAT 2018b) .

- Fishing for, or supported activities to fish for bigeye, yellowfin and skipjack tunas in association with objects that could affect fish aggregation, including FADs, shall be prohibited: a) From 1 January to 28 February each year, and b) In the area delineated as follows
    - Southern limit: parallel 4º / South latitude
    - Northern limit: parallel 5º / North latitude
    - Western limit: meridian 20º / West longitude
    - Eastern limit: the African coast
- The prohibition referred to in the paragraph above includes: 1. launching any floating objects, with or without buoys; 2. fishing around, under, or in association with artificial objects, including vessels; 3. fishing around, under, or in association with natural objects; 4. towing floating objects from inside to outside the area.
- Each CPC fishing in the geographical area of the area/time closure shall: a) Take appropriate action to ensure that all vessels flying its flag, including supply vessels, when engaged in fishing activities during the time/area closure, have an observer on board in accordance with Annex 4 in Rec 14-01. The information collected by the observers shall be reported each year by 31 July to the ICCAT Secretariat and to SCRS; b) Take appropriate action against vessels flying their flag that do not comply with the area/time closure; c) Submit an annual report on their implementation of the area/time closure to the Executive Secretary, who shall report to the Compliance Committee at each Annual meeting.
- For scientific observers on board of vessels targeting bigeye, yellowfin and/or skipjack tunas in the area east of meridian 20º/West longitude and north of parallel 28º/ South latitude the following shall apply: a) Scientific observers shall automatically be recognized by all CPCs. Such recognition shall allow the scientific observer to continue the collection of data throughout the EEZ visited by the vessel observed. The coastal CPCs concerned shall receive from the flag CPC which mandated the observer the scientific information collected by the observer and related to fishing activities on ICCAT species in their EEZ. b) CPCs that do not accept that their national scientific observer may collect data in the EEZ of another CPC, or that do not recognize as valid the data collected in their EEZ by a scientific observer of another CPC, must inform the Executive Secretary, for immediate transmission to the SCRS and the Compliance Committee, of their refusal within three months after the entry into force of this Recommendation or their accession to ICCAT. By such refusal, the CPC concerned shall refrain to require the deployment of its national scientific observer on vessels of another CPC.
- CPCs shall ensure that for purse seiners flying their flag and fishing for bigeye, yellowfin or skipjack tunas on FADs the following provisional limits are not exceeded: No more than 500 FADs with or without instrumental buoys are active at any one time in relation to each of its vessels through such measures as, for example, the verification of telecommunication bills.
- CPCs with purse seine and baitboat vessels fishing for bigeye, yellowfin and skipjack tunas in association with objects that could affect fish aggregation, including FADs, shall submit to the Executive Secretary Management Plans for the use of such aggregating devices by vessels flying their flag by 31 January each year.
- In order to minimize the ecological impact of FADs, in particular the entanglement of sharks, turtles and other non-targeted species, and the release of synthetic persistent marine debris, CPCs shall: i. replace by 2016 existing FADs with non-entangling FADs in line with the guidelines under Annex 7 of Rec 16-01. ii. undertake research to gradually replace existing FADs with fully biodegradable and nonentangling FADs, with a view to phase out non-biodegradable FADs by 2018, if possible.
- Each CPC shall, by 31 July each year, notify to the Executive Secretary the list of authorized vessels flying their flag which have fished bigeye and/or yellowfin and/or skipjack tunas in the Convention area or have offered any kind of support to the fishing activity (support vessels) in the previous calendar year. For purse seines this list shall also include the support vessels that have supported the fishing activity, irrespective of their flag.
- CPCs shall: - submit to the SCRS information on by-catches and discards made by fishing vessels flying their flag fishing for tropical tunas; - encourage the vessel owners, masters and crew fishing for tropical tunas under their flag to implement good practices to better manage by-catches and reduce discards; - consider designing and adopting management measures and/or management plans to better manage by-catch and reduce discards.
- The number of longline and purse seine vessels are restricted in the bigeye tuna fishery, implying that there is also an effort limit on yellowfin tuna.

7.2.2 Catch profiles

The report shall include any relevant catch profiles showing Unit of Assessment (UoA) catch over time.

Table **7.2.2** shows total catches (as estimated in the logbooks) from the assessed fishing vessels between 2014 and 2018 (including only landings from FSC sets). The 3 tropical tunas (skipjack, yellowfin, and bigeye) account for almost 100% of the total volume caught (i.e., 98.90%). The yellowfin tuna accounts for over half of the volume caught (68.78%), followed by the skipjack tuna (26.26%) and the bigeye tuna (3.86%). Other species reported in the logbooks account for 1.10% of the total volume caught.

Table **7.2.2** Total estimated catches (in tons) from the vessels included in the Unit of Assessment between 2014 and 2018. Data including only FSC sets. Source: Prepared by the client based on the logbooks from the assessed vessels

Species	Scientific name	2014	2015	2016	2017	2018	%
Yellowfin tuna	*Thunnus albacares*	4,050	10,889	9,386	3,443	7,079	68.78%
Skipjack tuna	*Katsuwonus pelamis*	1,051	3,529	2,096	1,806	4,824	26.26%
Bigeye tuna	*Thunnus obesus*	295	278	291	301	792	3.86%
Other Tunas		13	118	106	183	137	1.10%

7.2.3 Total Allowable Catch (TAC) and catch data

The report shall include a Total Allowable Catch (TAC) and catch data table using the table below. If possible, a separate table should be provided for each species or gear.

The annual TAC for 2012 and subsequent years of the Multi-annual Programme is 110,000 t for yellowfin tuna and shall remain in place until changed based on scientific advice (Rec 16-01). No further quota allocation is done by ICCAT.

In ICCAT tuna purse seine fisheries the skipper shall record in the logbook an estimation of the catches per species for every set.

The most recent annual estimated catches (from logbooks) of unassociated yellowfin tuna of the assessed vessels are presented in **Table 7.2.3**.

For more data on catches of the UoA/UoC (historical data series and species catch composition) see **Table 8**.

Table 7.2.3 – Total Allowable Catch (TAC) and catch data

TAC	Year	**2018**	Amount	**110,000 t**
UoA share of TAC	Year	**2018**	Amount	**N/A**
Total estimated UoA/UoC YFT catches	Year (most recent)	**2018**	Amount	**7,079 t**
Total estimated UoA/UoC YFT catches	Year (second most recent)	**2017**	Amount	**3,443 t**

7.2.4 Principle 1 Performance Indicator scores and rationales

In the Performance Indicator scoring tables, the report shall include sufficient rationale which makes direct reference to every scoring issue and whether it is fully met at each Scoring Guidepost (SG). References shall be included in the form of hyperlinks, citations or by providing the quantitative information.

For any Performance Indicator for which scoring is not required or a default score is applied, this shall be recorded in the relevant scoring table.

If a condition is required, the CAB shall assign a condition number for cross-references in assessment reports.

PI 1.1.1 – Stock status

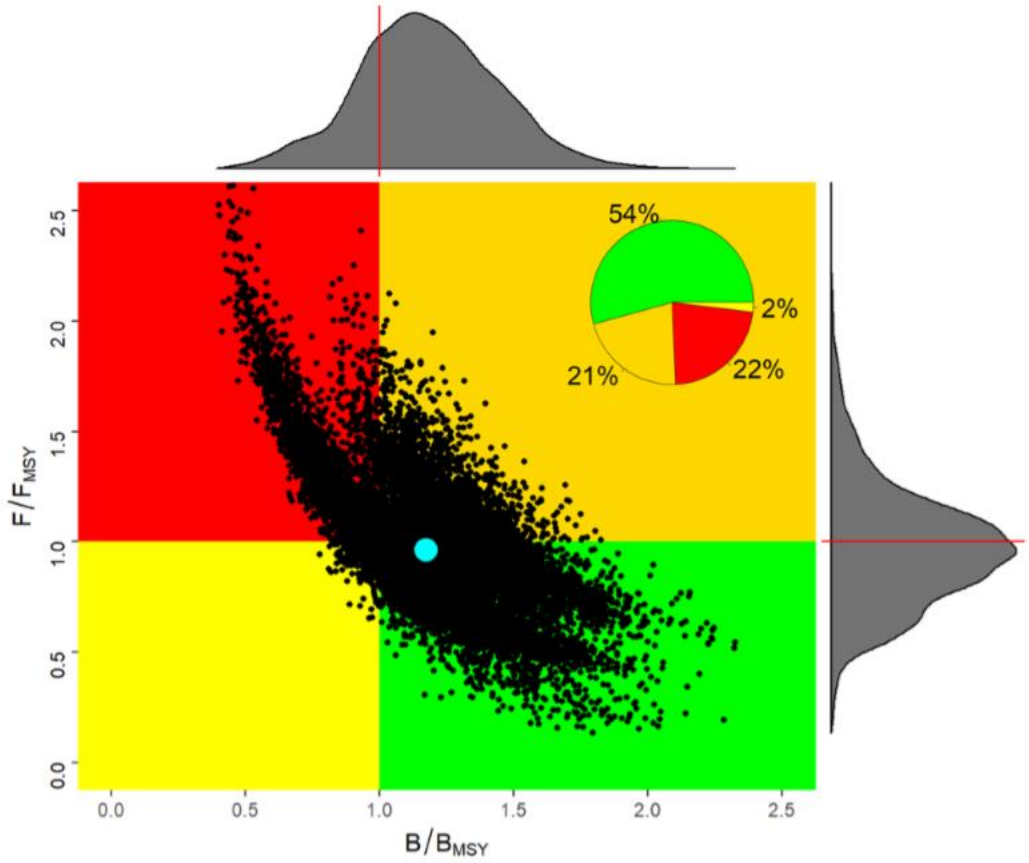
PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is **likely** that the stock is above the point where recruitment would be impaired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

A full stock assessment was conducted for yellowfin tuna in 2019, applying two production models (JABBA, MPB) and one age-structured model (Stock Synthesis) to the available catch data through 2018. The four Stock Synthesis model runs, were regarded as representing alternative recruitment, and steepness hypotheses. Likewise, the JABBA runs addressed different hypotheses about initial priors for r, and about which indices of abundance were representing the population. Finally, the base case selected for MPB estimated biomass and fishing mortality trends that varied somewhat from JABBA. In order to capture this uncertainty in the population dynamics for developing the management advice, it was best to incorporate results from all of the accepted model runs.

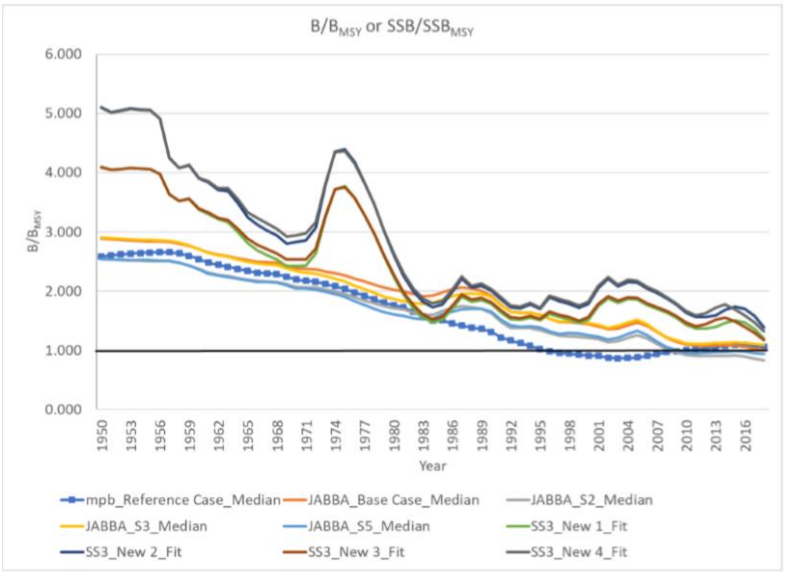
Equal weight was given to surplus production model and integrated assessment model results. Within surplus production models, JABBA and MPB were also given equal weight. Each run within a modeling platform (JABBA, and Stock Synthesis) were also given equal weight. For the combined results (MPB, JABBA, SS) used to develop management advice, the median estimate of B_{2018}/B_{MSY} is 1.17 (0.75-1.62)- and the median estimate of F_{2018}/F_{MSY} is 0.96 (0.56-1.5). The median MSY estimated is 121,298 t (90,428t – 267,350 t). These relate to 90% confidence intervals. Combining the results of all models provides a way to estimate the probability of the stock being in each quadrant of the Kobe plot in 2018 (Figure below). The corresponding probabilities are 54% in the green (not overfished not subject to overfishing), 21% in the orange (subject to overfishing but not overfished), 2% in the yellow (overfished but not subject to overfishing) and 22% in the red (overfished and subject to overfishing). In summary, the results point to a stock status of not overfished (24% probability of overfished status), with no overfishing (43% probability of overfishing taking place).

No explicit reference point where recruitment is impaired is used in ICCAT, therefore the default reference point of $0.5B_{MSY}$ is used as proxy indicator (MSC-MSCI Vocabulary, 2014, pg377, GSA 2.2.3.1). It is estimated that there is a 10% probability that the stock is below $B_{2018}/B_{MSY}=0.75$. Assuming the estimates are approximately normally distributed, the 95%CI would also exclude the PRI, therefore it is **highly likely** that the stock is above the level where recruitment is impaired and implicitly there is a high degree of certainty of that.

SI (a) meets **SG60, SG80 and SG100**.



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



As mentioned in SI a) a new stock assessment was carried out in 2019 and the historical state of the resource has also changed. With the new assessment the general trend indicated by the various stock assessment results, indicates that the stock is above or fluctuating around the MSY level; B_{2018}/B_{MSY} is 1.17 (0.75-1.62), therefore **SG80 is met.** (See figure above) (ICCAT, 2019a). However, the Kobe plot indicates that there is only a 75% certainty that the stock is above the MSY level, therefore **SG100 is not met**.

References

ICCAT, 2019a

Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Atlantic Ocean YFT: ICCAT has not as yet adopted reference points for YFT, therefore the proxy advised in the FCR guidance clause GSA2.2.3.1, was used	According to FCR guidance clause GSA2.2.3.1, the proxy for the PRI is about $0.5B_{MSY}$.	MSY level; B_{2018}/B_{MSY} is 1.17 (0.75-1.62), (10^{th}-90^{th} percentiles), therefore it is highly likely that the stock is above the proxy of $0.5B_{MSY}$,
Reference point used in scoring stock relative to MSY (SIb)	Biomass as maximum sustainable yield level	$B_{cur}>B_{MSY}$ $F_{cur}<F_{MSY}$	MSY level; B_{2018}/B_{MSY} is 1.17 (0.75-1.62), (10^{th}-90^{th} percentiles). The stock is estimated to be above the MSY biomass level

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

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the **shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the stock.
	Met?	**Yes / No**		**Yes / No**
Rationale				

The stock is not overfished and overfishing is not taking place, therefore this PI does not need to be scored.

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?	**Yes / No**	**Yes / No**	**Yes / No**
Rationale				

The stock is not overfished and overfishing is not taking place, therefore this PI does not need to be scored.

References

List any references here, including hyperlinks to publicly-available documents.

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

Draft scoring range	**NA**
Information gap indicator	**Information sufficient to score PI**

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

MSC defines the catch strategy as a combination of monitoring, stock assessment, HCRs and management measures, and its degree of interaction should also be assessed when working together to achieve the management objective to maintain the stock at consistent Maximum Sustainable Yield level (MSYL).

The following elements are part of the strategy for the target stock of the evaluated fishery:

1. Complete stock assessment every 4-6 years by the SCRS (revised and updated annually). This evaluation allows the Committee to establish the status of the resource and issue recommendations for its management.
2. The ICCAT Recommendation [11-13] (ICCAT, 2011b), describes a general framework for decision making aimed at keeping stocks above the MSY level, of not being overfished and avoiding overfishing.
3. Effort limitation are in place and CPC vessels need to be authorised for fishing on tropical tunas. ICCAT has a list of registered authorised vessels (available on its website: https://www.iccat.int/en/vesselsrecord.asp)
4. CPCs are obligated to annually report data to ICCAT; catch data (Task I) and catch-effort (Task II) (ICCAT, 2016c). They should further provide the list of vessels flying their flag and fishing for bigeye and / or yellowfin tuna and / or skipjack in the convention area.
5. Various measures for the management of FADs are implemented; space-time closure in the Gulf of Guinea zone, limit of 500 FADs per vessel, management plans, specific data collection and submission of information. Moreover, ICCAT provides guidelines for the construction of non-entangling FADs. During the space-time closure the CPCs must ensure a 100% observer coverage (Rec 16-01. (ICCAT, 2016e))
6. Recognition is given to fleets that implement voluntary observer programs outside the closure time/area. These programs provide ICCAT with data, which is collated and analysed by the SCRS.
7. A port sampling program was developed by the SCRS with the objective of collecting tropical tuna fishery data of tuna captured in the geographic area of the space-time closure (ICCAT, 2016e).
8. Most of the monitoring and management measures detailed above are integrated into the Multiannual Conservation and Management Program for Tropical Tunas (Recommendation [16-01], (ICCAT, 2016e)). This program has been reviewed annually since its first publication in 2011 (Rec [11-01] (ICCAT, 2011c), referring only to yellowfin and bigeye, while in 2014 - Rec [14-01] (ICCAT, 2014a) – Eastern Atlantic skipjack tuna was included).
9. For yellowfin tuna a TAC of 110 000 tonnes per annum is set for the fishery since 2012 (Rec 15-01, (ICCAT, 2015a)).

With this harvest strategy it is highly likely that the stock is above the PRI, therefore SI(a) **SG60 is met**.

The management quantities estimated in the 2011, 2016 and 2019 YFT stock assessment (ICCAT, 2012) (ICCAT, 2016b and ICCAT, 2019a) were the following:

B_{2010}/B_{MSY}=0.85(0.61-1.12) B_{2014}/B_{MSY}=0.95 (0.71-1.36) B_{2018}/B_{MSY}=1.17 (0.75-1.62)
F_{2010}/F_{MSY}=0.87 (0.68-1.4) F_{2014}/F_{MSY}=0.77 (0.53-1.05) F_{2018}/F_{MSY}=0.96 (0.56-1.5)

The stock status increased and the fishing pressure decreased from 2010 to 2014. The latest stock assessment results indicate a higher stock status (above MSY), but a higher fishing mortality. However, the 2019 stock assessment results can't be compared to that of the 2016 results, because it is based on different assumptions. Since 2005, catches were either below or around 110,000 t. Rec.14-01 (ICCAT, 2014a) implemented a TAC of 110,000 t for 2012 and subsequent years. The overall catches in 2012 (114,937 t), 2013 (106,288 t) and 2014 (113,414 t) were just above this TAC, but since 2015 catches have been significantly above this level (128,298 t). Also, a catch of 148,874 t was recorded in 2016, 135,865 t for 2017, and 135,689 t for 2018, all an overage of the TAC (ICCAT, 2019a).

Despite this, there is evidence that 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. SI(a) **SG80 is met**.

However, there is no explicit allocation of yellowfin catch to ICCAT CPCs that would both reduce the likelihood of overages (by increasing accountability), and facilitate a strategy to respond in terms of subsequent catch restrictions. For these reasons SI(a) **SG100 is not met**.

	Harvest strategy evaluation			
b	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 overall health of the stock increased by approximately 20% since 2010, but there is a high uncertainty around the estimates;

B_{2018}/B_{MSY}=1.17 (0.75-1.62) F_{2018}/F_{MSY}=0.96 (0.56-1.5) (90% confidence intervals)

This indicates that the strategy is likely to work (SI(b) **SG60 is met**), and evidence exists (improved stock status) that the harvest strategy is achieving its objectives, therefore SI(b) **SG80 is achieved**.
Further, probabilistic projections have been modelled to test the harvest strategy (A TAC of 110 000t), and the performance of the harvest strategy has been fully evaluated, shown in the table below.
The table describes the estimated probabilities of the Atlantic YFT stock being above B_{MSY} below F_{MSY} in a given year for a given catch level (ICCAT, 2019c).

TAC | Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0	64	84	95	99	100	100	100	100	100	100	100	100	100	100
60000	64	75	85	92	96	97	98	99	99	99	100	100	100	100
70000	64	74	83	90	94	96	97	98	98	99	99	99	100	100
80000	64	72	79	86	91	94	96	97	97	98	98	99	99	99
90000	64	70	77	82	87	90	92	94	95	96	97	97	98	98
100000	64	68	73	77	82	85	87	89	90	92	93	94	94	95
110000	64	66	69	72	75	77	79	81	82	83	84	85	86	86
120000	63	63	64	65	65	66	66	67	67	68	65	65	66	66
130000	58	57	56	54	52	50	47	46	45	44	43	42	38	38
140000	48	45	42	38	35	31	29	26	24	22	21	20	20	19
150000	39	34	30	25	21	17	15	13	12	12	11	10	9	7

However, there is a strong concern that catches above 120,000 t are expected to further degrade the condition of the yellowfin stock if they continue. Furthermore, given that significant overages are frequent, existing conservation and management measures appear to be insufficient. Increased harvests on small yellowfin tuna has had negative consequences to both long-term sustainable yield and stock status, and continued increases in the harvest of small yellowfin tuna will continue to reduce the long-term sustainable yield the stock can produce. Effective measures need to be found to reduce fishing mortality on small yellowfin tuna (e.g. FOB-related and other fishing mortality of small yellowfin tuna). The performance of the harvest strategy has been fully evaluated, but evidence exists to show that it might not be achieving its objectives of being clearly able to maintain stocks at target levels, therefore SI(b) **SG 100 is not met**.

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

Catch and discard data for tropical tunas (yellowfin, bigeye and skipjack), as well as the results of related research activities, are compiled by the SCRS and reviewed annually by the Tropical Tuna Working Group. Among other tasks, these groups are responsible for reviewing measures to minimise the mortality of unwanted catches.
Monitoring is in place that is expected to determine whether the harvest strategy is working. CPCs are obligated to annually report data to ICCAT; catch data (Task I) and catch-effort (Task II) (ICCAT, 2016c).
Therefore, all the data needed to determine whether the harvest strategy is working, is available.
For SI(c) **SG60 is met.**

	Harvest strategy review			
d	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			**Yes**
Rationale				

Every 4-6 years a complete stock assessment is done by SCRS, and reviews and updates are made annually.
The final provisions of Rec [16-01] (ICCAT, 2016e) determined that the Committee, at its 2017 meeting, should review and improve various elements of the strategy of tropical tuna catch, including for YFT. In fact, this process of review and improvement of the Multiannual Program for the conservation and management of Tropical Tunas has been happening annually since its inception in 2011. A review of the successive Recommendations [14-01] (ICCAT, 2014a), [15-01] (ICCAT, 2015a) and finally [16-01] (ICCAT, 2016e) shows how elements have been incorporated and detailed specifications on various elements that make up the catch strategy (data collection of the fishing operations with FADs, management of FADs, observer programs, SCRS obligations, etc.).

The harvest strategy is periodically reviewed and improved as necessary. ICCAT (2018a) recognized that in the most recent years overall catches have exceeded the TAC by 17-37%, therefore to address this concern, a stock assessment of yellowfin tuna has been conducted in 2019 as was recommended (ICCAT, 2019c). For SI(d) **SG100 is met**.

	Shark finning			
e	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**NA**	**NA**	**NA**
Rationale				

	Review of alternative measures			
f	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?	**Yes**	**Yes**	**Yes**
Rationale				

Estimates regarding discards of yellowfin, skipjack and bigeye tuna in the EU purse seine fishery were made using the stratified ratio estimator method and the EU PS observer database. Discards of yellowfin are low, with yearly average of 0.03% (2005-2013) from FAD-free sets (ICCAT, 2016c). Discarded fish are normally too small or not in a good condition for human consumption. A recent ICCAT Recommendation (17-01, (ICCAT, 2017a)) prohibiting discards of tropical tunas (YFT, SKJ, BET) by purse seiners just entered into force 11th June 2018. This Recommendation establishes that vessels shall retain on board and then land or tranship to port all bigeye, skipjack and yellowfin tunas caught, except for two exceptions: (i) fish unfit for human consumption and, (ii) when caught during the last set of a trip and there is not enough storage capacity. This Recommendation also establishes that CPC shall report all discards observed. Finally, it is established that in 2020 the SCRS shall assess the effectiveness of this Recommendation and submit recommendations to the Commission regarding potential improvements.
SI(f) SG60 and SG80 and SG100 are met.

References

ICCAT 2011b, ICCAT 2016c, ICCAT 2011c, ICCAT 2014a, ICCAT 2015a, ICCAT 2012, ICCAT 2016b, ICCAT 2019a, ICCAT 2016c, ICCAT 2018e, ICCAT 2019c, ICCAT 2017a

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

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.2 – Harvest control rules and tools

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

In 2011, ICCAT adopted Recommendation [11-13] (ICCAT 2011b) which sets out the principles for decision-making. It is a format (Strategy Matrix) to provide advice that was agreed upon by the scientific bodies of the different RFMOs of tunas at the 2nd Joint Meeting (in June 2009 in San Sebastian, Spain). Recommendation 11-13 guides the Commission in developing stock-sensitive management measures according to its representation in the Kobe diagram (a standardized four-quadrant format, red-yellow-green), which is widely accepted as a practical and easy-to-use method for presenting stock status information. The Recommendation clearly states how management measures should be designed according to the location of status in the Kobe quadrants. In all cases, the stated requirement is that management measures should be designed so that there is a high probability that the stock will remain at B_{MSY} levels (or recover to these levels). In case of overfishing and / or overfished stock, the adoption of a rebuilding plan is required.

The Strategy Matrix does not specify actions with respect to the proximity to PRIs, but is designed so that the probability of reaching the TRP is high, both in relation to the state of stock (B_{MSY}) and in relation to the rate of exploitation (F_{MSY}), through the implementations of actions to reduce the exploitation rate when it is above F_{MSY}. By definition, since the matrix is designed to ensure that there is a high probability of achieving B_{MSY} and F_{MSY} and maintain fishing mortality below F_{MSY}, it will also act to maintain the stock above the implicit PRIs. Thus, Rec [11-13] (ICCAT 2011c) generally defines HCRs that are expected to reduce the rate of exploitation as the stock status approaches a point at which recruitment is compromised. For yellowfin a TAC of 110 000 tonnes is allowed annually, which keeps the fishing mortality just below F_{MSY}. This implies that generally understood HCRs are in place and available that are expected to reduce the exploitation rate as the PRI is approached. Taking Rec 11-13 into consideration, the basis for HCRs are generally understood.

In 2015 a recommendation (Rec 15-07, (ICCAT 2015c) on the development of harvest control rules and of management strategy evaluation was put forward by ICCAT. In addition, to laying down the basic ground rules for the MSE, the SCRS will start by evaluation species-specific candidate HCRs. The MSC evaluation has been completed northern Atlantic albacore tuna; reference points and harvest control rules have been adopted and came into force in June 2018 (ICCAT 2017c).

HCRs are the arrangements by which a fishery expects to achieve the stock status outcomes expressed in PI 1.1.1. The tools for the YFT HCR is the TAC set at 110 000 tonnes. The interaction between the set TAC and the reference point (B_{MSY}) has been evaluated using probabilistic projections. The simulation testing on the probability of the stock to stay above the MSY level under the current TAC of 110 000 tonnes have been carried out and it is expected that there is a 87% probability that the stock will be still above MSY in 2033. (see Table 7.2.1.2). This implies that a well-defined YFT HCR is in place, and it is expected that under this management the stock will keep the stock fluctuating around B_{MSY}. Also, according to ICCAT Rec 2016-01 (ICCAT 2016a) it states that the Commission shall review the relevant conservation and management measures if the total catch exceeds the TAC for yellowfin tuna, again indicating that HCRs are in place.
It has to be considered that: The requirement that an HCR reduces exploitation rate as the limit reference point is approached should not always be interpreted as requiring the control rule to deliver an exploitation rate that is a monotonically decreasing function of stock size (Not need to be a 'hockey stick' type rule). Any exploitation rate function

may be acceptable so long as it acts to keep the stock above a limit reference point that avoids possible recruitment failure and attempts to maintain the stock at a target reference point that is consistent with B_{MSY} or a similar highly productive level (pg 395 MSC guide).
With the overage of catch since 2015, it is clear that the TAC is not monitored and the appropriate enforcement is not in place. There is no explicit allocation of yellowfin catch to ICCAT CPCs that would both reduce the likelihood of overages (by increasing accountability), and facilitate a strategy to respond in terms of subsequent catch restrictions. A full MSE has not been done for YFT, therefore well-defined HCRs are not in place that would ensure that the exploitation rate is reduced as the PRI is approached, therefore for SI(a) **SG80 has not been met**.

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

Currently, the harvest control rule is a constant TAC for yellowfin tuna and this has been in place since 2012. Although, this is not a “hockey stick” kind of rule, it can still be considered a HCR. The effect of the TAC allowed for YFT was tested in a probabilistic way (ICCAT, 2019a) and presented in the probability matrix presented in Table 7.2.1.2. It was tested considering various sensitivities. The result showed that there is a 64% probability that the stock is above B_{MSY} in 2020 and by 2033 the probability will rise to 87% hence the HCR is likely to be robust to the main uncertainties. Therefore, for SI(b) **SG80 is met**.
The HCR has been tested against a wide range of uncertainties, but those did not include the ecological role the stock plays, therefore there is some scope of improvement with the testing of robustness to uncertainty. SI(b) **SG 100 is not met**.

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

The current TAC for YFT is 110 000 tonnes, which is above the lower 10 percentile of the MSY which was estimated as 121, 298t (90,428-267,350) (ICCAT 2019a). This TAC was first implemented in 2012, therefore the tools which would limit exploitation rate are already in use. The fishing mortality for YFT in 2018 is F_{2018}/F_{MSY}=0.96 (0.56-1.50) (ICCAT 2019a) is just below the fishing mortality at MSY. It has been shown that catches below the TAC are effective in rebuilding the YFT stock to its MSY level as indicated by the probability matrix. The resource improved from B_{2010}/B_{MSY}=0.85 (0.61-1.12) in 2010 (ICCAT 2012) to B_{2014}/B_{MSY}=0.95 (0.71-1.36) (ICCAT 2016d). Therefore, there is some evidence that the tools available to implement the HCR are appropriate and effective in controlling exploitation. For SI(c), **SG60 is met**.

Since 2005, catches were either below or around 110,000 t. Rec.14-01 (ICCAT, 2014a) implemented a TAC of 110,000 t for 2012 and subsequent years. The overall catches in 2012 (114,937 t), 2013 (106,288 t) and 2014 (113,414 t) were just above this TAC, but since 2015 catches have been significantly above this level (128,298 t). Also, a catch of 148,874 t was recorded in 2016, 135,865 t for 2017, and 135,689 t for 2018, all an overage of the TAC (ICCAT, 2019a).
Considering that for 2015- 2018 catches have exceeded the MSY level (121, 298t), available evidence does not indicate that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs, therefore, for SI(c) **SG80 is not met.**

References

ICCAT 2011b, ICCAT 2011c, ICCAT 2016a, ICCAT 2019a, ICCAT 2014a

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

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

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 following fisheries data are used as input to the stock assessment models: Task I nominal catch, Task II catch and effort (CE), Task II catch-at-size (CAS) and the corresponding size frequency data aggregated by year-quarter, fishing mode, main gear, and 5x5 square Lat-Long grid (ICCAT, 2016c).

The tables below show the SCRS statistics (Task-I and Task-II) for the West and East Atlantic yellowfin, major fishery (flag/gear combinations ranked by order of importance) and year (1988 to 2017). Only the most important fisheries (representing ±97.5% of Task-I total catch) are shown. For each data series, Task I (DSet= "t1", in tonnes) is visualised against its equivalent Task II availability (DSet= "t2") scheme. The Task-II colour scheme, has a concatenation of characters ("a"= T2CE exists; "b"= T2SZ exists; "c"= CAS exists) that represents the Task-II data availability in the ICCAT-DB. See the legend below for the colour scheme pattern definitions provided above in the table (ICCAT, 2019b).

LEGEND and color schemes used to show Task II (t2) availability

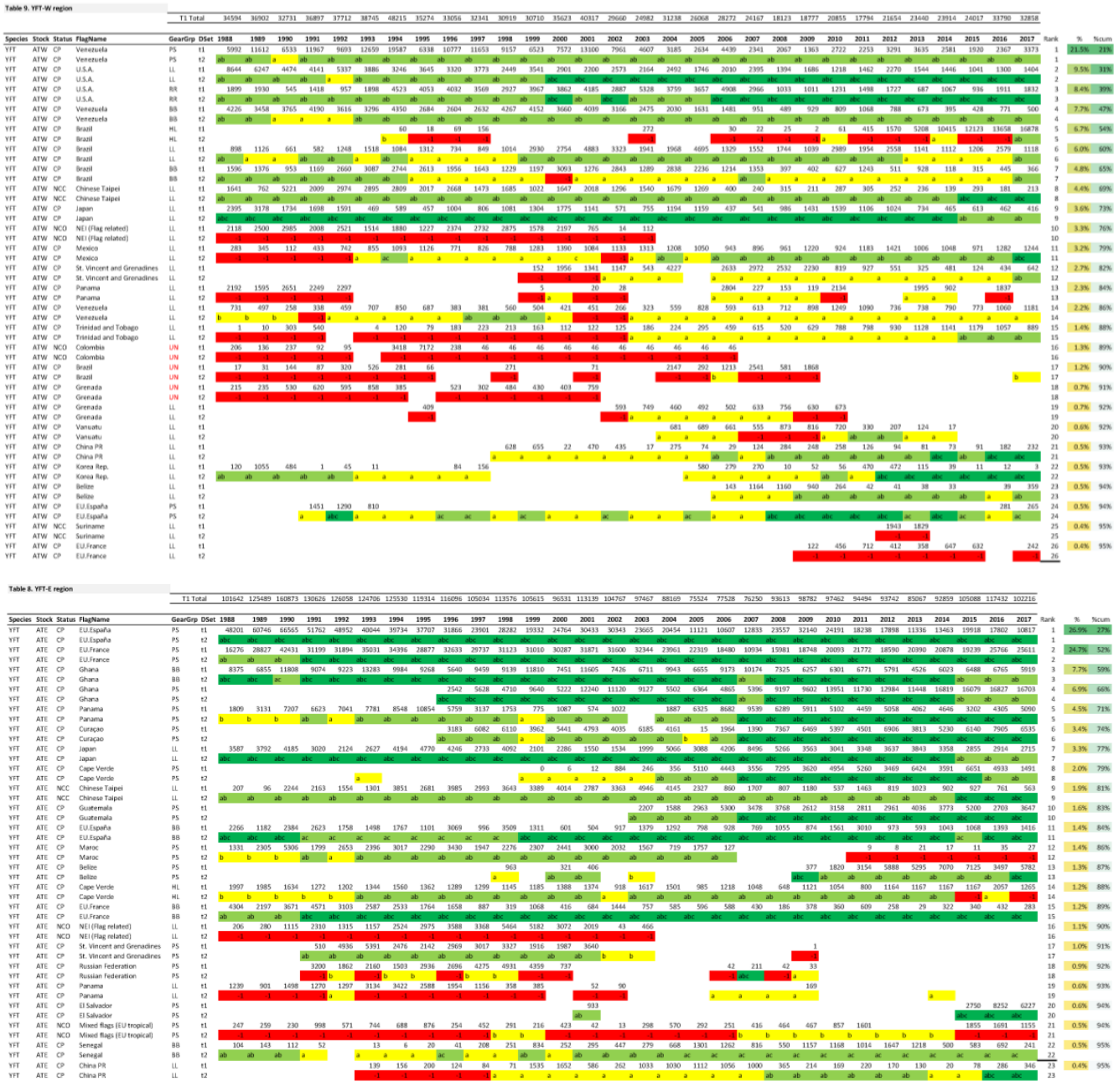
character	represents
a	t2ce
b	t2sz
c	t2cs

color scheme		t2 availability score	
Concatenated string	represents	score3 (*)	score2 (**)
-1	no T2 data	0	0
a	t2ce only	1	1
b	t2sz only	1	1
c	t2cs only	1	1
bc	t2sz + t2cs	1	1
ab	t2ce + t2sz	2	2
ac	t2ce + t2cs	2	2
abc	all	3	2

* Species requiring ST05-T2CS data (ALB, BFT, BET, YFT, SKJ, SWO)
** Rest of the species (not requiring ST05-CAS data)

(number of years in the score)	totYears	30
(score scale adopted)	scale	10

Detailed data are available since the 1950s. This information is adequate to use three different stock assessment approaches as illustrated in ICCAT (2019a) and it is also sufficient to support the harvest strategy, therefore SI(a) **SG60 and SG80 is met**.



There is a comprehensive range of relevant information on stock abundance, fishery removal and other information such as environmental information. Environmental data is available at https://www.iccat.int/en/SC_ENV.htm. However, at this stage there are no other monitoring programs, which though not directly relevant to the target stock, are referred to by fishery managers to inform their understanding of the stock management. For SI(a) **SG100 is not met.**

	Monitoring			
b	Guide post	Stock abundance and UoA removals are monitored and **at least one indicator** is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and **one or more indicators** are	**All information** required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent **uncertainties** in the

			available and monitored with sufficient frequency to support the harvest control rule.	information [data] and the robustness of assessment and management to this uncertainty.
	Met?	**Yes**	**Yes**	**No**
Rationale				

According to ICCAT (2019a), catch, effort, size and CAS/CAA estimates are available and this information is received from the various member states. As mentioned above, the data is available since the 1950s and they can support a harvest rule. SI(b) **SG60 is met**.

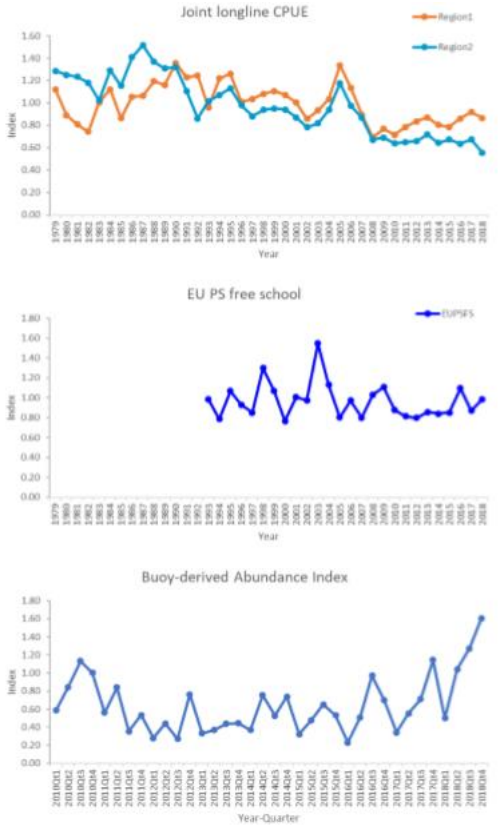
Information is obtained in logbook reports and landing records. There are some gaps within the data and the data is not always received in time, but monitoring programs that may enable managers to make informed management decisions are in place. According to the ICCAT scoreboard, the data for YFT is mostly reasonable (ICCAT, 2019b), but the information from the Western Atlantic is still below 5, which indicates poor data availability. Notwithstanding, catches in the Western Atlantic are much lower than in the Eastern part, therefore, it can be said that stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, which in this case is the constant TAC.

ICCAT SCORECARD on fisheries data availability (preliminary)

Table #	Fishery	SCORE	Score type
1	ALB-N stock	7.04	score3
2	ALB-S stock	5.49	score3
3	ALB-M stock	1.85	score3
4	BFT-E stock (ATE region)	5.69	score3
5	BFT-E stock (MED region)	3.18	score3
6	BFT-W stock	7.89	score3
7	BET-A stock (AT + MD)	6.65	score3
8	YFT-E region	6.70	score3
9	YFT-W region	4.29	score3
10	SKJ-E stock	7.05	score3
11	SKJ-W stock	4.69	score3
12	SWO-N stock	7.62	score3
13	SWO-S stock	6.52	score3
14	SWO-M stock	3.82	score3
15	BUM-A stock (AT + MD)	4.22	score2
16	WHM-A stock (AT + MD)	4.77	score2
17	SAI-E stock	2.93	score2
18	SAI-W stock	3.64	score2
19	SPF-E stock	2.42	score2
20	SPF-W stock	3.28	score2
21	BSH-N region	3.31	score2
22	BSH-S region	3.66	score2
23	BSH-M region	0.56	score2
24	POR-N region	1.26	score2
25	POR-S region	0.83	score2
26	SMA-N region	2.55	score2
27	SMA-S region	3.30	score2

		Quartile
bad:	[0, 2.5[	1
poor:	[2.5, 5[	2
reasonable:	[5, 7.5[	3
good:	[7.5, 10[	4

Four indices of abundance were used in various stock assessment model runs used to develop management advice (Figure below). A major advancement from the 2016 to the 2019 assessment was the development of a joint longline index using high resolution catch and effort information from the main longline fleets operating in the Atlantic (Japan, US, Brazil, Korea and Chinese Taipei). The indices were developed for 3 regions, but only two were used in the assessment: the North Atlantic (Region 1), and the tropical area (Region 2). A new echosounder-based buoy associated index (BAI) index was developed and was assumed to represent the abundance of juvenile yellowfin tuna. An index of larger yellowfin tuna (>80 cm, 10 kg) in free schools for the EU purse seine fleet (EUPSFS index) was also used. SI(b) **SG80 is met.**



Indices used within the stock assessment of yellowfin tuna. Reproduced from ICCAT (2019a).

It should be noted that for all models there are large uncertainties in the value of biomass and fishing mortality at any point in the history, including 2018, therefore it can be deduced that there is not a good understanding of the inherent uncertainties. For SI(b) **SG 100 is not met**.

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

Total catches of the P1 stock is broken down into all nations and all gears. Contracting Parties and Cooperating non-Contracting Parties, Entities and Fishing Entities (CPCs) require the collection of bycatch and discard data in their existing domestic scientific observer programs and logbook programs (Rec 11-10 in ICCAT - 2011d). The ICCAT scoreboard indicates the data availability from the upper end of poor (4.29 –west YFT) to reasonable (6.70-east YFT) See figure under SI(b).

Therefore, it can be considered that there is good information on all other fishery removals from the stock. SI (c) **SG80 is met**.

References

ICCAT 2016c, ICCAT 2019b, ICCAT 2019a, ICCAT 2011d

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

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		**Yes**	**Yes**
Rationale				

A full stock assessment was conducted for yellowfin tuna in 2019, applying two production models (JABBA, MPB) and one age-structured model (Stock Synthesis) to the available catch data through 2018. The four Stock Synthesis model runs, were regarded as representing alternative recruitment, and steepness hypotheses. Likewise, the JABBA runs addressed different hypotheses about initial priors for r, and about which indices of abundance were representing the population. Finally, the base case selected for MPB estimated biomass and fishing mortality trends that varied somewhat from JABBA. In order to capture this uncertainty in the population dynamics for developing the management advice, it was best to incorporate results from all of the accepted model runs (2019c).

Thus, it can be deduced that the uncertainties in some of the biological parameters are realised and appropriate sensitivity tests are done, to address uncertainties. For SI(a) **SG80 and SG100 are met**.

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

All stock assessment methods estimate B_{2018}/B_{MSY} and F_{2018}/F_{MSY}.
B_{2018}/B_{MSY}=1.17 (0.75-1.62) F_{2018}/F_{MSY}=0.96 (0.56-1.5) (90% confidence intervals)

Results are presented in a Kobe plot (Figure 7.2.1.6). Combining the results of all models provides a way to estimate the probability of the stock being in each quadrant of the Kobe plot in 2018. The corresponding probabilities are 54% in the green (not overfished not subject to overfishing), 21% in the orange (subject to overfishing but not overfished) 2% in the yellow (overfished but not subject to overfishing) and 22% in the red (overfished and subject to overfishing). In summary, the results point to a stock status of not overfished (24% probability of overfished status), with no overfishing (43% probability of overfishing taking place).
The Kobe plot is designed around the MSY concept, which is a generic reference point. SI(b) **SG60 is met**.

All stock assessments are able to estimate the stock status relative to MSY-related reference points which are appropriate to the stock (ICCAT, 2019a). For SI(b) **SG80 is met**.

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

	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The various stock assessment approaches evaluate the status of the resource by investigating numerous biological assumption; for example, different values of natural mortality and steepness. Further, different growth assumptions were tested. The results are presented in a probabilistic way, as shown by the Kobe plot as an example in Figure 7.2.1.6. Projections under different catch strategies are presented in a probability matrix (See Table 7.2.1.2).

Therefore, the major sources of uncertainty are identified (**SG60 is met**) and the assessment takes into account uncertainty (**SG80 is met**) and is evaluating stock status relative to reference points (MSY) in a probabilistic way. For SI(c) **SG100 is met**.

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?			**Yes**
Rationale				

Input variance adjustments were iteratively adjusted according to recommendations in Francis (2011). A set of diagnostics were run to evaluate model performance including fits to indices of abundance, length composition residuals, retrospective analysis, hindcasting, likelihood profiling, Age Structured Production Model (ASPM) analysis, jitter analysis and sensitivity runs on influential parameters. Therefore, different hypotheses and assessment approaches have been rigorously explored, tested and shown to be robust. For SI(d) **SG100 is 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 SCRS meet annually and discuss the data, model assumptions and results. This meeting is attended by numerous stock assessment scientists, therefore the assessment of the stock status is subject to peer review. SI(e) **SG 80 has been met**. However, during this meeting, no external reviewer has been invited yet, therefore it cannot be said that the assessment has been internally and externally peer reviewed. For SI(e) **SG100 is not met**.

References

ICCAT 2019a, ICCAT, 2019b, Francis 2011

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

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

7.3 Principle 2

7.3.1 Principle 2 background

The report shall include a summary of the Unit(s) of Assessment (UoA) based on the topics below, referencing electronic or other documents used:

- The aquatic ecosystem, its status and any particularly sensitive areas, habitats or ecosystem features influencing or affected by the UoA.
- The Primary, Secondary and Endangered, Threatened or Protected (ETP) species including their status and relevant management history.
- Specific constraints, e.g. details of any unwanted catch of species, their conservation status and measures taken to minimise this as appropriate.
- If cumulative impacts need consideration for any Principle 2 Performance Indicators, the report shall contain a summary of how this has been addressed, i.e. which other MSC UoAs/fisheries and how the cumulative impacts were considered.

Any information used as supporting rationale should be provided in the scoring tables.

The background shall include information justifying how scoring elements were assigned to components within Principle 2 of the MSC Fisheries Standard (Fisheries Standard v2.01 Section SA3.1, SA3.4.2-SA3.4.5, SA3.7.1). The team may amend the table below to present this information. The report shall include the catch and UoA related mortality of all main Primary, main Secondary and ETP species together with a description of the adequacy of information, identification of data sources used and whether they are qualitative or quantitative.

Reference(s): Fisheries Standard v2.01

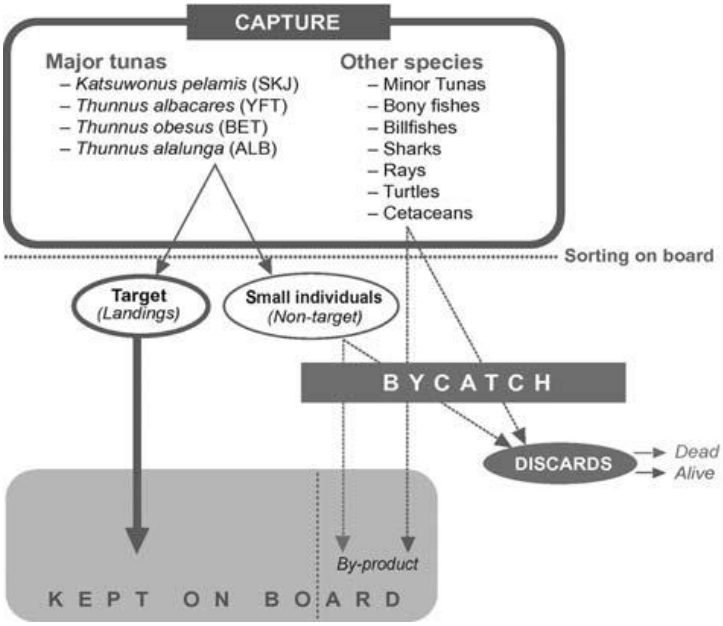
7.3.2 UoC catch composition: species assignment to MSC P2 categories

The species assessed under P2 are those species in the catch that are not covered under P1. The assessment team considered each P2 species within only one of the primary species, secondary species or ETP species components, according to MSC Fisheries Standard SA3.1.3-3.1.5 and SA3.4.4-3.4.5.

7.3.2.1 Sources of information

The different sources of information used by the team to identify and classify the different species components and subcomponents to be assessed against P2 are presented and discussed below.
Since the term by-catch is widely used by all the different sources of information presented below, the assessment team considers important to provide here a clear definition of this term. The ICCAT manual defines the term by-catch as: "*(…) the unintentional/incidental capture of non-target species during fishing operations"*. The fate of those bycatches can be: (i) to be retained; (ii) to be dumped dead, or (iii) to be released alive to the sea (**Figure**). Small individuals of major tunas are also considered as by-catch (non-target).

Figure 7.3.2.1. Conceptual scheme defining the terms used in the present study and describing the origin and fate of organisms caught aboard fishing vessels. Source: from Amandè et al 2011



a. ICCAT list on bycatch and incidental catches

A list of by-catch species recorded as being ever caught by any major tuna fishery occurring within the Convention Area is presented in Appendix 5 of the ICCAT Manual. This list was reviewed and updated with all the species reported until 2010 (Appendix 5.1 at the ICCAT website). As indicated by ICCAT: *"The list is qualitative and is not indicative of quantity or mortality. Thus, the presence of a species in the lists does not imply that it is caught in significant quantities, or that individuals that are caught necessarily die"*.
This list has been used to complete the other sources of information presented below (fishing logbooks and observer's data from the assessed vessels, and relevant scientific publications). For this, we have proceeded as follows:

- Observers on board the assessed vessels between 2014 and 2018 (a total of 192 fishing trips and 1464 FSC sets) recorded catch composition including the total retained and discarded catches observed for the mentioned period. Tunas and tuna-like species other than yellowfin, bigeye and skipjack were recorded under the generic term 'Other tunas' while the remaining teleosts were registered under the generic title 'Other fish'. Therefore, all tunas, tuna-like as well as other teleosts for which ICCAT found that there are records of interactions with purse seiners have also been included in the final list (**Table 7.3.2.9**) for its P2 assessment.

b. Amandè et al 2011

Spanish and French purse seine fishery data (i.e., logbook, well maps, and landing data) and observer's data collected within the framework of DCF programme for 2008 and 2009 were used to update the estimates of bycatch of the European tuna purse seine fishery in the Atlantic Ocean (Amandè, et al. 2011). Observer data were collected during 13 trips and 19 trips in 2008 and 2009, respectively corresponding to 6.7% and 8.5% of total trips, respectively. Fishing sets were categorized into log associated (FOB) and free swimming schools (FSC) according to direct information reported by observers. For the purpose of this assessment the team worked on the FSC data presented in Amandè et al 2011 to elaborate **Table 7.3.2.1**. Annual by-catch for 2008 and 2009 on FSC sets was estimated to be about 1,529 t and 4,253 t, respectively, corresponding to a mean annual value of 39 t per 1,000 t and 87 t per 1,000 t of production, respectively. This represents about 6% of total catch during the studied period. By-catch of tunas represented 86.7% of the total by-catch corresponding to 56.8 t/1,000 t of unloaded tuna. For the remaining 13.3%, bony fishes represented 5.2% (3.4 t/1,000 t), billfishes 3.5% (2.6 t/1,000 t), sharks and rays 4.6% (0.4 t/1,000 t). The authors provide a detailed list of the species accounting for the bycatch, although they do not present their volumes. However, taking into account the percentages of the total catch accounted for each of the species group (tunas, bony fishes, etc.), it is clear that any single species would meet the requirements for being assessed as a 'Main' P2 component. All species listed in this paper were included in **Table 7.3.2.9** as P2-species component to be assessed in this assessment.

Table 7.3.2.2. Estimated bycatch (tones) by species group FSC sets. Source: adapted from Amandè et al 2011

	2008	2009	TOTAL	t/1000t of production	% of the catch	% of the bycatch
Catch	41,032	53,007	94,039			
Production	39,503	48,754	88,257			
Total bycatch	1,529	4,253	5,782	65.5	6.15%	
rays	5	26	31	0.4	0.03%	0.54%
sharks	12	221	233	2.6	0.25%	4.03%
tunas	1,296	3,719	5,015	56.8	5.33%	86.73%
billfishes	101	99	200	2.3	0.21%	3.46%
bony fishes	115	188	303	3.4	0.32%	5.24%

c. Gondra et al 2017

This paper presents an update for the period 2010-2016 of the bycatch estimations for the European tuna purse seine fishery operating in the Atlantic Ocean. Bycatch data were collected by observers on board. Observer coverage increased progressively from 15 trips in 2010, to 114 and 107 trips in 2015 and 2016 respectively. Bycatch data were stratified by quarter and fishing mode (FSC and FAD sets). Again, tunas (neritic tunas and small size tunas) represent the major part of the bycatch (between 36 and 88% depending on the year), followed by bony fish (1-29%), sharks (0-47%), billfishes (2-12%), rays (1-5%) and turtles (0-1%). The estimation of the bycatch generated to achieve 1,000 tons of landed tropical tunas is shown in **Table 7.3.2.3**. As bycatch is known to account for a low percentage of the catches (between 2% according to data collected by Sea Eye observers on board the assessed vessels and 6% according to Amandè et al 2011) data shown on **Table 7.3.2.3** allows to interfere that none of the listed species groups would account for more than 3% of the total catches. Again, this allows the team to interfere that any single species would not meet the requirements for being assessed as a 'Main' P2 component. All species listed in this paper (including turtles and cetaceans) were included in **Table 7.3.2.9** as P2-species component to be assessed in this assessment.

Table 7.3.2.3. Bycatch tones per 1,000 t of production (BET+YFT+SKJ landed) by species group on FSC sets performed by European tuna purse seiners operating in the Atlantic between 2010-2016. Source: Gondra et al 2017

	2010	2011	2012	2013	2014	2015	2016
Rays	0.58	0.22	0.27	0.56	0.14	0.26	0.56
Sharks	2.81	1.06	0.07	5.55	3.28	10.73	11.43
Target tunas	1.13	33.58	1.64	1.23	1.62	9.49	4.00
Other tunas	26.36	0.53	14.27	2.64	4.68	20.99	7.30
Billfishes	2.03	1.56	2.23	1.23	0.82	0.83	0.78
Bony fishes	1.79	0.52	2.96	0.30	0.16	0.33	0.37
Turtles	0.27	0.18	0.37	0.14	0.15	0.11	0.14

d. UoA catch data from the logbooks

Purse seiners data related to catch composition are register both in logbook and landings data. However, landings data might not necessarily reflect the detailed information on fishing operations. Therefore, FSC sets cannot always being identified in landings data.

Species composition of the catches varies significantly depending on the type of fishing operation (FSC or FOB), although in both cases the assessed vessels target primarily yellowfin tuna (*Thunnus albacares*) tuna, skipjack tuna (*Katsuwonus pelamis*) and bigeye tuna (*T. obesus*), comprising almost 100% of the volume caught (98.90%). Yellowfin and bigeye are considered to belong to single Atlantic stocks, whereas skipjack is split into an Eastern and a Western stock; the UoA exploits the Eastern stock only.

Logbook data of the assessed vessels shows that yellowfin tuna comprises up to almost 69% of the FSC sets catches, followed by skipjack tuna, which comprises almost 27%, and less than 4% bigeye tuna (Table 7.3.2.4).

Table 7.3.2.4. Logbook catches (t) of the FSC sets and the estimated catch composition (%) for the defined period (2014-2018). Source: Client

Species	Scientific name	2014	2015	2016	2017	2018	%
Yellowfin tuna	*Thunnus albacares*	4,050	10,889	9,386	3,443	7,079	**68.78%**
Skipjack tuna	*Katsuwonus pelamis*	1,051	3,529	2,096	1,806	4,824	**26.26%**
Bigeye tuna	*Thunnus obesus*	295	278	291	301	792	**3.86%**
Other Tuna		13	118	106	183	137	**1.10%**
	Total	**5,409**	**14,814**	**11,879**	**5,733**	**12,832**	

e. <u>Data from observers on board the UoA</u>

The observer program on board the assessed vessels provides detailed information on fishing operations and catch composition, including fate of those catches (retained, released alive, discarded dead). The current observer program in place ensures compliance with ICCAT Recommendations [16-11] and [19-02] and constitutes one of the measures established in the Code of Good Practices signed by the ANABAC fleet in 2012. Observers recorded weight for tunas, while for other species groups (bony fishes, billfishes, sharks, turtles, etc.) number of individuals were observed and weight estimates are provided based on the estimated mean weight for each species.

Data recorded by observers on board the assessed vessels (**Table 7.3.2.5** and **7.3.2.6**) show that yellowfin tuna clearly dominates tuna catches from unassociated sets (69.94% in volume), followed by skipjack (26.12%), while the sum of bigeye and other tunas accounts for less than 4%. These data are similar to those reported in logbooks by the assessed fleet in the period 2014-2018 (**Table 7.3.2.4**).

Sets on FSC is a highly selective fishery since discards (both release alive and discarded dead) of target species account for less than 1% of production and, in turn, the three tropical tuna species (yellowfin, skipjack and bigeye tuna) account for more than 99% of the landings (**Table 7.3.2.5** and **7.3.2.6**).

Table 11 presents the catch composition of FSC sets including total catch (including retained, released and discarded bycatch), landings (all retained catches), production (YFT+SKJ+BET landings) and bycatch composition by species group for observer's data set from 2014 to 2018. From these data, tons per 1,000 production and % of catches and bycatch (including the fate of bycatch) were estimated from observer's data.

The level of non-target caught species reported as bycatch (retained and discarded) in the Atlantic Ocean are low (an average of less than 4% of the total catch weight (tonnes from 2014-2018) from FSC sets (**Table 7.3.2.7**). From observer's data, there does not appear to be any non-target species that compromise more than 2 % of the catch by weight (**Table 7.3.2.8**).

The species group with the highest bycatch level is non-target tunas with 68% of the weight of total bycatch (**Table 7.3.2.7**: total bycatch between 2014-2018 accounted for 1,214 t). Almost 90% of the non-target tunas' bycatch is retained on board. The non-target tunas 'bycatch´ species with higher contribution to the production are Little tunny (*Euthynnus alletteratus*) and Frigate tuna (*Auxis thazard*), accounting for 13.31 t and 10.11 t for every 1,000 t of tropical tunas landed (**Table 7.3.2.7**). Between 85 and 94% of these individuals of small tuna's species group are retained, while the rest are discarded dead. Significant catches of this small tuna retained are diverted to local West African markets, predominantly in Abidjan, and sold as faux poissons.

The species group with the second highest levels of bycatch is sharks, including silky shark (*Carcharhinus falciformis*), *Carcharhinidae sp* and blue shark (*Prionace glauca)* (**Table 7.3.2.7** and **7.3.2.8**). For the period 2014-2018, around 2,000 individuals were recorded by observers in FSC sets; but those individuals represented less than 0.5% of the total catch weight (**Table 7.3.2.7**). Most of these individual (more than 60%) were released alive.

Billfish catches accounted for around 1.8 % in FSC sets (**Table 7.3.2.7**). In terms of species composition, *Istiophorus albicans* is the main species in FSC sets (**Table 7.3.2.8**). There were more than 30 different species of bony fish reported in the ANABAC fleet observer's data set in the period 2014-2018. However, again, all together they constituted less than 2% of the total bycatch in weight, almost 95% of them were retained (**Table 7.3.2.7**).

Observers reported 101 turtles catch events during the whole studied period in FSC sets (**Table 7.3.2.8**). 100% were released alive. In terms of species composition*, Lepidochelys olivacea* was the main caught species followed by *Caretta caretta.*

Whale sharks, corresponding to 10 individuals of *Rhincodon typus* were reported by observers (**Table 7.3.2.8**). Individuals were taken alive from the net, escaped by their own or were released from the vessel. Cetaceans, similar case, 12 individuals were observed during the period 2014-2018, but all individuals were released alive before the retrieval of the net.

According to logbook data and observer's coverage, only yellowfin tuna and skipjack tuna account for more than the 5 % of the total volume of the catches (**Table 7.3.2.4** and **Table 7.3.2.8**).

Table 7.3.2.5. Tuna catches (t) corresponding to FSC sets by year. Data recorded by observers on board the assessed vessels between 2014 and 2018 (192 fishing trips and 1464 FSC sets). Data includes the retained and discarded catches observed by year. Source: Client

FSC sets	2014			2015			2016			2017			2018		
	L	D	DR	L	D	DR	L	D	DR	L	D	DR	L	D	DR
YFT	1,413.70	1.09	0.08%	10,253.65	2.45	0.02%	7,601.26	9.66	0.13%	2,143.06	1.16	0.05%	2,333.12		0.00%
BET			0.00%	155.00		0.00%	230.00		0.00%	38.00		0.00%	69.00		0.00%
SKJ	125.00	0.01	0.01%	2,884.30	4.09	0.14%	1,672.00	11.03	0.66%	490.00	0.12	0.02%	3,560.00		0.00%
Others	159.00	0.00	0.00%	231.96	44.05	15.96%	133.00	18.41	12.16%	106.00	6.80	6.03%	114.00	15.20	11.76%
Total	1,697.70	1.11	0.07%	13,524.90	50.59	0.37%	9,636.26	39.10	0.40%	2,777.06	8.08	0.29%	6,076.12	15.20	0.25%

Table 7.3.2.6. Total tuna catches (t) corresponding to FSC sets. Data recorded by observers on board the assessed vessels between 2014 and 2018 (192 fishing trips and 1464 FSC sets). Data includes the total retained and discarded catches observed for the mentioned period. Source: Client

Species	Retained	Discarded	Total tuna catches	% of the TT catches
YFT	23,407.77	14.36	23,422.14	69.94%
BET	492.00	0.00	492.00	1.47%
SKJ	8,731.30	15.25	8,746.55	26.12%
Other Tuna	743.96	84.46	828.42	2.47%
Total	**33,375.03**	**114.07**	**33,489.10**	

Table 7.3.2.7. Catch composition of FSC sets and fate of bycatch (by species groups) in weight (tons). Data recorded by observers on board the assessed vessels between 2014 and 2018 (192 fishing trips and 1464 FSC sets). Data includes the total retained and discarded catches observed for the mentioned period. Source: Client

	Tons						t/1000 t of production	% of all catches	% of total bycatch	Fate (% weight)		
	2014	2015	2016	2017	2018	Total				Retained	Released alive	Discarded dead
All catches	1,704.97	13,313.71	9,869.51	2,835.20	6,121.33	33,844.72						
Landings	1,700.76	13,197.88	9,641.52	2,779.31	6,080.54	33,400.02						
Production	1,538.69	12,955.95	9,503.26	2,671.06	5,962.12	32,631.07						
Total bycatch	166.28	357.76	366.25	164.14	159.21	1,213.65	37.19	3.59				
Rays	0.31	6.27	5.58	2.17	8.67	23.01	0.71	0.07	1.90	1.77%	66.10%	32.13%
Sharks	2.64	45.63	94.78	45.49	15.39	203.93	6.25	0.60	16.80	0.62%	58.23%	41.15%
Target tunas	1.11	6.54	20.68	1.28	0.00	29.61	0.91	0.09	2.44	0.00%	100.00%	
Other tunas	159.00	276.00	151.41	112.80	129.20	828.42	25.39	2.45	68.26	89.80%	10.20%	
Billfishes	3.01	9.18	3.67	1.66	4.06	21.57	0.66	0.06	1.78	94.83%	0.22%	4.95%
Other bony fish	0.08	9.25	3.13	0.17	0.96	13.58	0.42	0.04	1.12	21.01%	40.67%	38.32%
Turtles	0.13	2.53	2.30	0.57	0.94	6.47	0.20	0.02	0.53	0.00%	100.00%	0.00%

Table 7.3.2.8. Data on catch composition (total weight and number of individuals) of FSC sets and fate of each of the species caught). Data recorded by observers on board the assessed vessels between 2014 and 2018 (192 fishing trips and 1464 FSC sets). Data includes the total retained and discarded catches observed for the mentioned period. Source: Client

		Total weight	N ind	t/1000 t of production	% of all catches	Fate (% weight)		
						Retained	Released alive	Discarded dead
Rays	Dasyatidae	0.01	4	0.00	0.00	0.00%	75.00%	25.00%
	Dasyatys (Pteroplatytrygon) violacea	0.11	35	0.00	0.00	17.14%	71.41%	11.45%
	Manta birostris	4.13	39	0.13	0.01	2.16%	79.33%	18.51%
	Mobula japanica (rancureli)	4.05	27	0.12	0.01	0.00%	66.67%	33.33%
	Mobula mobular	11.41	76	0.35	0.03	1.31%	57.83%	40.85%
	Mobula sp.	3.15	21	0.10	0.01	4.76%	76.19%	19.05%
	Mobulidae	0.15	1	0.00	0.00	0.00%	100.00%	0.00%
Sharks	Carcharhinidae sp.	22.25	445	0.68	0.07	0.00%	68.76%	31.24%
	Carcharhinus falciformis	153.06	1,425	4.69	0.45	0.67%	54.67%	44.66%
	Carcharhinus longimanus	0.88	12	0.03	0.00	0.00%	69.27%	30.73%
	Isistius brasiliensis	0.00	1	0.00	0.00	0.00%	0.00%	100.00%
	Isurus oxyrinchus	1.66	19	0.05	0.00	7.45%	62.43%	30.12%
	Orectolobiformes	0.05	1	0.00	0.00	100.00%	0.00%	0.00%
	Prionace glauca	18.97	136	0.58	0.06	0.40%	70.19%	29.41%
	Requin non identified	1.78	43	0.05	0.01	0.00%	100.00%	0.00%
	Sphyrna lewini	2.91	62	0.09	0.01	0.00%	81.71%	18.29%
	Sphyrna mokarran	1.96	24	0.06	0.01	0.00%	12.64%	87.36%
	Sphyrna zygaena	0.41	6	0.01	0.00	0.00%	100.00%	0.00%
	Rhincodon typus	16.90	10	0.52	0.05	0.00%	100.00%	0.00%
Target tunas	Katsuwonus pelamis	8,746.55	(*)	268.04	**25.84**	99.83%	0.00%	0.17%
	Thunnus albacares	23,422.14	(*)	717.79	**69.20**	99.94%	0.00%	0.06%
	Thunnus obesus	492.00	(*)	15.08	1.45	100.00%	0.00%	0.00%
Other tunas	Euthynnus alletteratus	434.31	(*)	13.31	1.28	85.38%	0.00%	14.62%
	Thunnus alalunga	58.00	(*)	1.78	0.17	100.00%	0.00%	0.00%
	Auxis rochei	0.26	(*)	0.01	0.00	98.84%	0.00%	1.16%
	Auxis sp.	6.10	(*)	0.19	0.02	100.00%	0.00%	0.00%
	Auxis thazard	329.75	(*)	10.11	0.97	93.65%	0.00%	6.35%
Billfishes	Istiophoridae	0.46	15	0.01	0.00	94.27%	0.00%	5.73%
	Istiophorus albicans	11.77	450	0.36	0.03	98.49%	0.66%	0.85%
	Makaira indica	1.46	19	0.04	0.00	92.58%	0.00%	7.42%
	Makaira nigricans	5.36	41	0.16	0.02	94.08%	0.00%	5.92%
	Tetrapturus albidus	0.08	2	0.00	0.00	100.00%	0.00%	0.00%
	Tetrapturus angustirostris	0.25	10	0.01	0.00	100.00%	0.00%	0.00%
	Xiphias gladius	2.23	7	0.07	0.01	76.85%	0.00%	23.15%
Other bony fish	Ablennes hians	0.00	2	0.00	0.00	100.00%	0.00%	0.00%
	Acanthocybium solandri	0.34	42	0.01	0.00	100.00%	0.00%	0.00%
	Balistidae	0.00	1	0.00	0.00	0.00%	0.00%	100.00%

	Canthidermis maculata	0.50	717	0.02	0.00	42.29%	28.41%	29.30%
	Carangidae	0.00	1	0.00	0.00	100.00%	0.00%	0.00%
	Caranx crysos	0.41	603	0.01	0.00	48.02%	12.68%	39.30%
	Coryphaena equiselis	0.01	3	0.00	0.00	100.00%	0.00%	0.00%
	Coryphaena hippurus	1.44	232	0.04	0.00	100.00%	0.00%	0.00%
	Decapterus macarellus	0.00	2	0.00	0.00	100.00%	0.00%	0.00%
	Diodon eydouxii	0.03	50	0.00	0.00	0.00%	0.00%	100.00%
	Diodon hystrix	0.10	200	0.00	0.00	0.00%	0.00%	100.00%
	Diodontidae	0.04	72	0.00	0.00	69.44%	29.17%	1.39%
	Echeneis naucrates	0.00	8	0.00	0.00	0.00%	75.00%	25.00%
	Elagatis bipinnulata	0.62	268	0.02	0.00	71.90%	22.32%	5.78%
	Exocoetidae	0.00	3	0.00	0.00	0.00%	0.00%	100.00%
	Lagocephalus lagocephalus	0.09	187	0.00	0.00	1.60%	57.22%	41.18%
	Lobotes surinamensis	0.04	22	0.00	0.00	91.65%	2.53%	5.82%
	Masturus lanceolatus	0.17	16	0.01	0.00	0.00%	100.00%	0.00%
	Mola mola	2.69	36	0.08	0.01	0.00%	80.49%	19.51%
	Ranzania laevis	7.16	3,239	0.22	0.02	1.34%	40.59%	58.07%
	Remora remora	0.01	12	0.00	0.00	8.33%	83.33%	8.33%
	Seriola rivoliana	0.01	27	0.00	0.00	55.56%	0.00%	44.44%
	Sphyraena barracuda	0.04	9	0.00	0.00	100.00%	0.00%	0.00%
	Tylosurus crocodilus	0.00	1	0.00	0.00	0.00%	0.00%	100.00%
Turtles	Caretta caretta	2.19	36	0.07	0.01	0.00%	100.00%	0.00%
	Chelonia mydas	0.07	4	0.00	0.00	0.00%	100.00%	0.00%
	Dermochelys coriacea	2.77	13	0.08	0.01	0.00%	100.00%	0.00%
	Eretmochelys imbricata	0.08	7	0.00	0.00	0.00%	100.00%	0.00%
	Lepidochelys kempii	0.06	2	0.00	0.00	0.00%	100.00%	0.00%
	Lepidochelys olivacea	1.29	39	0.04	0.00	0.00%	100.00%	0.00%
Cetaceans	Balaenoptera edeni	40.00	4	1.23	0.12	0.00%	100.00%	0.00%
	Mysticate non identified	30.00	8	0.92	0.09	0.00%	100.00%	0.00%

7.3.2.2 P2 species classification following MSC requirements

According to the different sources of information presented above, the assessment team elaborated the most complete list of all species susceptible to interact with the UoC, and they were classified into primary (main/minor), secondary (main/minor) and ETP species according to MSC requirements.

Table 7.3.2.9. List of all species susceptible to interact with the UoC classified according to MSC Fisheries Standard SA3.1.3-3.1.5 and SA3.4.4.-3.4.5. For each of the species it is indicated in which sources of information (as described in section 0: (A) ICCAT bycatch list; (B) Amandè et al 2011; (C) Gondra et al (2017); (D) UoA logbooks; (E) Observer data on board the UoA) appears to interact with unassociated purse seiners. Data deficient column was assessed against FCP7.7.3.

ICCAT Code	Common name	Scientific name	P2 component	P2 subcomp	ETP Regulation	Sources of information	Data deficient
Tunas and tuna-like species							
SKJ	Skipjack tuna	*Katsuwonus pelamis*	Primary	Main	N/A	A, B, C, D, E	NO

BET	Bigeye tuna	*Thunnus obesus*	Primary	Minor	N/A	A, B, C, D, E	NO
ALB	Albacore	*Thunnus alalunga*	Primary	Minor	N/A	A, B, C, D, E	NO
LTA	Atlantic black skj	*Euthynnus alletteratus*	Secondary	Minor	N/A	A, B, C, E	YES
BLT	Bullet tuna	*Auxis rochei*	Secondary	Minor	N/A	A, B, C,E	YES
FRI	Frigate tuna	*Auxis thazard*	Secondary	Minor	N/A	A, B, C, D, E	YES
BLF	Blackfin tuna	*Thunnus atlanticus*	Secondary	Minor	N/A	A, C	YES
KAW	Kawakawa	*Euthynnus affinis*	Secondary	Minor	N/A	B, C	YES
MAW	West African Spanish mackerel	*Scomberomorus tritor*	Secondary	Minor	N/A	A	YES
			Billfishes				
SAI	Atlantic sailfish	*Istiophorus albicans*	Primary	Minor	N/A	A, B, C, E	NO
BUM	Blue marlin	*Makaira nigricans*	Primary	Minor	N/A	A, B, C, E	NO
SWO	Swordfish	*Xiphias gladius*	Primary	Minor	N/A	A, C, E	NO
WHM	Atlantic white marlin	*Tetrapturus albidus*	Primary	Minor	N/A	A, B, C, E	NO
		Tetrapturus angustirostris	Secondary	Minor	N/A	E	YES
BLM	Black marlin	*Makaira indica*	Secondary	Minor	N/A	B, C,E	YES
SPF	Longbill spearfish	*Tetrapturus pfluegeri*	Secondary	Minor	N/A	A, C	YES
			Other teleosts				
BAF	Flat needlefish	*Ablennes hians*	Secondary	Minor	N/A	E	YES
WHM	Wahoo	*Acanthocybium solandri*	Secondary	Minor	N/A	A, B, C, E	YES
AWI	Orange filefish	*Aluterus schoepfii*	Secondary	Minor	N/A	A	YES
ALM	Unicorn leatherjacket filefish	*Aluterus monoceros*	Secondary	Minor	N/A	B, C	YES
-	Triggerfish	*Balistes capriscus*	Secondary	Minor	N/A	B	YES
TRG	Grey triggerfish	*Balistes carolinensis*	Secondary	Minor	N/A	A, B, C	YES
BVP	Bluespotted triggerfish	*Balistes punctatus*	Secondary	Minor	N/A	A	YES
CNT	Rough triggerfish	*Canthidermis maculata*	Secondary	Minor	N/A	A, B, C, E	YES
RUB	Blue runner	*Caranx crysos*	Secondary	Minor	N/A	A, B, C, E	YES
CFW	Pompano dolphinfish	*Coryphaena equiselis*	Secondary	Minor	N/A	A,B, C, E	YES
DOL	Common dolphinfish	*Coryphaena hippurus*	Secondary	Minor	N/A	A, B, C, E	YES
MSD	Mackerel scad	*Decapterus macarellus*	Secondary	Minor	N/A	E	YES
	Pelagic porcupinefish	*Diodon eydouxii*	Secondary	Minor	N/A	E	YES
DIY	Spot-fin porcupinefish	*Diodon hystrix*	Secondary	Minor	N/A	A, C,E	YES
EHN	Slender sharksucker	*Echeneis naucrates*	Secondary	Minor	N/A	E	YES
RRU	Rainbow runner	*Elagatis bipinnulata*	Secondary	Minor	N/A	A, B, C, E	YES
EXQ	Flying halfbeak	*Euleptorhamphus velox*	Secondary	Minor	N/A	A	YES
FLY	Flyingfishes nei	*Exocoetidae*	Secondary	Minor	N/A	A,E	YES
KYS	Bermuda sea chub	*Kyphosus sectatrix*	Secondary	Minor	N/A	A, B, C	YES

LGH	Oceanic puffer	*Lagocephalus lagocephalus*	Secondary	Minor	N/A	E	YES
LAG	Opah	*Lampris guttatus*	Secondary	Minor	N/A	A	YES
LOB	Tripletail	*Lobotes surinamensis*	Secondary	Minor	N/A	A, B, C, E	YES
MRW	Sharptail mola	*Masturus lanceolatus*	Secondary	Minor	N/A	A, B, C, E	YES
MOX	Ocean sunfish	*Mola mola*	Secondary	Minor	N/A	A, B, C, E	YES
NAU	Pilotfish	*Naucrates ductor*	Secondary	Minor	N/A	A	YES
HTL	Slender suckerfish	*Phtheirichthys lineatus*	Secondary	Minor	N/A	A	YES
RZV	Slender sunfish	*Ranzania laevis*	Secondary	Minor	N/A		YES
REO	Shark sucker	*Remora remora*	Secondary	Minor	N/A	A, B, C,E	YES
OIL	Oilfish	*Ruvettus pretiosus*	Secondary	Minor	N/A	A, B	YES
MAC	Atlantic mackerel	*Scomber scombrus*	Secondary	Minor	N/A	A	YES
YTL	Longfin yellowtail	*Seriola rivoliana*	Secondary	Minor	N/A	A, C, E	YES
GBA	Great barracuda	*Sphyraena barracuda*	Secondary	Minor	N/A	A, B, C,E	YES
BTS	Houndfish	*Tylosurus crocodilus*	Secondary	Minor	N/A	E	YES
USE	Cottonmouth jack	*Uraspis secunda*	Secondary	Minor	N/A	A, C	YES
			Rays				
RMJ	Spinetail mobula	*Mobula japanica*	ETP	N/A	CMS (Ap. I);	B,E	NO
RMM	Devil fish	*Mobula mobular*	ETP	N/A	CMS (Ap. I);	A,B,E	NO
RMB	Giant manta	*Manta birostris*	ETP	N/A	CMS (Ap. I);	A,E	NO
RMO	Smoothtail mobula	*Mobula thurstoni*	ETP	N/A	CMS (Ap. I);	A	NO
RMT	Chilean devil ray	*Mobula tarapacana*	ETP	N/A	CMS (Ap. I);	B, E	NO
-	Atlantic torpedo	*Tetronarce nobiliana*	Secondary	Minor	N/A	A	YES
PLS	Pelagic stingray	*Pteroplatytrygon violacea*	Secondary	Minor	N/A	A,B,E	YES
			Sharks				
BSH	Blue shark	*Prionace glauca*	Primary	Minor	N/A	A, C, E	NO
ISB	Cookie cutter shark	*Isistius brasiliensis*	Secondary	Minor	N/A	E	YES
SMA	Shortfin mako	*Isurus oxyrinchus*	Primary	Minor	N/A	A, B, C, E	NO
FAL	Silky shark	*Carcharhinus falciformis*	ETP	N/A	ICCAT Rec [11-08];	A, B, C, E	NO
OCS	Oceanic whitetip shark	*Carcharhinus longimanus*	ETP	N/A	ICCAT Rec [10-07]	A, B, C, E	NO
PTH	Pelagic thresher	*Alopias pelagicus*	ETP	N/A	RD139/2011; ICCAT Rec. 09-07	C	
SPL	Scalloped hammerhead	*Sphyrna lewini*	ETP	N/A	ICCAT Rec [10-08]; CMS (Ap.I);	A, B, C, E	NO
SPK	Great hammerhead	*Sphyrna mokarra*	ETP	N/A		A, C, E	NO
SPZ	Smooth hammerhead	*Sphyrna zygaena*	ETP	N/A		A, B, C, E	NO
RHN	Whale shark	*Rhincodon typus*	ETP	N/A	CMS(Ap.I), SICA Regulation OSP-07-2014, Ministerial Agreement No 713-2014	A, E	NO
			Seabirds				
No interactions with seabirds recorded							
			Turtles				
LKY	Kemp's ridley turtle	*Lepidochelys kempii*	ETP	N/A	IUCN (CR) CITES (Ap.I); CMS (Ap.I); Atlantic Turtles MOU;	A, C, E	NO

LKV	Olive Ridley turtle	*Lepidochelys olivacea*	ETP	N/A	IUCN (VU) CITES (Ap.I) ; CMS (Ap. I) ;	C, E	NO
TTL	Loggerhead turtle	*Caretta caretta*	ETP	N/A	IUCN (VU) CITES (Ap.I) ; CMS (Ap. I) ;	A, C, E	NO
TUG	Green turtle	*Chelonia mydas*	ETP	N/A	IUCN (EN) CITES (Ap.I) ; CMS (Ap. I) ;	A, C, E	NO
TTH	Hawksbill turtle	*Eretmochelys imbricata*	ETP	N/A	IUCN (CR) CITES (Ap.I); CMS (Ap. I);	A, C, E	NO
DKK	Leatherback Turtle	*Dermochelys coriacea*	ETP	N/A	IUCN (VU) CITES (Ap.I) ; CMS (Ap. I) ;	A, C, E	NO
Cetaceans							
BRW	Bryde's whale	*Balaenoptera edeni*	ETP	N/A	CITES (Ap.I); CMS (Ap.I)	A, C, E	NO
SHW	Short-finned pilot whale	*Globicephala macrorhynchus*	ETP	N/A	Western African Aquatic Mammals CMS MoU	C	NO
PIW	Long-finned pilot whale	*Globicephala melas*	ETP	N/A	Western African Aquatic Mammals CMS MoU	C	NO
FIW	Fin whale	*Balaenoptera physalis*	ETP	N/A	CITES (Ap.I); CMS (Ap.I)	A, C,	NO
HUW	Humpback whale	*Megaptera novaeangliae*	ETP	N/A	CITES (Ap.I); CMS (Ap.I)	A, C,	NO
MIW	Minke whale	*Balaenoptera acutorostrata*	ETP	N/A	CITES (Ap.I)	A	NO
SIW	Sei whale	*Balaenoptera borealis*	ETP	N/A	IUCN (EN) CITES (Ap.I)	A	NO
SPW	Sperm whale	*Physeter macrocepahlus*	ETP	N/A	IUCN (VU) CITES (Ap.I) ; CMS (Ap.I)	C	NO

7.3.3 Primary species impacted by the UoC

The difference between 'Primary' and 'Secondary' species lies on whether management is based on biological reference points (primary) or not (secondary). On the other hand, the difference between 'Main' and 'Minor' lies on the proportion (in weight) that a particular species represents in the catch. According to MSC Fisheries Standard SA3.4.2-3.4.5, the designated weight threshold to differentiate between 'Main' and 'Minor' is 5% (or 2% in the case of less resilient species): species accounting ≥5% in weight of the total catch are considered as 'Main', while species falling below that threshold are classified as 'Minor' (unless the total catch of the UoA is exceptionally large, such that even small proportions of a P2 species significantly impact the affected stock, MSC Fisheries Standard SA3.4.4).

Among all the species listed in **Table 7.3.2.9**, only in the case of 3 tunas species (skipjack tuna, bigeye tuna and albacore), 4 billfishes (swordfish, Atlantic sailfish, blue marlin and Atlantic white marlin) and 2 sharks (blue shark and shortfin mako shark) fishery management is based on biological reference points as a result of stock assessments performed by the SCRS.

According to logbook and observers data (**Table 7.3.2.8**) just skipjack tuna account for more than 5% of the total volume of the UoC catches. Therefore, this species is the only one classified as 'main' subcomponents. The remaining 9 species will be assessed as 'Minor' subcomponents.

- 1 subcomponent as main primary: skipjack (East Atlantic stock).
- 8 subcomponents as minor primary: albacore (Stocks N & S), bigeye tuna, swordfish (Stocks N & S), Atlantic sailfish, blue marlin, Atlantic white marlin and blue shark (stocks N & S) and Shortfin mako shark (Stocks N & S).

Detailed information on the **main primary** subcomponent is provided below:

Eastern Skipjack tuna (*Katsuwonus pelamis*) (extracted from ICCAT, 2017)

Biological background

Skipjack tuna is a gregarious species that is found in schools in the tropical and subtropical waters of the three oceans. Skipjack is the predominant species found under fish aggregation devices (FADs) where it is caught in association with juvenile yellowfin tuna, bigeye tuna and with other species of epipelagic fauna. Skipjack is a species showing an early maturity (around first year of life), high fecundity and spawns opportunistically throughout the year in warm waters above 25º C. Skipjack is also thought to be a faster-maturing and shorter lived species than yellowfin tuna. Skipjack has a 2-stanza growth, with fast growth during the pre-recruitment phase (from birth to 40cm) and an average growth for larger individuals between equatorial and temperate growth rates. Different natural mortality equations were used for fish sized below and above 15cm.

Stock structure and mixing

Because of limited movements observed from tagging data, there is a very low probability of mixing between skipjack distributed in the North and South Atlantic (ICCAT 2014).

Catches

Following the historic record in 2013 (255,730 t), the total catches of skipjack throughout the Atlantic Ocean (including catches of "faux poisson" landed in Côte d'Ivoire) remain high, reaching 245,933 t in 2016 (**Figure 7.3.3.1**Figure). This represents a very sharp rise compared to the average catches of the five years prior to 2010 (155,157 t). It is possible, however, that the catches of a segment of the Ghanaian purse seine fleet, transhipped on carriers, have escaped the fishery statistics collection process before 2011, but this has been corrected for by now. The numerous changes that have occurred in the skipjack fishery since the early 1990s (such as the progressive use of FADs and the increase of the fishing area towards the west and north) have brought about an increase in skipjack catchability and in the biomass proportion that is exploited. SKJ catches have steadily increased in the Eastern Atlantic since the early sixties, and especially during recent years (2010-2013). The increased fishing pressure due to FADs and due to the increasing SKJ prices over a sustained period could be indicative of higher catches being sustainable. FAD fisheries are catching the majority of total catches in the Eastern Atlantic (56% of total SKJ catches during the period 2009-2013).
The average rate of discards of skipjack on FADs by European purse seiners operating in the eastern Atlantic has been estimated based on board observer programmes to be 42 kg per t of skipjack landed. Furthermore, the amount of small skipjack (average size 37 cm FL) landed in the local market of Abidjan in Côte d'Ivoire as "faux poisson" has been estimated at 235 kg per t of skipjack landed (i.e. an average of 6,641 t/year between 1988 and 2007 for the European or associated purse seiners). However, the latest estimates indicate values close to 10,000 t/year between 2005 and 2014 for all purse seiners operating in the eastern Atlantic (skipjack representing around 30% of the total "faux poisson": the species composition in 2014 has not been taken into account because it seems less accurate than in previous years). These estimates are incorporated into the reported historical catches for the EU purse seiners since 1982 (**Figure 7.3.3.2**), as well as in the catch-at-size matrix. "Faux poisson" estimates for 2015 and 2016 are not yet available. Figure 7.3.3.2 illustrates the catches for the bait boat and purse seine fishery from 1950 to 2016 and it can be seen that purse seine landings are much higher than those from bait boats, especially since FAD's have been introduced.

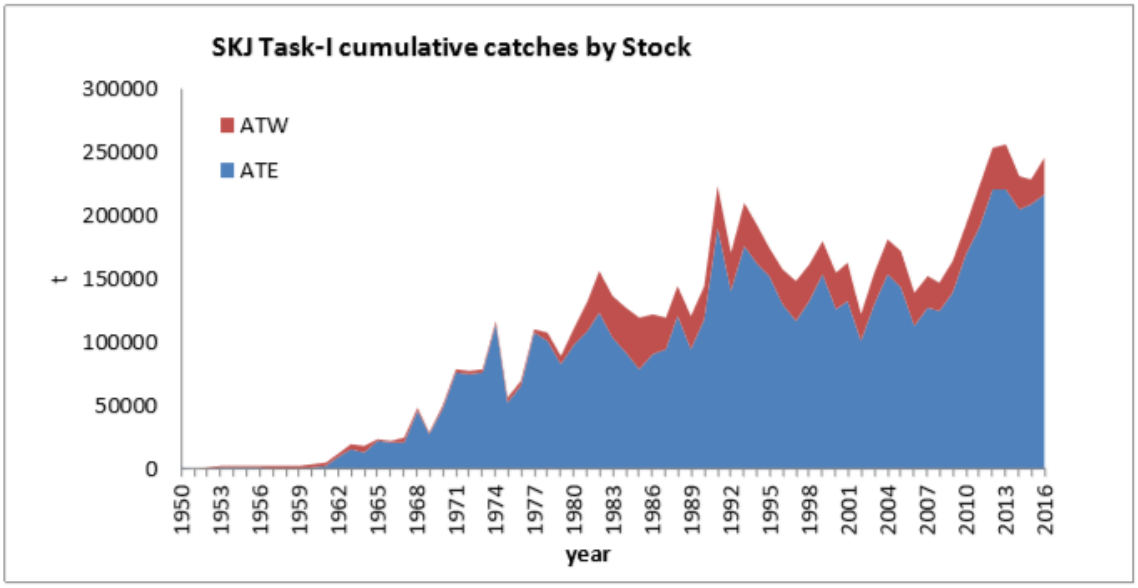


Figure 7.3.3.1. Total skipjack catches (t) in the Atlantic and by stock (East and West) between 1950 and 2016. Skipjack estimates in the faux poissons landed in Côte d'Ivoire were included in the skipjack trade catches in the eastern Atlantic except for 2016. It is

possible that skipjack catches taken in the eastern Atlantic in recent years were not reported or were under-estimated in the logbook correction of species composition based on multi-species sampling carried out in ports. The 2016 figure is still preliminary.

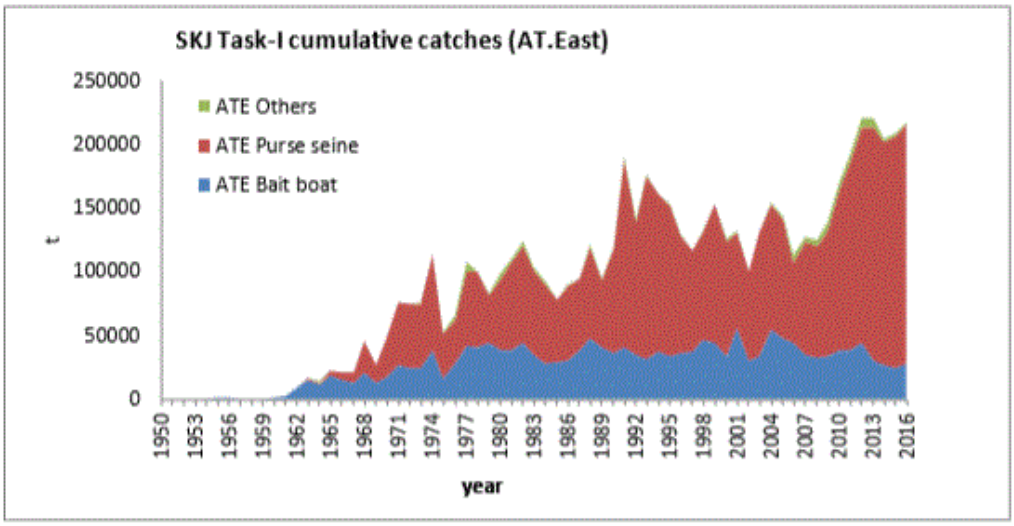


Figure 7.3.3.2. Skipjack catches in the eastern Atlantic, by gear (1950-2016), after correction of Ghana's data by species from 1996 to 2014.

Fishing dynamics

It is difficult to discriminate a fishing effort between free schools (composed of large yellowfin tunas) and FAD fishing (targeting skipjack) in the East Atlantic because the fishing strategies can change from one year to the next and in addition, the sea time devoted to activities on FADs and the assistance provided by supply vessels are difficult to quantify. It is recognized that the use of data series on the yearly progression of the sale prices of tropical species by commercial category enables identification of the years when skipjack is most targeted by the purse seiners (which seems to be the case in the past few years). Nominal purse seine effort, expressed in terms of carrying capacity, has decreased regularly since the mid-1990s up to 2006. However, after this date, several European Union purse seiners have transferred their effort to the East Atlantic, due to piracy in the Indian Ocean, and a fleet of new purse seiners have started operating from Tema (Ghana), whose catches are probably underestimated. All this has contributed to the growth in carrying capacity of the purse seiners, which is gradually nearing the level observed in the early 1990s. The number of purse seiners follows this trend but seems to have remained steady since 2010; the nominal effort of bait boats has remained stable for over 20 years. By 2010, overall carrying capacity of the purse seine fleet had increased significantly, to about the same level as in the 1990s, and has increased by nearly 50% since. This can clearly be seen by the increased catches depicted in (**Figure 7.3.3.2**). FAD based fishing has accelerated even more rapidly than free school fishing.

It is recognised that the increase in fishing power linked to the introduction of technological innovation on board the vessels as well as to the development of fishing using floating objects has resulted in an increase in the efficiency of the various fleets, since the early 1980s. In order to take into account the effect of the technological changes in skipjack catchability, an annual yearly growth of 3% is generally assumed as the working hypothesis, although an analysis carried out fixing the MSY and K at the values estimated in the previous stock assessment would suggest an increase in catchability between 1 and 13% per year. Moreover, the estimates on growth in bigeye catchability, whose juveniles are also captured using FADs, would indeed indicate a value of 2.5% per year before 1991 and 6 to 8% thereafter. However, it is not known whether these estimates only reflect technological changes, or the availability of fish as well, resulting from the expansion of the surface area exploited over the years, reaching its historic high in 2013 and which corresponds to the expansion of the fishery toward the West Central Atlantic or more recently to the level of the North and South latitudes. **Figure 7.3.3.2** illustrates the distribution of skipjack catches in the Atlantic for bait boat between 1950 and 2014 and for purse seiners by fishing mode (free schools vs. FADs) between 1991 and 2014. Also, the skipjack catches made by European and associated purse seiners (about 75% of the total catches) between 2000 and 2006 and between 2007 and 2014 showing the withdrawal from the Senegal fishing zone on free schools, due to non-renewal of the fishing agreements in 2006, and the appearance of a fishing area under FADs in 2012 North of 15ºN latitude is reflected in **Figure 7.3.3.3**.

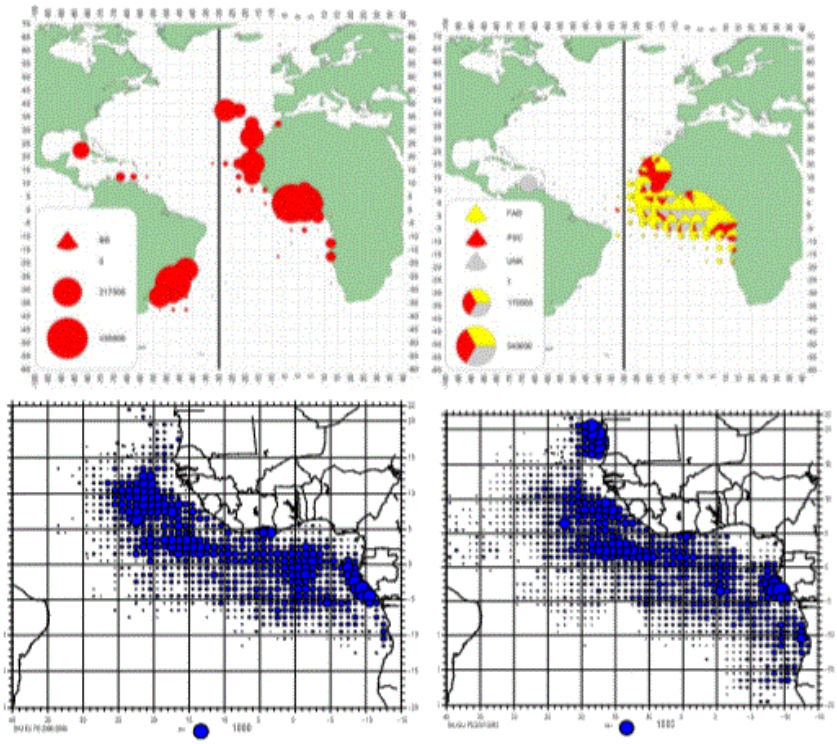


Figure 7.3.3.3. Distribution of skipjack catches in the Atlantic for bait boat (upper left panel) between 1950 and 2014 and for purse seiners (upper right panel) by fishing mode (free schools vs. FADs. UNK is considered to be mainly free schools in the Western and mainly FAD in the Eastern Atlantic) between 1991 and 2014. Skipjack catches made by European and associated purse seiners (about 75% of the total catches) between 2000 and 2006 (lower left panel) and between 2007 and 2014 (lower right panel) showing the withdrawal from the Senegal fishing zone on free schools, due to non-renewal of the fishing agreements in 2006, and the appearance of a fishing area under FADs in 2012 North of 15ºN latitude.

Stock assessment

Skipjack tuna has been considered a difficult species to assess, mainly due to the fact that the annual recruitment is a large proportion of total biomass and that it is difficult to characterize the effect of fishing on the population with standard fisheries data and stock assessment methods. The uncertainties in the stock structure and the difficulties to estimate PS CPUE that could be considered as being proportional to SKJ biomass, are additional to these basic uncertainties. This structural problem is mainly due to the development of fish-aggregating devices (FADs) that are playing a major role in the current SKJ fisheries, when the multiple changes in these FAD fisheries remain poorly understood. Unfortunately, SKJ catches by LL fisheries are so low that the catch rates thought not to be particularly reflective of SKJ abundance, as is the case with all other tuna stocks (ICCAT, 2014). Two standardized fishery indices from the EU-purse seine fishery: an index which accounts for skipjack caught in free schools off the coast of Senegal up to 2006 and the second index which characterises fish captured off FADs and in free schools in the equatorial area were developed (**Figure 7.3.3.4**). The increase in CPUE of the European purse seiners in the late 1990s is partly the consequence of the increase in the catches of positive sets under FADS. Furthermore, the regular increase in the skipjack yields of the bait boats based in Senegal may only be the result of an increase in catchability linked to the adoption of the so-called “bait boat associated school” fishing towards the mid-1980s. No marked trend has been observed for the Canary Islands bait boats, nor for the peripheral fishery of the Azorean bait boat fishery.

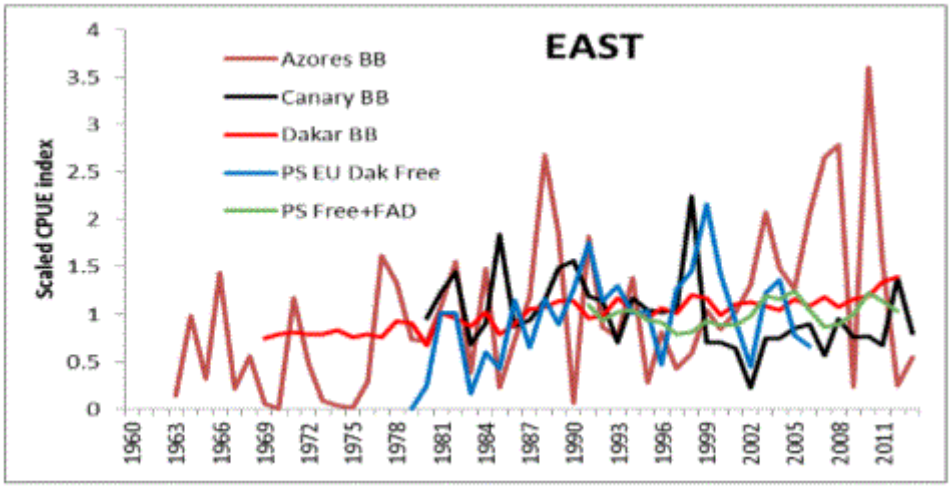


Figure 7.3.3.4. Relative abundance indices for the Eastern skipjack stock. Each index has been adjusted to its own average level given that to resolve problems regarding scaling, the indices for purse seine have been adjusted to the same level as the Azorean bait boat series.

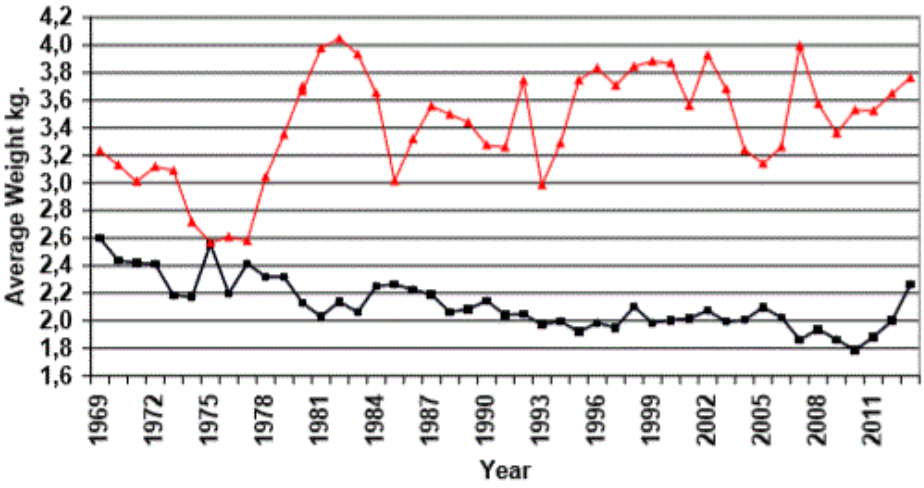


Figure 7.3.3.5. Changes in the average weight of skipjack in the eastern (black) and western Atlantic (red).

Regardless of the model used: 2 surplus biomass production models (one non-equilibrium conventional model, and one Bayesian model), a model based only on catch and a mortality estimation model based on the average sizes of fish captured, it was not possible to provide a reliable estimate of the maximum sustainable yield and therefore nor provide advice on the state of the eastern stock. This applies in the Bayesian case, (1) after testing different working hypotheses on the a priori distribution of the input parameters of the surplus production model (i.e. the growth rate and the carrying capacity), and on the impact of the growth of the catchability coefficient on the CPUE of each fleet, and (2) after performing a retrospective analysis in the case of the catch-only based model. The absence of definition of a fishing effort associated with FADs for the purse seiners, the difficulty of taking into account changes in catchability, the lack of marked contrast in the datasets despite the historical development of the fishing pressure and the fact that the catches and the CPUEs have increased in parallel in recent years are constraints for effective use of the classic stock assessment methods. It is difficult to estimate the MSY in conditions of continuous growth of catches without having reliable indicators on the response of the stock to these increases. These indicators may be improved by including CPUE series, fishing mortality estimates from tagging programmes or other indicators on the exploitation of this species.

Even a precautionary diagnosis on the state of the stock in the absence of quantification by an adequate approach, indicates no evidence of a fall in yield, or in the average weight of individuals captured (**Figure 7.3.3.5**). The estimated value of the MSY, according to the catch-only assessment model, has tended to increase in recent years but at a growth rate that is lower than that observed for the catches for the same period. However, according to this model, although it is unlikely that the eastern skipjack stock is overexploited, current catches could be at, even above, the MSY.

The most recent assessment of the stock of skipjack in the East Atlantic was done in 2014, using data until 2013. Two alternative models were used to analyse the Eastern Atlantic skipjack stock; a catch-only model and a Bayesian Surplus Production (BSP) model. The results of the Bayesian surplus production models show that the values of the posterior

distribution mean for the B_{cur}/B_{MSY} can be in the range of 1.55 to 1.79 for the five different model scenarios and the F_{cur}/F_{MSY} can be from 0.22 to 0.49. Even, in the light of the clear uncertainties in the assessments, it is very likely that the Eastern Atlantic Skipjack stock is not overfished, nor does overfishing take place (ICCAT, 2014).

Even if not much confidence is being put into the Production model results (**Figure 7.3.3.6**), it can reliably be said that no indicator indicates that the stock is overfished, as all the estimates point to a lightly exploited stock. Hence, the high recent landings, even if above MSY, are unlikely to reduce the stock below B_{MSY} for several years, at which time the response of landings and CPUE indicators to several years of high landings could be re-evaluated (ICCAT, 2014).

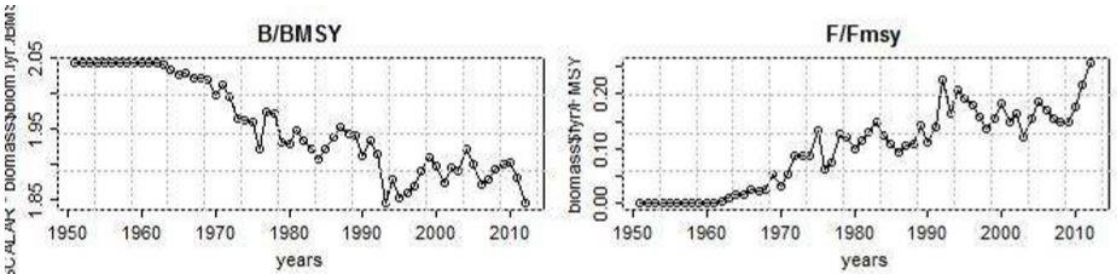


Figure 7.3.3.6. The current biomass relative to the Biomass at maximum sustainable yield and current fishing mortality relative to the fishing mortality as MSY until 2013.

Effect of current regulations

There is currently no specific regulation in place for skipjack tuna. Several time/area regulatory measures on banning fishing on FADs [Rec. 98-01, Rec. 99-01, Rec. 14-01 and Rec. 16-01] or on complete closure to surface fleets [Rec. 04-01] have however been implemented in the East Atlantic but the intended aim was to protect yellowfin and bigeye tuna juveniles.

The Recommendation [Rec. 16-01] establishes a moratorium on FAD fishing in the area that extends from to 4ºS and 5ºN latitude and from African coast to 20ºW longitude during the months of January and February, entered into force in 2016.

Management recommendations

Despite the absence of evidence that the eastern stock is overexploited, but considering (1) the lack of quantitative findings for the eastern stock assessment, and (2) pending the submission of additional data (including on FADs and on the ongoing AOTTP) which are necessary to improve the stock assessment it was recommended that the catch and effort levels do not exceed the level of 2012-2013 catch or effort. In addition, awareness should be stressed that by increasing harvests and fishing effort for skipjack can lead to involuntary consequences for other species that are caught in combination with skipjack in certain fisheries (particularly juveniles of yellowfin and bigeye). For the West Atlantic, the Committee recommends that the catches should not be allowed to exceed the MSY. **Table 7.3.3.1** summarises management measures and main stock assessment results for the East Atlantic skipjack tuna.

Table 7.3.3.1. Management measures and stock status for East Atlantic skipjack tuna.

	East Atlantic
Maximum Sustainable Yield (MSY)	Probably higher than previous estimates (143,000-170,000 t)
Current yield (2016[1])	217,363 t
Current Replacement Yield	Unknown
Relative Biomass (B_{2013}/B_{MSY})	Likely >1
Mortality due to fishing (F_{2013}/F_{MSY})	Likely <1
Stock Status	
Overfished:	Not likely
Overfishing:	Not likely
Management measures in force	Rec. 16-01[2]

Detailed information on the **minor primary subcomponent** is provided below:

Bigeye tuna (*Thunnus obesus*) (ICCAT, 2019)

Bigeye tuna are distributed throughout the Atlantic Ocean between 50ºN and 45ºS, but not in the Mediterranean Sea. This species swims at deeper depths than other tropical tuna species and exhibits extensive vertical movements. Bigeye tuna exhibit clear diurnal patterns: they are found much deeper during the daytime than at night. Spawning takes place in tropical waters when the environment is favourable. From nursery areas in tropical waters, juvenile fish tend to diffuse into temperate waters as they grow. Catch information from surface gears indicate that the Gulf of Guinea is a major nursery ground for this species. Dietary habits of bigeye tuna are varied and prey organisms like fish, molluscs, and crustaceans are found in their stomach contents. Bigeye tuna exhibit relatively fast growth: about 105 cm fork length at age three, 140 cm at age five and 163 cm at age seven. Bigeye tuna over 200 cm are relatively rare. Bigeye tuna become mature around 100 cm at between 3 and 4 years old. Young fish form schools mixed with other tunas such as yellowfin tuna and skipjack. These schools are often associated with drifting objects, whale sharks and sea mounts. This association weakens as bigeye tuna grow. Bigeye tuna are assumed to be an Atlantic-wide single stock, however, the possibility of other scenarios, such as north and south stocks, should not be disregarded.

Stock assessment

Stock status evaluations for Atlantic bigeye tuna used in 2018 several modelling approaches, ranging from non-equilibrium (MPD) and Bayesian statespace (JABBA) production models to integrated statistical assessment models (Stock Synthesis). The results of different model formulations considered to be plausible representations of the stock dynamics were used to characterize stock status and the uncertainties in the status evaluations.

The Stock Synthesis integrated statistical assessment model allows the incorporation of more detailed information, both for the biology of the species as well as fishery data, including the size data and selectivity by different fleet and gear components. As Stock Synthesis allows modelling of the changes in selectivity of different fleets as well as to investigate the effect of the length/age structure of the catches of different fisheries in the population dynamic, productivity and fishing mortality, it was the agreed model to be used for the management advice. The Stock Synthesis uncertainty grid includes 18 model configurations that were investigated to ensure that major sources of structural uncertainty were incorporated and represented in the assessment results. Although the results of two production models, non-equilibrium and Bayesian state-space, are not used for management advice they supported the Stock Synthesis stock assessment results.

Results of the uncertainty grid of Stock Synthesis runs show a long-term decline in SSB with the current estimate being at the lowest level in the time series (Figure 7.3.3.7) and increasing trend of fishing mortality (average F on ages 1-7) starting in the early 1990s, with the highest fishing mortality at 1994 and has remained high since then (**Figure 7.3.3.7**).

The SS3 uncertainty grid, despite a broad range of assumptions regarding stock productivity (steepness) and model parameterization, shows trajectories of increasing F decreasing B towards the red area of the Kobe plot ($F > F_{MSY}$ and $SSB < SSB_{MSY}$), overfishing starting in around 1994 and an overfished stock at around 1996-1997, and being in the red quadrant of the Kobe plot since then (Figure 7.3.3.8). According to the results of the SS3 uncertainty grid, Atlantic bigeye stock is currently overfished (SSB/SSB_{MSY} =0.59, ranging from 0.42 to 0.80) and undergoing overfishing (F/F_{MSY} = 1.6, ranging from 1.14 to 2.12) with very high probability (99%) (Figure 7.3.3.8).

The current MSY may be below what was achieved in past decades because overall selectivity has shifted to smaller fish. Calculations of the time-varying benchmarks from SS3 uncertainty grid show a long-term increase in SSB_{MSY} and a general long-term decrease in MSY.

The Committee is confident that uncertainty of the stock assessment results has decreased from previous stock assessments and that the Bigeye tuna is overfishing and being overfished with a probability > 90% (**Table 7.3.3.2**). This is likely the result of the use of the improved joint LL index, the confirmation that catches continue to exceed TACs, and the use of a single model platform for the provision of the management advice.

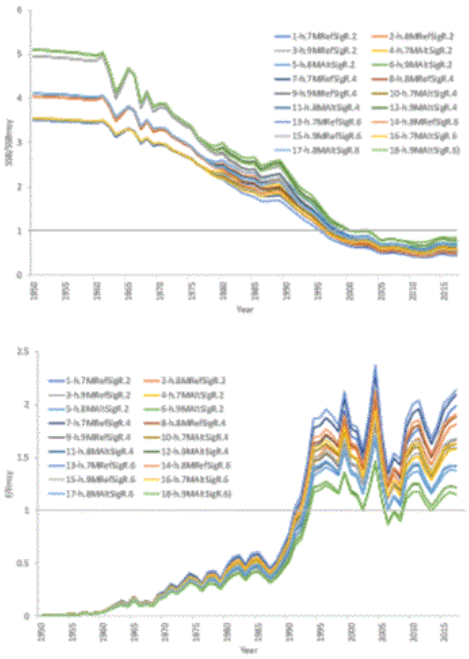


Figure 7.3.3.7. Trajectories of SSB/SSBMSY and F/FMSY estimated from the 18 Stock Synthesis uncertainty grid runs for Atlantic bigeye tuna. For each run the benchmarks are calculated from the year-specific selectivity and fleet allocations.

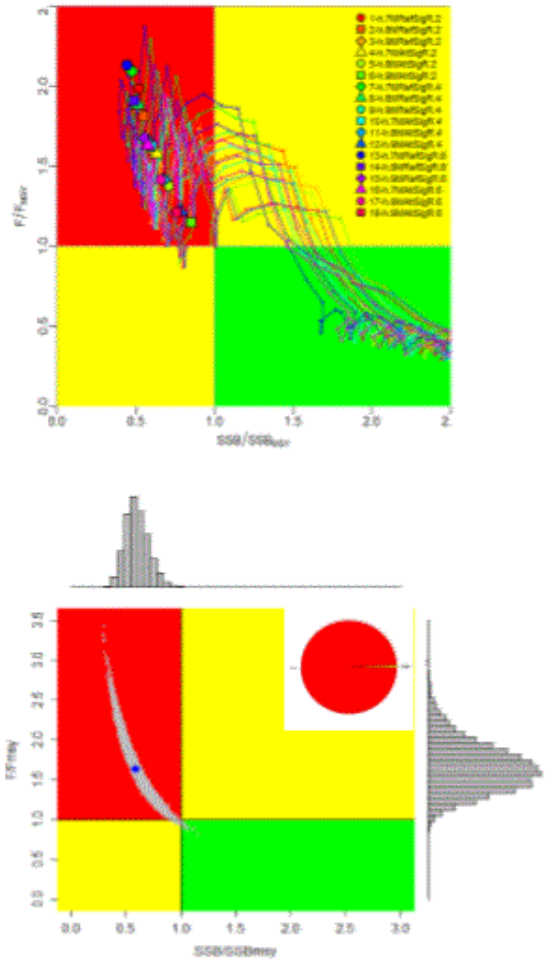


Figure 7.3.3.8. Stock Synthesis: (a) Kobe phase plot for the deterministic runs of the 18 Stock Synthesis uncertainty grid runs for Atlantic bigeye tuna. For each run the benchmarks are calculated from the year specific selectivity and fleet allocations. (b) Kobe plot of SSB/SSBMSY and F/FMSY for stock status of Atlantic bigeye tuna in 2017 based on the log multivariate normal approximation across the 18 uncertainty grid model runs of Stock Synthesis with an insert pie chart showing the probability of being

in the red quadrant (99.5 %), green quadrant (0.2 %), and in yellow (0.3 %). Blue square is the median and marginal histograms represent distribution of either SSB/SSBMSY or F/FMSY.

Table 7.3.3.2. Management measures and stock status for Atlantic bigeye tuna (ICCAT, 2019a).

ATLANTIC BIGEYE TUNA SUMMARY	
Maximum Sustainable Yield	76,232 t (72,664-79,700 t)[1]
Current (2018) Yield	73,366 t[2]
Relative Spawning Biomass (SSB_{2017}/SSB_{MSY})	0.59 (0.42-0.80)[1]
Relative Fishing Mortality (F_{2017}/F_{MSY})	1.63 (1.14-2.12)[1]
Stock Status (2017)	Overfished: Yes[3] Overfishing: Yes[3]
Conservation & management measures in effect:	Rec. 16-01, Rec. 18-01 – Total allowable catch for 2016-2019 was set at 65,000 t for Contracting Parties and Cooperating non-Contracting Parties, Entities or Fishing Entities. – Be restricted to the number of their vessels notified to ICCAT in 2005 as fishing for bigeye tuna. – Specific limits of number of longline boats; China (65), Chinese Taipei (75), Philippines (5), Korea (14), EU (269) and Japan (231). – Specific limits of number of purse seine boats; EU (34) and Ghana (17). – No fishing with natural or artificial floating objects during January and February in the area encompassed by the African coast, 20º W, 5ºN and 4ºS. – No more than 500 FADs active at any time by vessel. – Use of non-entangling FADs.

[1] Combined result of SS3 18 uncertainty grid. Median and 10 and 90% percentile in brackets.
[2] Reports for 2018 reflect most recent data but should be considered provisional.
[3] Probability of overfished > 99%, probability of overfishing > 99%.

Albacore (*Thunnus alalunga*) (ICCAT, 2016)

Albacore is a temperate tuna widely distributed throughout the Atlantic Ocean and Mediterranean Sea. Based on the biological information available for assessment purposes, the existence of three stocks is assumed: northern and southern Atlantic stocks (separated at 5ºN) and a Mediterranean stock. However, some studies support the hypothesis that various sub populations of albacore exist in the North Atlantic and Mediterranean. Likewise, there is likely intermingling of Indian Ocean and South Atlantic immature albacore, which needs further research. Scientific studies on albacore stocks, in the North Atlantic, North Pacific and the Mediterranean, suggest that environmental variability may have a serious potential impact on albacore stocks, affecting fisheries by changing the fishing grounds, as well as productivity levels and potential MSY of the stocks. Those yet sufficiently unexplored aspects might explain recently observed changes in fisheries, such as the lack of availability of the resource in the Bay of Biscay in some years, or the apparent decline in the estimated recruitment, which are demanding focussed research. The expected life span for albacore is around 15 years. While albacore is a temperate species, spawning in the Atlantic occurs in tropical waters. Present available knowledge on habitat, distribution, spawning areas and maturity of Atlantic albacore is based on limited studies, mostly from past decades. In the Mediterranean, there is a need to integrate different available studies to better characterize growth of Mediterranean albacore. Besides some additional recent studies on maturity, in general, there is poor knowledge about Mediterranean albacore biology and ecology.

Stock assessment

South Atlantic

Results indicate that, most probably, the South Atlantic albacore stock is not overfished and that overfishing is not occurring (**Table 7.3.3.3**). However, there is considerable uncertainty about the current stock status and the effect of alternative catch limits on the rebuilding probabilities of the southern stock. The different model scenarios considered in the south Atlantic albacore stock assessment provide different views on the future effects of alternative management actions.

North Atlantic

The uncertainty around the current stock status has a clear shape determined by the strong correlation between parameters estimated by the production model. The probability of the stock currently being in the green area of the Kobe plot (not overfished and not undergoing overfishing, $F<F_{MSY}$ and $B>B_{MSY}$) is 96.8% while the probability of being in the yellow area (overfished, $B<B_{MSY}$) is 3.2%.The probability of being in the red area (overfished and undergoing overfishing, $F>F_{MSY}$ and $B<B_{MSY}$) is 0% (**Figure 7.3.3.9**). In summary, the available information indicates that the stock has improved

and is most likely in the green area of the Kobe plot, i.e., not overfished and overfishing is not occurring (**Table 7.3.3.3**), although the exact condition of the stock is not well determined.

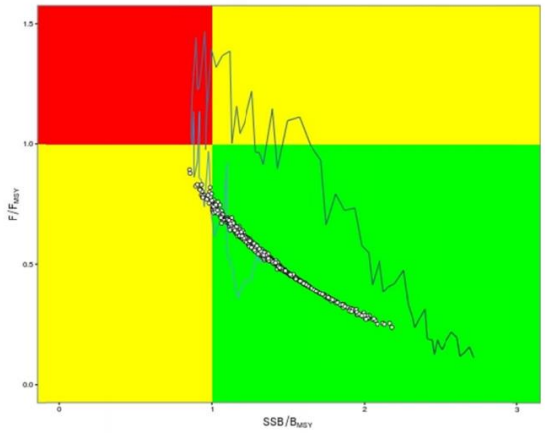


Figure 7.3.3.9.- Estimate trends in $B<B_{MSY}$ and $F>F_{MSY}$ with the base case scenario of the North Atlantic Albacore.

Table 7.3.3.3. Summary of Abacore stock status. Source: Report of the SCRS, 2019.

	North Atlantic	South Atlantic
Maximum Sustainable Yield	37,082 t (35,396-42,364)[1]	25,901 t (15,270-31,768)[2]
Current (2018) Yield	29,363 t	17,098 t
Yield in last year of assessment (2014)	26,651 t	13,677 t
Yield in last year of assessment (2015)		
B_{MSY}	407,567 t (366,309-463,685) [1]	120,465 t (71,312-208,438) [2]
F_{MSY}	0.097 (0.079-0.109) [1]	0.202 (0.119-0.373) [2]
B_{2015}/B_{MSY}	1.36 (1.05-1.78)[1]	1.10 (0.51-1.80) [2]
B_{2015}/B_{LIM}[3]	3.4	
F_{2014}/F_{MSY}	0.54 (0.35-0.72) [1]	0.54 (0.31-0.87) [2]
F_{2015}/F_{MSY}		
Stock Status	Overfished: NO	Overfished: NO
	Overfishing: NO	Overfishing: NO
Management measures in effect:	Rec. 98-08: Limit number of vessels to 1993-1995 average. [Rec. 17-04]: TAC of 33,600 t for 2018-2020, according to interim HCR. Management objective is to keep the stock in (or rebuild it to) the green area of the Kobe plot with 60% probability, while maximizing catch and reducing variability of TAC.	Rec. 16-07: TAC of 24,000 t for 2017-2020

[1] Median and 80% CI for the base case.
[2] Median and 80% CI for the range of the 8 base cases.
[3] The interim B_{LIM} is $0.4*B_{MSY}$.
[4] Median and 95% CI for the base case.

Atlantic swordfish (*Xiphias gladius*) (ICCAT, 2017)

Swordfish (Xiphias gladius) are members of the family Xiphiidae and are in the suborder Scombroidei. They can reach a maximum weight in excess of 500 kg. They are distributed widely in the Atlantic Ocean and Mediterranean Sea. In the ICCAT Convention area, the management units of swordfish for assessment purposes are a separate Mediterranean

group, and North and South Atlantic groups separated at 5°N. New genetic information was reviewed that indicated that the existing stock boundaries should be refined for the Atlantic and Mediterranean stocks. While recognizing the importance of the work, the Committee noted that the stock boundaries are approximations, and the possible impacts of seasonal changes and oceanographic processes in resource distribution need to be fully understood. Swordfish feed on a wide variety of prey including groundfish, pelagic fish, deep-water fish, and invertebrates. They are believed to feed throughout the water column, and from electronic tagging studies, undertake extensive diel vertical migrations. Swordfish mostly spawn in the western warm tropical and subtropical waters throughout the year, although seasonality has been reported in some of these areas. They are found in the colder temperate waters during summer and fall months. Young swordfish grow very rapidly, reaching about 140 cm LJFL (lower-jaw fork length) by age three, but grow slowly thereafter. Females grow faster than males and reach a larger maximum size. Tagging studies have shown that some swordfish can live up to 15 years. Swordfish are difficult to age, but about 50% of females were considered mature by age five, at a length of about 180 cm. However, the most recent information indicates a smaller length and age at maturity. The analysis of the horizontal movements evidences seasonal patterns, with fish generally moving south by winter and returning to the temperate foraging grounds in spring. Broader areas of mixing between some eastern and western areas were also suggested. These new results obtained by pop-up satellite tags also fully confirm the previous knowledge that was available from fishery data: deep longline settings catch swordfish during the daytime as a by-catch, while shallow setting long liners target swordfish at night closer to the surface.

Stock assessment

Swordfish stock N: the final base case Age Structured model estimated that B_{2015} was above B_{MSY} (median = 1.13, 95% CIs =0.81-1.45) and F_{2015} was lower than F_{MSY} (median = 0.75, 95% CIs = 0.57-0.92). The final base case Bayesian Surplus Production model estimated that current biomass (B_{2015}) was near B_{MSY} (median = 0.99, 95% CIs = 0.77-1.24) and current F_{2015} was lower than F_{MSY} (median = 0.81, 95% CIs = 0.61-1.10). Both models agreed that overfishing is not occurring and that biomass is either higher or very close to B_{MSY} (**Table 7.3.3.4**). The estimate of stock status in 2017 is slightly more pessimistic than the estimated status in the previous 2009 and 2013 assessments, and suggests that in 2015 there was a 61% probability that the stock is at or above MSY reference levels.

Swordfish stock S: the results from both models for the South Atlantic swordfish were consistent. The final base case BSP2 model estimated that current biomass (B_{2015}) was lower than B_{MSY} (median = 0.64, 95% CIs = 0.43-1.00) and current F_{2015} was higher than F_{MSY} (median = 1.15; 95% CIs = 0.61-1.82). The final base case JABBA model estimated that B_{2015} was also below B_{MSY} (median = 0.72, 95% CIs = 0.53- 1.01) while F_{2015} was very close to F_{MSY} (median = 0.98, 95% CIs = 0.70-1.36). Both models agreed that the southern swordfish stock biomass is overfished, and that overfishing is either occurring or current F is very close to F_{MSY} (**Table 7.3.3.4**).

Table 7.3.3.4. Summary of Atlantic Swordfish stock status. Source: Report of the SCRS, 2019.

ATLANTIC SWORDFISH SUMMARY		
	North Atlantic	***South Atlantic***
Maximum Sustainable Yield	13,059 (11,840-14,970)[1]	14,570 (12,962-16,123)[2]
Current (2018) Yield[3]	8,858 t	10,404 t
Yield in last year used in assessment (2015)[4]	10,668 t	10,227 t
B_{MSY}	82,640 t (51,580-132,010)[5]	52,465 t (35,119-80,951)[2]
SSB_{MSY}	21,262 t (14,797-27,728)[6]	Unknown
F_{MSY}	0.17 (0.10-0.27)[1]	0.28 (0.17-0.44)[2]
Relative Biomass (B_{2015}/B_{MSY})	1.04 (0.82 - 1.39)[7]	0.72 (0.53 - 1.01)[8]
Relative Fishing Mortality (F_{2015}/F_{MSY})	0.78 (0.62-1.01)[7]	0.98 (0.70 - 1.36)[8]
Stock Status (2015)	Overfished: NO	Overfished: YES
	Overfishing: NO	Overfishing: NO
Management Measures in Effect	TAC (2018-2021): 13,200 t [Rec. 17-02]	TAC (2018-2021): 14,000 t [Rec. 17-03]
	125/119 cm LJFL minimum size	125/119 cm LJFL minimum size

[1] Average from base case BSP2 and SS models; range corresponding to the lowest and highest 95% CIs from the two models.
[2] From base case JABBA model with 95% CIs.
[3] Provisional and subject to revision.
[4] Based on catch data available in July 2017 for the stock assessment session.
[5] From base case BSP2 model, with 95% CIs.
[6] From base case SS model, with 95% CIs.
[7] Median and 95% quantiles from base case SS and BSP2 models.
[8] Median and 95% quantiles from base case JABBA model.

Atlantic sailfish (*Istiophorus albicans)* (ICCAT, 2016)

This species is widespread in the Atlantic and Indo-Pacific, and is common. It is primarily caught in sport and artisanal fisheries, and as bycatch in long-line and purse seines. In 2009, ICCAT conducted a full assessment of both Atlantic sailfish stocks through a range of production models and by using different combinations of relative abundance indices (**The lowest** range of Bcurrent/BMSY for the Atlantic sailfish is below PRI, as shown in the table below.

Table). It is clear that there remains considerable uncertainty regarding the stock status of these two stocks, however, many assessment model results present evidence of overfishing and evidence that the stocks are overfished, more so in the east Atlantic than in the west Atlantic. Although some of the results suggest a healthy stock in the west, few suggest the same for the east. The eastern stock is also assessed to be more productive than the western stock, and probably able to provide a greater MSY. The eastern stock is likely to be suffering stronger overfishing and most probably has been reduced further below the biomass that would produce MSY than the western stock. Reference points obtained with other methods reach similar conclusions. The lowest range of $B_{current}/B_{MSY}$ for the Atlantic sailfish is below PRI, as shown in the table below.

Table 7.3.3.5. Summary of Atlantic sailfish stock status. Source: Report of the SCRS, 2015.

ATLANTIC SAILFISH SUMMARY		
	West Atlantic	**East Atlantic**
Maximum Sustainable Yield (MSY)	1,438-1,636 t [1,2]	1,635-2,157 t [3]
Current Yield (2018)	1,250 t[4]	1,183 t[4]
SSB_{2014}/SSB_{MSY}	1.81 (0.51-2.57)[1] 1.16 (0.18-1.69)[2]	
B_{2014}/B_{MSY}		0.22-0.70 [3]
F_{2014}/F_{MSY}	0.33 (0.25 – 0.57)[1] 0.63 (0.42 – 2.02)[2]	0.33-2.85 [3]
Overfished	Not likely	YES
Overfishing	Not likely	Possibly
Management Measures in Effect:	Recommendation [Rec. 16-11]. Limit Atlantic sailfish catches of either stock to the level of 67% of MSY.	

[1] Stock Synthesis estimate utilizing increasing CPUE trends, with approximate 95% confidence intervals.
[2] Stock Synthesis estimate utilizing decreasing CPUE trends, estimate with approximate 95% confidence intervals.
[3] Range obtained of plausible estimates from bootstrapped Production Bayesian surplus, production, and Stock Reduction Analysis models.
[4] 2018 yield should be considered provisional.

Atlantic blue marlin (*Makaira nigricans*) (ICCAT 2015, ICCAT 2019)

An epipelagic oceanic species, blue marlin is often found in wide-open blue waters with surface temperatures between 22° and 31°C. It is the most tropical of the billfishes. Its latitudinal range changes seasonally, expanding northwards and southwards in the warmer months and contracting towards the equator in colder months. Unlike the partial assessment of 2006, the SCRS conducted a full assessment in 2011, which included estimations of management benchmarks. The results of the 2011 assessment indicated that the stock remains overfished and undergoing overfishing. In contrast to the results of the 2006 assessment, which indicate that, the declining trend in biomass had partially stabilized, current results indicated a continued decline trend. However, the SCRS recognized the high uncertainty with regard to data and the productivity of the stock (**Table 7.3.3.6**).

The median of the current (2016) relative biomass ratio is 0.69 with 10% and 90% confidence intervals of 0.52 and 0.91, respectively. Fishing mortality climbed rapidly and has exceeded FMSY since 1990. The current fishing mortality ratio F_{2016}/F_{MSY} is 1.03 with 10% and 90% confidence limits of 0.74 and 1.50. This implies that in 2016 the stock of Atlantic blue marlin was overfished and experiencing overfishing. The B_{2016}/B_{MSY} ratio is 0.464 (0.43-0.967). The 2018 results are similar to those of the 2011 assessment. The current status of the blue marlin stock is presented in **Figure 7.3.3.10**. The probability of being in the red quadrant of the Kobe plot was estimated to be 54%. The probability of being in the yellow quadrants of the Kobe plot was estimated to be 42% and that of being in the green quadrant only 4%. The estimated MSY was determined to be 3,056 t with 10% and 90% credible limits of 2,384 to 3,536. The value estimated for MSY in 2011 was 2,837 t. ICCAT established a rebuilding plan for marlins [Rec. 00-13]. The plan first established annual landing limits for 2001 and 2002 of 50% of the 1999 landings for pelagic longline and purse seine vessels.

Later, Rec. 12- 04 established a 2,000 t landing limit (maintained in Rec. 15-05) for the period starting in 2013. Following the 2011 assessment, the SCRS advised that the catch (including dead discards) must remain at 2,000 t or less to permit the stock to increase. Annual catches have generally exceeded 2,000 t since 2012, and as expected the stock has not increased. The stock biomass in 2016, estimated at 0.69 of BMSY, is very similar to 0.67 of BMSY, the level

that the Group estimated for 2009, implying that the stock has not rebuilt much during the period 2009-2016. This matches the predictions presented in the Kobe matrix of 2011 which predicted that with catches of 2,500 t a year the biomass in 2016 would be at 0.69 of BMSY (catches for the period 2010-2016 have averaged 2,468 t per year). In summary, the main effects of the rebuilding plan have been to reduce the fishing mortality to a level very close to FMSY and to halt the decline in biomass.

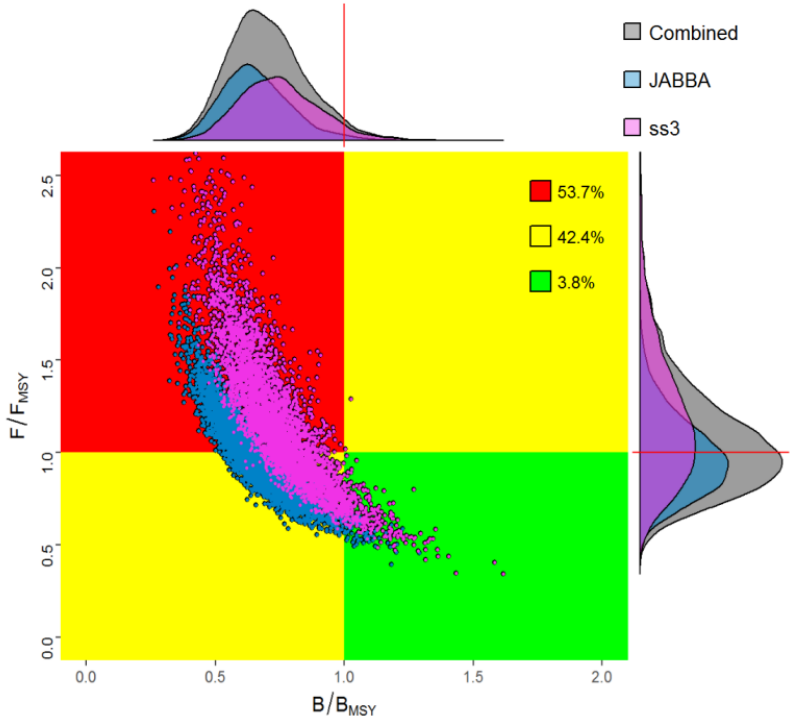


Figure 7.3.3.10.- Combined Kobre plots for the final base cases of Bayesian Surplus Production model (JABBA, blue) and stock synthesis model (SS3, pink) models for the Atlantic blue marlin.

Table 7.3.3.6. Summary of Blue Marlin stock status. Source: Report of the SCRS, 2019.

ATLANTIC BLUE MARLIN SUMMARY	
Maximum Sustainable Yield	3,056 t (2,384 – 3,536 t)[1]
Current (2018) Yield	1,436 t[2]
Relative Biomass (SSB_{2016}/SSB_{MSY})	0.69 (0.52 – 0.91)[1]
Relative Fishing Mortality (F_{2016}/F_{MSY})	1.03 (0.74 -1.50)[1]
Stock Status (2016)	Overfished: Yes Overfishing: Yes
Conservation and Management Measures in Effect:	Recommendation [Rec. 15-05, Rec 18-04]. Landing limit of 2,000 t in 2016, 2017, 2018 and 2019.

[1] Combined Bayesian surplus production model and age structured assessment model results. Values correspond to median estimates, 80% confidence interval values are provided in parenthesis.
[2] 2018 yield should be considered provisional.

Atlantic White Marlin (*Kajikia albida* = *Tetrapturus albidus*) (ICCAT, 2015; 2019)

This marlin is found throughout warm waters of the Atlantic from 45°N to 45°S including the Gulf of Mexico, the Caribbean Sea, and the Mediterranean Sea. The results of the 2012 assessment indicated that the stock remains overfished but most likely not undergoing overfishing. Relative fishing mortality has been declining over the last ten years and is now most likely to be below F_{MSY}. Relative biomass has probably stopped declining over the last ten years, but still remains well below B_{MSY}. There is considerable uncertainty in these results. The two assessment models provide different estimates about the productivity of the stock, with the integrated model suggesting that white marlin is a stock that can rebuild relatively fast whereas the surplus production model suggests the stock will rebuild very slowly. The results from both approaches are considered equally plausible. These results are conditional on the reported catch being a true reflection of the fishing mortality experienced by white marlin. Sensitivity analyses suggest that if recent fishing mortality has been greater than reported, because discards are not reported by many fleets, estimates of stock status would be more pessimistic and current relative biomass would be lower and overfishing would continue. The presence of unknown quantities of roundscale spearfish in the reported catches and data used to estimate relative abundance of white marlin increases the uncertainty for the stock status and outlook for this species (**Table 7.3.3.7**).

The median of the current (2017) biomass ratio and fishing mortality ratio with 95% confidence intervals are 0.58 (0.27-0.87) and 0.65 (0.45-0.93), respectively. This implies that in 2017 the stock of Atlantic white marlin was being overfished but not undergoing overfishing. The probability of being in the red quadrant of the Kobe plot was estimated to be 1%. The probability of being in the yellow quadrants of the Kobe plot was estimated to be 99% and that of being in the green quadrant less than 1%. The estimated MSY was determined to be 1,495 t with 95% confidence intervals (1,316 t – 1,745t).

The stock status results for 2017 showed that Atlantic white marlin stock has a 99 % probability of being overfished but not suffering overfishing. The probability of being in the red quadrant of the Kobe plot was estimated to be 1%. The probability of being in the yellow quadrants of the Kobe plot was estimated to be 99% and that of being in the green quadrant less than 1%. The estimated MSY was determined to be 1,495 t with 95% confidence intervals (1,316 t – 1,745t).

Table 7.3.3.7. Summary of Atlantic White Merlin stock status. Source: SCRS 2019.

ATLANTIC WHITE MARLIN/ROUNDSCALE SPEARFISH SUMMARY	
MSY	1,495 (1,316 – 1,745) t[1]
Current (2018) Yield	314 t [2]
Relative Biomass: B_{2017}/B_{MSY}	0.58 (0.27-0.87)[1]
Relative Fishing Mortality: F_{2017}/F_{MSY}	0.65 (0.45-0.93)[1]
Stock Status (2017)	Overfished: Yes Overfishing: Not
Conservation and Management Measure in Effect:	Recommendations [Rec. 15-05] and [Rec. 18-04] Landing limit of 400 t in 2016 - 2019

[1] Median of combined estimates from 2 Stock Synthesis models and 1 JABBA model with approximate 95% confidence intervals.
[2] 2018 yield should be considered provisional.

Atlantic Shortfin mako (*Isurus oxyrinchus*) (ICCAT, 2017)

One stock of shortfin mako *Isurus oxyrinchus* has been considered to exist in the North Atlantic (e.g. Kohler et al., 2002) as genetic studies found no evidence to separate east and west populations in the Atlantic, but indicate differences between the North Atlantic and the South Atlantic and other oceans (Heist et al., 1996; Schrey and Heist, 2002).

Shortfin mako was listed as 'Near Threatened' until 2008 when it was up listed to 'Vulnerable' both globally and regionally in the North Atlantic in the IUCN Red List. Since 2015 it is listed as 'Endangered' globally (Rigby et al., 2019b), 'Critically Endangered' in the Mediterranean (Walls and Soldo, 2016) and 'Data Deficient' at European level (Walls et al., 2015).

Regarding possible cumulative impacts, there are no MSC-certified or under assessment fisheries targeting this species. In addition, when it was reported (see **Table 7.3.2.8**), it was discarded and representing 0.001% of the total catch.

North Atlantic Shortfin mako

The North Atlantic Shortfin mako stock was assessed by ICCAT in 2019 using several methods: Production models (BSP, JABBA), other models (CMSY), and Stock Synthesis models. For the North Atlantic stock, scenarios with the BSP2-JAGS estimated that the stock was both overfished (B_{2015}/B_{MSY}=0.63 to 0.85) and that overfishing was occurring (H_{2015}/H_{MSY}=1.93 to 3.58). The JABBA model indicated that the stock was both overfished (B_{2015}/B_{MSY}=0.57 to 0.76) and that overfishing was occurring (H_{2015}/H_{MSY}=3.75 to 4.37), resulting in a 92.6 – 99.9% probability of being in an overfished state and still experiencing overfishing. Estimates obtained with the final SS3 run predicted that the stock was probably overfished (SSF_{2015}/SSF_{MSY}=0.95, where SSF is spawning stock fecundity) and that overfishing was occurring (F_{2015}/F_{MSY}=4.38, CV=0.11) with a probability of 56.1% of being overfished and experiencing overfishing. The combined probability from all the models of being in an overfished state while still experiencing overfishing was 90%. The models agree that the northern stock was overfished and was undergoing overfishing.

South Atlantic Shortfin mako

For the South Atlantic stock, scenarios with the BSP2-JAGS estimated that the stock was not overfished (B_{2015}/B_{MSY}=1.69 to 1.75) but that overfishing may be occurring (F_{2015}/F_{MSY}=0.86 to 1.07). For the BSP2-JAGS model, estimates from the 2 runs indicated a 0.3-1.4% probability of the stock being overfished and overfishing occurring (red quadrant in Kobe plot), a 29-47.4% probability of the stock not being overfished but overfishing occurring, or alternatively, the stock being overfished but overfishing not occurring. In the JABBA model Kobe plot the South Atlantic stock trajectory reveals a clockwise pattern moving from an underexploited state to a recovery as a result of decreasing biomass under sustainable fishing, which is followed by a short period of overfishing, which is implausible.The models results were therefore not considered for management advice. Model estimates obtained for the CMSY model indicate that the stock could be overfished (B_{2015}/B_{MSY}= 0.65 to 1.12) and that overfishing is likely occurring (F_{2015}/F_{MSY}=1.02 to 3.67). The combined model results indicate a probability of 19% that the stock is both overfished and experiencing overfishing .The Group considers the stock status results for the South Atlantic to be highly uncertain. Despite this uncertainty, it is not possible to discount that in recent years the stock may have been at, or already below, B_{MSY} and that fishing mortality is already exceeding FMSY.

Atlantic Blue shark (*Prionace glauca*) (SCRS, 2015)

There is a discrete North Atlantic stock of blue shark Prionace glauca (Heessen, 2003; Fitzmaurice et al., 2005; ICCAT, 2008), with 5°N latitude the southern stock boundary, and a separate South Atlantic stock (ICCAT, 2008).

The North Atlantic Blue shark stock was assessed by ICCAT in 2015 using two different approaches: Bayesian Surplus Production Model (BSPM) and length-based age-structured models: Stock Synthesis (SS3). Both models suggested sustainable spawning stock size and fishing mortality rates relative to maximum sustainable yield (ICCAT, 2015) (**Table 7.3.3.8**).

Blue shark is a highly migratory species that both, in Europe (Sims et al., 2015) and globally (Rigby et al., 2019a) is listed as 'Near Threatened' by the IUCN and as 'Critically Endangered' in the Mediterranean (Sims et al., 2016).
Regarding possible cumulative impacts, there are no MSC-certified or under assessment fisheries targeting this species.

Blue shark stock N

Scenarios with the Bayesian Surplus Production (BSP) estimated that the stock was not overfished is B2013/BMSY = 1.50 to 1.96., while estimates obtained with the SS3 models indicate that SSF2013/SSFMSY=1.35 to 3.45.

Blue shark stock S

Scenarios with the BSP (Bayesian Surplus Production) estimated that the stock was not overfished (B2013/BMSY=1.96 to 2.03). Estimates obtained with the state-space BSP were generally less optimistic, especially when process error was not included, predicting that the stock could be overfished (B2013/BMSY=0.78 to 1.29)

Table 7.3.3.8.- Summary of North Atlantic Blue shark stock status. Source: Report of the SCRS, 2015.

NORTH ATLANTIC BLUE SHARK SUMMARY		
Provisional Yield (2014)		36,516 t[2]
2013 Yield		36,748 t[1]
Relative Biomass	B_{2013}/B_{MSY}	1.35-3.45[3]
	B_{2013}/B_0	0.75-0.98[4]
Relative Fishing Mortality	F_{MSY}	0.19-0.20[4]
	F_{2013}/F_{MSY}	0.04-0.75[5]
Overfished 2013 (Yes/No)		Not likely [6]
Overfishing 2013 (Yes/No)		Not likely [6]

[1] Estimated catch used in the 2015 assessments.
[2] Task I catch.
[3] Range obtained with the Bayesian Surplus Production (BSP) and SS3 models. Value from SS3 is SSF/SSF_{MSY}.
[4] Range obtained with the BSP model.
[5] Range obtained with the BSP and SS3 models.
[6] Although the models explored indicate the stock is not overfished and overfishing is not occurring, the Committee acknowledges that there still remains a high level of uncertainty.

7.3.4 Secondary species impacted by the UoC

Apart from the 8 species (11 stocks) classified as primary, all the other species listed in **Table 7.3.2.9** which are not considered as ETP species (see next section) were classified as 'Secondary' components. The resulting comprehensive list include 46 species: 2 rays, 1 shark, 6 tunas and tuna-like species, 3 billfishes and 34 other bony fishes. According to all the different sources of information consulted, catches for all the above mentioned species would fall below the threshold to be considered 'Main' subcomponents. Therefore, all 46 secondary elements were classified as 'Minor' subcomponents for the purpose of this assessment (for more details see **Section 7.3.2**).

7.3.5 ETP species impacted by the UoC

According to MSC requirements (SA 3.1.5), the team shall assign ETP species as follows:

a. Species that are recognized by national ETP legislation (in this case Belizean, Cape Verdean and/or Spanish legislation).
b. Species listed in binding international agreements given below:
    - Appendix 1 of the Convention on International Trade in Endangered Species (CITES), unless it can be shown that the particular stock of the CITES listed species impacted by the UoA under assessment is not endangered.
    - Binding agreements concluded under the Convention on Migratory Species (CMS), such as the Agreement on the Conservation of Albatrosses and Petrels (ACAP).
c. 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).

In terms of vulnerable or endangered species caught as bycatch in purse seine fisheries (e.g. sharks, turtles) the main issue is the mortality of captured individuals and other types of indirect mortality resulting from interaction with fishing gear (e.g. FAD entanglement). In this case, the principal issues are wastage and potential loss of data when these fish are discarded and unreported.

Following concerns of the impact of tuna purse seine fisheries on whale shark populations and the lack of scientific studies on the fate of encircled individuals over the longer term, some tuna regional fisheries management organizations (RMFOs), e.g., Indian Ocean Tuna Commission (IOTC), Western and Central Pacific Fisheries Commission (WCPFC), and Inter-American Tropical Tuna Commission (IATTC), have prohibited the intentional setting of nets on whale sharks since September 2013 (IOTC Res[13/05]), January 2014 (WCPFC, CMM-2012-04), and July 2014 (IATTC, Res[C-13-04]) respectively. It must be stressed that the whale shark has recently been listed as Endangered (June 2016, Vulnerable previously) by the International Union for Conservation of Nature, (IUCN; www.redlist.org), and is included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; www.cites.org) and in both Appendix II of the Convention of Migratory Species of Wild Animals since 1999 and Appendix I since 2017(CMS; www.cms.int).

None of the binding agreements concluded under the CMS affect the species that interact with the fleet evaluated in the area where it operates. Moreover, although there are 3 Memorandums of Understanding (MoUs) concluded under the

CMS that would indeed be relevant to the fleet evaluated: i) Sea Turtles in the Atlantic, ii) Marine Mammal West Africa; iii) Sharks (which includes in its Annex I the whale shark and shortfin mako shark), none of them is a legally binding instrument (although they have been signed by most of the West African coastal countries where the UoA operates).

Hammerhead sharks (Sphyniridae family), oceanic whitetip sharks, silky sharks and oceanic whitetip sharks have been identified as endangered species due to the impact of fisheries within the ICCAT Convention area and therefore between 2009 and 2011 different Recommendations were formulated (Recs [09-07], [10-07], [10-08], [11-08]) that prohibit the retention on board of the species in question, as well as their transhipment, landing, storage, sale or offering for sale, either of the entire casing or of any part separately

ICCAT Recommendations come into effect 6 months after their approval by the Commission and are binding for the CPCs unless they are objected by any CPC. Belize, Cabo Verde or the EU (including Spain) have not objected to these Recommendations, so for the purposes of the evaluation it is considered that these shark species are recognized as endangered species by the flags' legislation of the vessels evaluated.

Based on the different sources of information consulted by team (see **section 7.3.2**) and on the MSC guidance on the categorization of ETP species described above, the team has prepared a list of potential bycatch species to be interacted by purse seiners targeting tropical tunas in the Atlantic (**Table 7.3.2.9**). However, the team will only consider as ETP scoring elements those species recorded by the observers on board the UoC during the last 5 years, since those are the ETP species, which have been demonstrably impacted by the UoC (see **section 7.3.2.1e**). Species listed in **Table 7.3.5.1** will be considered as ETP scoring elements for this assessment.

Table 7.3.5.1. ETP species encountered by the UoC and reported by the observers on board the assessed fleet from 2014-2018 for FSC sets Source: Client Checklist.

Group	Common name	Species	Nº Individuals	% alive	% dead
Rays	Spinetail mobula	*Mobula japanica*	39	66.67%	33.33%
	Devil fish	*Mobula mobular*	76	57.83%	40.85%
	Giant manta	*Manta birostris*	39	79.33%	18.51%
Sharks	Silky shark	*Carcharhinus falciformis*	1425	54.67%	44.66%
	Oceanic whitetip shark	*Carcharhinus longimanus*	12	69.27%	30.73%
	Scalloped hammerhead	*Sphyrna lewini*	62	81.71%	18.29%
	Great hammerhead	*Sphyrna mokarra*	24	12.64%	87.36%
	Smooth hammerhead	*Sphyrna zygaena*	6	100%	0%
	Whale shark	*Rhincodon typus*	10	100%	0%
Sea turtles	Kemp's ridley turtle	*Lepidochelys kempii*	2	100%	0%
	Olive Ridley turtle	*Lepidochelys olivacea*	39	100%	0%
	Loggerhead turtle	*Caretta caretta*	36	100%	0%
	Green turtle	*Chelonia mydas*	4	100%	0%

	Hawksbill turtle	*Eretmochelys imbricata*	7	100%	0%
	Leatherback Turtle	*Dermochelys coriacea*	13	100%	0%
Marine Mammals	Bryde's whale	*Balaenoptera edeni*	4	100%	0%

Of all the species presented in **Table 7.3.2.9**, only 3 species of rays, 7 species of sharks, 6 species of sea turtles and 1 species of whales are considered ETP for the purposes of this fishery evaluation.

- Seabirds

There were no reported seabirds interactions or captures by the UoA in the observer data from 2014-2018; therefore, seabirds will not be considered further in this background section.

- Sharks and rays

Despite being the most frequent sensitive species group in tropical tuna purse seine bycatch, sharks bycatch rate in tis fishery is relatively low (i.e. <1 of the total catch weight). This estimate can vary with ocean, region, and season and fishing mode, i.e. FOB vs. Free schools (Gilman 2011; Amandè et al., 2012; Hall and Roman, 2013; Ruiz Gondra et al., 2017a; Ruiz Gondra et al., 2018; Lezama-Ochoa et al., 2016).

Some of the species of sharks included in the assessed fleet bycatch and considered as ETPs for the team are silky shark (*Carcharhinus falciformis*), oceanic whitetip shark (*Carcharhinus longimanus*), 3 sphyrna sp (scalloped hammerhead great hammerhead, smooth hammerhead) and whale shark (*Rhincodon typus*). For the period 2014-2018, observers in FSC sets recorded around 1600 individuals of these species; but those individuals represented less than 0.5% of the total catch weight (**Table 7.3.2.7**). Most of these individual (around 55%) were released alive.

Three different type of rays (Spinetail mobula (*Mobula japanica*), Devil fish (*Mobula mobular*) and Giant manta (*Manta birostris*)) with a total number of 142 individuals were caught as part of the bycatch for the assessed fleet but a 68% was released alive.

Silky sharks

Different studies suggested that the survival of silky sharks would be expected to increase by around 71% for the purse seines if some mitigation measures are applied (Restrepo et al. 2016, 2017). Considering that silky sharks composed over the 90% of the shark bycatch and due to the vulnerability of this species, many studies are taking place in collaboration with the fishing sector to find viable a mitigation measures for the reduction of the non-intentional mortality.

Silky sharks caught by the assessed fleet between 2014-2018 corresponded to 1425 individuals and 55% of them were released alive. Silky sharks are listed on the CMS MoU, and are covered with an ICCAT Rec (11-08). The stock status of silky sharks is unknown, but the there is concern for the stock as it caught in large numbers in the purse seine FAD fishery. The average annual catch of silky shark in ANABAC FSC sets is estimated to be about 285 individuals, with total records of 1,425 individuals in the entire period with <0.4% of the total catch (**Table 13** and **21**). More than 50% of the animals were observed to be released alive. Of the silky sharks that are released alive, between 20% and 40% survive. This implies an overall survival rate of 10% - 20% of those captured (Poisson et al. 2011, Poisson et al. 2014, Hutchinson et al. 2015, and Eddy et al. 2016).

Oceanic whitetip shark

In the case of the *oceanic whitetip sharks*, a total number of 12 individuals was caught and 70% of them released alive. Oceanic white tip sharks are identified here an ETP species as a precaution, and they are covered by an ICCAT Rec (10-07).

Smooth hammerhead

6 individuals of *smooth hammerhead* (100% were released alive), 62 individuals of scalloped hammerhead sharks (81.71% released alive) were captured in the period 2014-2018. Both species are listed by the CMS appendix 1. They are also regulated under Real Decreto 139/2011 and ICCAT recommendation 10-08. The status of each of these

stocks in unknown. *Great hammerhead* bycatch consisted on 24 individuals with just 12% released alive. The *great hammerhead* is also listed by the CMS but in the appendix 2 and the CMS MOU.

Whale shark

Whale sharks have recently been listed as Endangered (June 2016, Vulnerable previously) by the International Union for Conservation of Nature, (IUCN; www.redlist.org), and is included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; www.cites.org) and in both Appendix II of the Convention of Migratory Species of Wild Animals since 1999 and Appendix I since 2017(CMS; www.cms.int).

Whale sharks, corresponding to 10 individuals of *Rhincodon typus* were reported by observers (**Table 7.3.2.8**). All those individuals were taken alive from the net, escaped by their own or were released from the vessel.

These individuals of whale shark recorded by the observers on board of the assessed fleet during the 2014-2018 were all caught in 2016 (9 individuals) and 2015 (1 individual), before Rec 16-01 was implemented, therefore still including whale sharks as FSC sets, according to ICCAT's definition at the time. This different classification of the whale shaks data given by the client for the period assessed (2014-2018) indicates to the assessment team that the information is not adequate to measure trends and support a **strategy** to manage impacts on some of the ETP species. The team will proceed to gather further information from the client in the next certification steps.

Rays

Three different species of large ray were captured including spinetail mobula, devil ray and a giant manta. Catches of these species were 27, 76, 39 individuals in the 2014-2018 period, respectively, and about 68% were released alive. These species are listed on the CMS Appendix 1; therefore, they are identified as MSC ETP species. The stock status of these species is unknown.

Management measures concerning sharks and rays include: The obligation to register (both in observer programs and in logbooks) and to report by-catches and discards according to Recommendation [11-10]. The different measures established in Recommendations [09-07], [10-07], [10-08], [11-08] for the conservation and management of protected sharks (these Recommendations prohibit retaining these species on board, returning live the copies whenever possible, and report all interactions indicating the state (live / dead).

- Sea Turtles

Interactions with marine turtles in the tropical tuna purse seine fisheries have been shown to be sparse and with high survival rates, over 90% (Bourjea et al., 2014; Ruiz Gondra et al., 2017a). Thus, the impact of this fishery on this group is considered low (Bourjea et al., 2014). To enhance the survival of marine turtles, when they are detected in a fishing set, RFMOs require fishers to adopt best handling and releasing practices to foster the recuperation and enhance the survival of animals (FAO, 2009; Poisson et al., 2012), promote trainings for the application of these best practices and the development of other mitigation measures to reduce the bycatch (i.e. non-entangling FADs). The use of non-entangling FADs and Lower entanglement Risk FADs is already a commitment adopted by the ANABAC fleet.

Observers reported 101 sea turtles catch events during the whole studied period in FSC sets during the whole FSC sets studied period (**Table 7.3.2.8**). 100% were released alive. In terms of species composition, Lepidochelys olivacea was the main caught species followed by Caretta caretta. Sea turtles are protected because they are all included in Appendix 1 of CITES and because 3 out of the 6 species are classified by IUCN as Vulnerable, 1 as endangered and the remaining 2 as critically endangered.

Olive Ridley turtles are IUCN red listed as vulnerable, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. Thirty-nine Olive Ridley sea turtles were taken by the assessed fleet between 2014-2018, all of them released alive. According to the IUCN red list, the abundance of olive Ridley turtles is in decline, and the exact abundance of the stock is unknown (http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T11534A3292503.en).

Loggerhead turtles are IUCN red listed as vulnerable, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. A total number of 36 loggerhead sea turtles were taken between 2014-2018 period, and 100% were released alive. According to the IUCN red list, the overall abundance of loggerhead sea turtles is decreasing, including the sub-population of the eastern north Atlantic. The exact abundance of the stock in unknown (http://www.iucnredlist.org/species/3897/119333622#assessment-information).

Green turtles are IUCN red listed as endangered, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. Four green sea turtles were taken in the 2014-2018 period, and 100% were released alive. According to the IUCN red list, the overall abundance of green sea turtles is decreasing, including the sub-population

of the eastern south Atlantic. The exact abundance of the stock in unknown (http://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en).

Leatherback turtles are IUCN red listed as vulnerable, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. Thirteen leatherback sea turtle were taken in the 2014-2018 period. All (100%) were released alive. According to the IUCN red list, the overall abundance of leatherback sea turtles is decreasing, including the sub-population of the eastern south Atlantic. The exact abundance of the stock in unknown (http://dx.doi.org/10.2305/IUCN.UK.2013-2.RLTS.T6494A43526147.en).

Kemp´s Ridley turtles are UICN red listed as critically endangered, and are listed in CITES Appendix 1, and in the Atlantic Turtles MOU. A total number of 2 were caught by the assessed fleet and both of them released alive.
In summary, 101 sea turtles were captured by the assessed fleet between 2014-2018 period. All were released alive.

- Cetaceans

In all the data recorded by the observers in the assessed fleet during 2014-2018, 12 baleen whales were caught although just 4 individuals of Bryde´s whale were identified by the observers. All individuals were released alive before the retrieval of the net. Bryde's whales are IUCN red listed as Least Concern but is listed on CITIES Appendix 1.

Cetacean bycatches are regulated by the EU (EC - No 520/2007 (Art. 29)), but ICCAT does not include a recommendation for prohibiting intentional sets to cetaceans. ANABAC member fishing vessels do not fish with dolphins and the interaction with cetaceans, principally baleen whales, is rare and non-intentional. Interactions mainly occur with large cetaceans (e.g. humpback whale; Megaptera novaeangliae) in specific areas and seasons and they generally escape from the net before its closure or by breaking the net (Escalle et al., 2015).
Arrizabalaga et al. (2011) performed a comprehensive PSA exercise using the by-catch species included in the ICCAT list for Atlantic tuna fisheries. The results showed that, although marine mammals have the highest average intrinsic vulnerability to population decline, their susceptibility scores is extremely low in the case of purse seine owing to the low frequency of interactions. As a result, the authors did not include this taxonomic group in the final risk ranking (Arrizabalaga et al., 2011).

7.3.6 Habitats

Purse seine fishing gear used by the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery operates in the surface or epipelagic portion in deep oceanic waters in the water column in the east central and southeast Atlantic (FAO areas 34 and 47). This is the commonly encountered habitat for this fishery. The gear is suspended from floats with netting below the surface. The fishery is carried out entirely in the epipelagic ecosystem, at all times above 120 m depth. While the net has a depth of 260m, due to the way of operating with the purse line (a drawstring) to close the bottom of the seine, it never operates more than 120m deep. The fishery is conducted always in waters considerably deeper (up to several thousand meters). Therefore, purse seines never come into contact with the seabed or affect vulnerable marine habitats. In addition, the gear is never lost, although some small sections of netting could be lost, when large animals damage the gear.

The characteristics of the pelagic and mesopelagic habitat where the ANABAC unassociated purse seine fishery for yellowfin tuna operates in the north and south Atlantic are well known and have been researched over long periods by Spain and other coastal countries. Extensive bathymetry data on the Atlantic Ocean can be referenced in the GEBCO website (http://www.gebco.net/). The environmental characteristics of the Atlantic Ocean have also been widely studied by national institutions such as AZTI, IEO, CSIC (Consejo Superior de Investigaciones Científicas), or international institutions such as NOAA (National Oceanic and Atmospheric Administration). For example, NASA's OceanColor Web (http://oceancolor.gsfc.nasa.gov/cms/) is supported by the Ocean Biology Processing Group (OBPG) provide ocean-related products from a large number of operational, satellite-based remote-sensing missions providing ocean colour, sea surface temperature and sea surface salinity data to the international research community since 1996.

Based on the Table GSA8, from MSC fisheries standard v2.0, there is no known bottom-contact by the purse seine fishing gear operated in deep ocean waters. The species targeted cannot be caught using trawl or other bottom-contacting gear. The use of the gear, the understanding that comes from years of peer-reviewed research about its impacts, and the specific management strategy that mandates only its use could be construed as a cohesive and strategic arrangement. This is supported by demonstrable understanding about how the use of purse seines work to avoid impacting benthic habitats specifically, and some understanding about the impacts of lost gear on habitat and the relative effects of such impacts are deemed to be low risk for overall habitat health. Periodic assessments (i.e., directed research and risk assessments) are undertaken to inform management decision makers about lost-gear impacts to ensure that management strategies are working and are demonstrably avoiding serious or irreversible harm to “main” habitats and to determine whether changes need to be made to mitigate unacceptable impacts.

Figure and **Figure** show the protected marine areas in the north and South Atlantic Ocean. 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/). Protected habitats susceptible to being affected by the fleet being assessed are either deep or coastal habitat, which are unlikely to be impacted by surface purse seine fishery. In relation to the African countries where the fishery take place it is remarkable the recent initiative leaded by Gabon to create the largest marine protected areas network in Africa (9 marine parks and 11 aquatic reserves), which combine with the country’s three existing marine zones will account for 53,000 Km2 of protected coastal and ocean waters. As part of the bilateral agreement signed with Gabon, the assessed vessels has to take an additional Gabonese observer on board if required by the Government of Gabon.

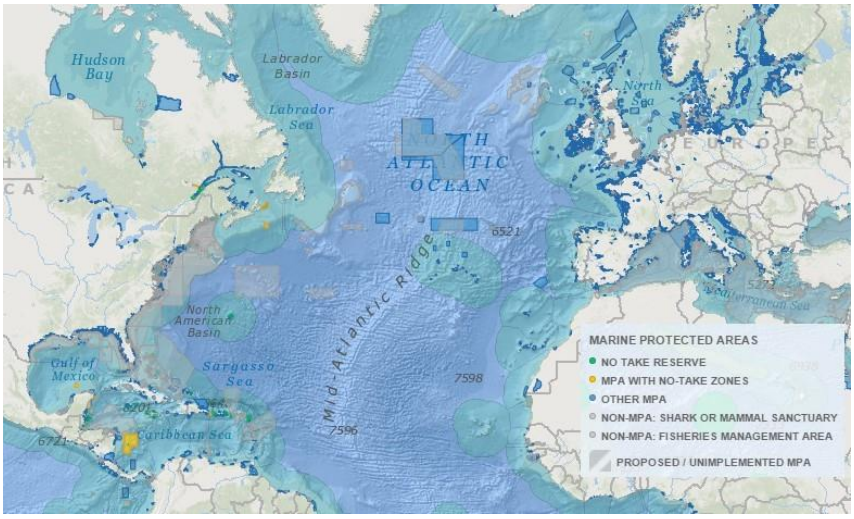


Figure 7.3.6.1. Marine protected areas in the North Atlantic Ocean, extracted from MPAtlas website (http://mpatlas.org/explore/)

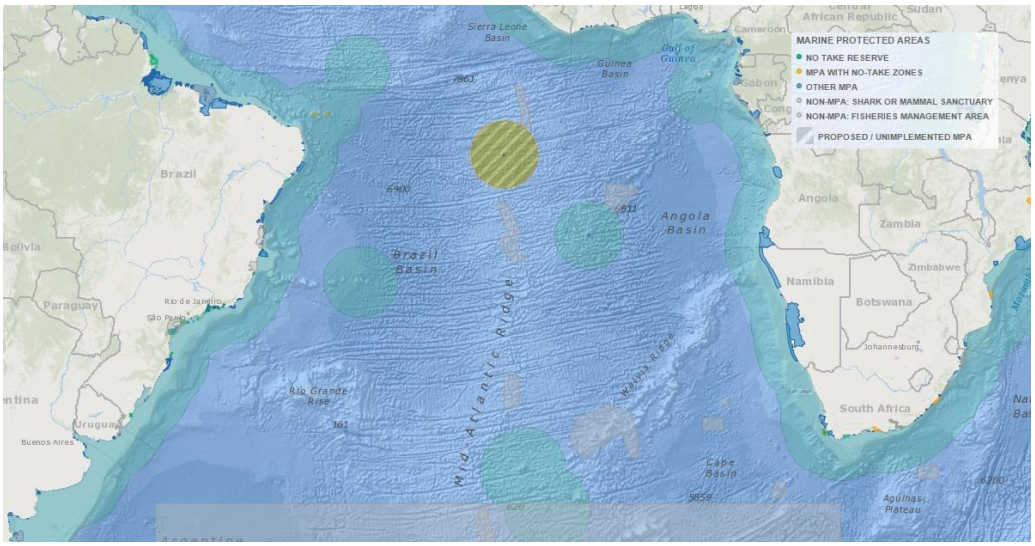


Figure 7.3.6.2 Marine protected areas in the South Atlantic Ocean, extracted from MPAtlas website (http://mpatlas.org/explore/).

The purse seine gear displaces biota from the space occupied by the gear, and it probably interferes with the movement of some organisms in the vicinity of the gear. However, these effects on pelagic habitat are temporary and the assessment team is not aware of any evidence of adverse impacts on the structure or functioning of either benthic or pelagic habitat. The fishery does not change the characteristics of the water column (for example, the temperature, salinity, currents) and it does not come into contact with benthic habitats.

7.3.7 Ecosystem

All fishing methods have some level of environmental impact, which is often measured in terms of fishing mortality of non-target species (bycatch) that may be retained or discarded at sea as well as target species that may be discarded at sea for a variety of reasons, i.e. too small, damaged, exceeds capacity or replaced with higher value species (high grading).

The purse seine fishery primarily targets tuna, a large predatory fish, with about 95% of the catch by weight and numbers comprised of tuna. There is a small bycatch of other species including billfish, rays, sharks, and some small bony fishes. Addition to these species, some ETP species including other sharks and rays, marine mammals, and marine turtles are also caught.

The fishery under assessment takes place within the water column with only limited contact on the bottom occurring with purse seine; therefore, ecosystem impacts are considered only to result from removal of species or functional groups from the system.

The impacts of the purse seine gear are considered minimal due to selective nature of the gear, other than the direct impacts on captured species as described in the sections on the target, primary and secondary and ETP species.

Ecosystem level impacts resulting from species or functional groups could include:

- Changes to the trophic relationships or structure.
- Changes to the size composition of the ecological community.
- Changes in biodiversity of the ecological community (e.g. alterations to species evenness and dominance) caused by direct or indirect effects of fishing.
- Changes in the distribution of species.

A fishery can alter the structure and functioning of ecosystems through trophic interactions by removing forage species upon which higher trophic level species depend or through top down trophic cascades. Based on the proportion of higher-level predators making up the largest proportion of bycatch species, we consider changes to trophic relationships or structure to be the most serious threat from the fishery to the ecosystem.

Much debate continues over the extent to which purse seine fisheries impact ecosystem function through removal of top or apex predators and the ability to predict associated impacts remains limited (Myers et al, 2007). The former mechanism is not applicable to this fishery because the fishery does not catch forage species. The second mechanism was described by Andersen and Pedersen (2009) using a size- and trait-based model to explore how marine ecosystems might react to perturbations from different types of fishing pressure. They conclude that cascades are damped further away from the perturbed trophic level. Fishing on several trophic levels leads to a disappearance of the signature of trophic cascades. However, Pershing et al. 2015 suggests that trophic cascade regime shifts are rare in open ocean ecosystems and that their likelihood increases as the residence time of water in the system increases. Then, as the UoC operates in the open seas of Atlantic Ocean this mechanism is neither applicable.

The ICCAT Sub-Committee on Ecosystems was created in 2005 to integrate the monitoring and research activities related to the ecosystem that are required by the SCRS in fulfilling its advisory role to the Commission, being the scientific cornerstone in support of an Ecosystem Approach to Fisheries (EAF) in ICCAT.

The Sub-Committee's work will encompass the specific tasks listed below:

1) Monitoring:

- Create and maintain an inventory of species caught by fleets targeting tuna and tuna like species in the Atlantic and Mediterranean.
- Improve conventional statistics (catch, effort, size) of ICCAT target species that are caught incidentally in non-targeted fisheries.
- Monitor and improve information on interactions with non-ICCAT target species, with emphasis on those species of interest to the Commission and for which no Species Group has been established (e.g., sea turtles and sea birds).
- Facilitate access by SCRS scientists to oceanographic and environmental data.

2) Research:

- Evaluate the relative impact of the different abiotic and biotic factors (including oceanographic and climate phenomena, directed and incidental fishing, predation, competition, pollutions and other human impacts) that affect the abundance, distribution and migration of ICCAT target species.
- Characterize main feeding and reproductive habitats of ICCAT target species.

- Characterize the volume, composition and disposition of non-target species that are caught incidentally in tuna and tuna-like fisheries within the Convention area.
- Investigate trophic interactions of ICCAT target species.
- Investigate the impact that changes in fishing gears or fishing technology have on the catch of target and non-target species.

3) Modelling:
- Develop reference points and indicators that explicitly incorporate ecosystem considerations.
- Develop simulation, dynamic and statistical models focusing on mixed-fisheries, multispecies, bycatch and ecosystem issues.

4) Advice:
- Develop mechanisms which can be used to better integrate ecosystem considerations into the scientific advice provided by SCRS to the Commission, including but not limited to, Precautionary Approaches.
- Investigate, through operational models, potential benefits (at an ecosystem level) of alternative management strategies, such as time-area closures.
- Advise on the impacts of tuna and tuna-like fisheries on the populations of non-target species of interest to the Commission

Since 2007 the Sub-Committee on Ecosystems have an annual Inter-sessional Meeting (latest report: EAFM, 2019). Further, a joint meeting of tuna RFMOs on the Implementation of the Ecosystem Approach to Fisheries (EAF) Management, was initiated by ICCAT and supported by the Common Oceans/ABNJ Tuna Project, which brought together scientists from the five t-RFMOs and national experts. The goals of the latter meeting were to (1) creating species distribution maps, (2) review and determine the best methods to determine BPUEs and the number of fisheries interactions at the species level. A number of recommendations to the Commission were made as regards different issues covered during the meeting (EAFM, 2019).

Recently, scientist from broad research centres have provided the Directorate-General for Maritime Affairs and Fisheries (DG MARE) with: A list of ecosystem indicators (and guidance for associated reference points) to monitor impacts of fisheries targeting Highly Migratory Species (HMS). These indicators cover all ecological components of an EAFM, including target species, bycatch and threatened species, trophic relationships and habitats ; candidate ecological regions with meaningful ecological boundaries for HMS and its fisheries in order to facilitate the operationalisation of EAFM in marine pelagic ecosystems in the International Commission for the Conservation of Atlantic Tunas (ICCAT) and Indian Ocean Tuna Commission (IOTC) ; an ecosystem plan using two ecoregions as case studies, one within the ICCAT convention area and one within the IOTC convention area. This ecosystem or EAFM plan has the main purpose of facilitating the linkage between ecosystem science and fisheries management; recommendations to better link ecosystem indicators and management to foster the implementation of an EAFM (DG MARE, 2019).

7.3.8 Principle 2 Performance Indicator scores and rationales

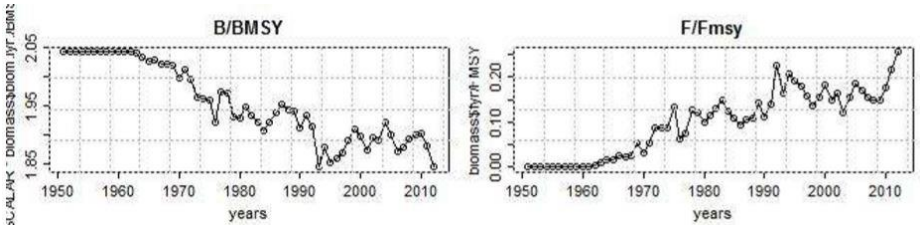
PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are **likely** to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI. OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which 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?	**Yes**	**Yes**	**No**

According to logbook data from the UoA from 2014 to 2018 (¡Error! No se encuentra el origen de la referencia.), skipjack accounted for 26.26% of the total catches, while bigeye tuna accounted for 3.86 %. Therefore, just skipjack is classified as primary main species in accordance with SA3.1.3.3.

Eastern Skipjack tuna:

The SCRS carried out the last assessment of the stock of skipjack in the East Atlantic in 2014, using data until 2013. Two alternative models were analyzed for Eastern skipjack, including a catch-only model and a Bayesian Surplus Production (BSP) model. The results of the Bayesian surplus production models show that the values of the posterior distribution mean for the B_{cur}/B_{MSY} can be in the range of 1.55 to 1.79 for the five different model scenarios and the F_{cur}/F_{MSY} can be from 0.22 to 0.49. It is therefore very likely that the Eastern Atlantic Skipjack stock is not overfished, nor does overfishing take place (ICCAT, 2014).It is therefore in the qualitative sense very likely that the Eastern Atlantic Skipjack stock is not overfished, nor does overfishing take place. (ICCAT 2014)
Even a precautionary diagnosis on the state of the stock in the absence of quantification by an adequate approach, indicates no evidence of a fall in yield, or in the average weight of individuals captured.



Even though not much confidence is being put into the Production model results (see graphs above), and no confidence intervals are provided, according to SA2.2.1 in P1 the terms “likely”, “highly likely” and “high degree of certainty” are used to allow for either qualitative or quantitative evaluation. The stock assessment concluded that it can reliably be said that no indicator indicates that the stock is overfished, as all the estimates point to a lightly exploited stock. Hence, the high recent landings, even if above MSY, are unlikely to reduce the stock below B_{MSY} for several years, at which time the response of landings and CPUE indicators to several years of high landings could be re-evaluated (ICCAT 2014). Using this qualitative information, it is **highly likely** that skipjack tuna is above the PRI, therefore **SG80 has been reached**.
Even though all the model results indicated the posterior distribution mean to be above the MSY level, there is no **high degree of certainty** about this and therefore **SG100 is not met**.

	Minor primary species stock status			
b	Guide post			Minor primary species are **highly likely** to be above the PRI. OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			**Yes**
Rationale				

As detailed in **section 7.3.3** there are 8 species to be assessed as minor primary: bigeye tuna (*Thunnus obesus*), albacore (*Thunnus albacares*) stocks North & South, swordfish (*Xiphias gladius*) stocks North & South, Atlantic sailfish (*Istiophorus albicans*), blue marlin (*Makaira nigricans*), Atlantic white marlin (*Tetrapturus albicans*), blue shark (*Prionace glauca*) stocks North & South and Shortfin mako shark (*Isurus oxyrinchus*). **Table 2.1.1.1** presents a summary of the results of the latest stock assessments performed by the SCRS for these species. The degree of uncertainty varies greatly between the 12 different stocks.

Bigeye tuna (ICCAT, 2019):

Stock status evaluations for Atlantic bigeye tuna used in 2018 several modelling approaches, ranging from non-equilibrium (MPD) and Bayesian statespace (JABBA) production models to integrated statistical assessment models (Stock Synthesis). The results of different model formulations considered plausible representations of the stock dynamics were used to characterize stock status and the uncertainties in the status evaluations.
Results of the uncertainty grid of Stock Synthesis runs show a long-term decline in SSB with the current estimate being at the lowest level in the time series (see figure below) and increasing trend of fishing mortality (average F on ages 1-7) starting in the early 1990s, with the highest fishing mortality at 1994 and has remained high since then (**Figure 7.3.3.8**)(ICCAT, 2019a).

The SS3 uncertainty grid, despite a broad range of assumptions regarding stock productivity (steepness) and model parameterization, shows trajectories of increasing F decreasing B towards the red area of the Kobe plot ($F > F_{MSY}$ and $SSB < SSB_{MSY}$), overfishing starting in around 1994 and an overfished stock at around 1996-1997, and being in the red quadrant of the Kobe plot since then.
According to the results of the SS3 uncertainty grid, Atlantic bigeye stock is currently overfished (SSB/SSB_{MSY} =0.59, ranging from 0.42 to 0.80) median (10^{th}-90^{th} percentiles) and undergoing overfishing (F/F_{MSY} = 1.6, ranging from 1.14 to 2.12) with very high probability (99%) (**Figure 7.3.3.8**).

By assuming that PRI is defined as $0.5B_{MSY}$ and with the 10^{th} percentile being well below that at SSB/SSB_{MSY} = 0.42, it might be likely that the BET stock is below the PRI, because no 70^{th} percentiles are provided and the Kobe plot visually indicates that this could indeed be the case. However, and even though this species is below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of this minor primary species, as its percentage catch was just 1.45%.

Albacore stock N (ICCAT, 2019):

The lowest range of the 80% CI for B_{2015}/B_{MSY} is 1.05 for the base case. The uncertainty around the current stock status has a clear shape determined by the strong correlation between parameters estimated by the production model. The probability of the stock currently being in the green area of the Kobe plot (not overfished and not undergoing overfishing, $F<F_{MSY}$ and $B>B_{MSY}$)) is 96.8% while the probability of being in the yellow area (overfished, $B<B_{MSY}$) is 3.2%.The probability of being in the red area (overfished and undergoing overfishing, $F>F_{MSY}$ and $B<B_{MSY}$) is 0%. In summary, the available information indicates that the stock has improved and is most likely in the green area of the Kobe plot, although the exact condition of the stock is not well determined. Assuming that PRI is defined as $0.5B_{MSY}$ it is highly likely that the Albacore stock N is above the PRI.

Albacore stock S (ICCAT, 2019):

The lowest range of the 80% CI for B_{2015}/B_{MSY} is 0.51 for the base case. Results indicate that, most probably, the South Atlantic albacore stock is not overfished and that overfishing is not occurring (**Table 7.3.3.3**). However, there is considerable uncertainty about the current stock status, and the effect of alternative catch limits on the rebuilding probabilities of the southern stock. The different model scenarios considered in the south Atlantic albacore stock assessment provide different views on the future effects of alternative management actions. However, by assuming that PRI is defined as $0.5B_{MSY,}$ it is highly likely that the Albacore stock S is above the PRI.

Swordfish stock N (ICCAT, 2017):

The final base case Age Structured model estimated that B_{2015} was above B_{MSY} (median = 1.13, 95% CIs =0.81-1.45) and F_{2015} was lower than F_{MSY} (median = 0.75, 95% CIs = 0.57-0.92). The final base case Bayesian Surplus Production model estimated that current biomass (B_{2015}) was near B_{MSY} (median = 0.99, 95% CIs = 0.77-1.24) and current F_{2015} was lower than F_{MSY} (median = 0.81, 95% CIs = 0.61-1.10). Both models agreed that overfishing is not occurring and that biomass is either higher or very close to B_{MSY} (Table 7.3.3.4). The estimate of stock status in 2017 is slightly more pessimistic than the estimated status in the previous 2009 and 2013 assessments, and suggests that in 2015 there was a 61% probability that the stock is at or above MSY reference levels. Therefore, it is highly likely that the North Swordfish stock to be above the PRI.

Swordfish stock S (ICCAT, 2017):

The lowest range of the 95% CI for B_{2015}/B_{MSY} is 0.53 from base case JABBA model.The results from both models for the South Atlantic swordfish were consistent. The final base case BSP2 model estimated that current biomass (B_{2015}) was lower than B_{MSY} (median = 0.64, 95% CIs = 0.43-1.00) and current F_{2015} was higher than F_{MSY} (median = 1.15; 95% CIs = 0.61-1.82). The final base case JABBA model estimated that B_{2015} was also below B_{MSY} (median = 0.72, 95% CIs = 0.53- 1.01) while F_{2015} was very close to F_{MSY} (median = 0.98, 95% CIs = 0.70-1.36). Both models agreed that the southern swordfish stock biomass is overfished, and that overfishing is either occurring or current F is very close to F_{MSY} (**Table 7.3.3.4**).

Assuming that PRI is defined as $0.5B_{MSY,}$ it is highly likely that the Swordfish stocks S is also above the PRI.

Atlantic sailfish (ICCAT, 2016)

The lowest range of $B_{current}/B_{MSY}$ for the Atlantic sailfish (0.22) (East Atlantic) is below PRI, as shown in **Table 7.3.3.5.** However, and even though this species is below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of this minor primary species, as its percentage catch was just 0.03%.

Atlantic white marlin (ICCAT, 2015; 2019)

The median of the current (2017) biomass ratio and fishing mortality ratio with 95% confidence intervals are 0.58 (0.27-0.87) and 0.65 (0.45-0.93), respectively. This implies that in 2017 the stock of Atlantic white marlin was being overfished but not undergoing overfishing. The probability of being in the red quadrant of the Kobe plot was estimated to be 1%. The probability of being in the yellow quadrants of the Kobe plot was estimated to be 99% and that of being in the green quadrant less than 1%. The estimated MSY was determined to be 1,495 t with 95% confidence intervals (1,316 t – 1,745t). We cannot state that it is highly likely that the Atlantic white marlin is above the PRI. However, and even though this species is below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of this minor primary species, as its percentage catch was just 0.2%.

Blue marlin (ICCAT 2019)

The SSB_{2016}/SSB_{MSY} ratio is 0.69 (0.52-0.91) and the fishing mortality ratio F_{2016}/F_{MSY} is 1.03 (0.74-1.50) with 20% and 80% confidence limits (**Table 7.3.3.6**). This implies that in 2016 the stock of Atlantic blue marlin was overfished and experiencing overfishing. The 2018 results are similar to those of the 2011 assessment. The estimated MSY was determined to be 3,056 t with 10% and 90% credible limits of 2,384 to 3,536. However, the most recent assessment for this species was conducted in 2011 using data until 2009 and it was already determined at that time that the stock was overfished and that overfishing was occurring despite the Recommendation issued by ICCAT on 2000 (Rec 00-13) to establish a plan to rebuild blue marlin and white marlin populations. This rebuilding plan has been recently strengthened by a new Recommendation, which entered into force the 4th of June of 2016 (Rec 15-06). From all the above, this species is below the PRI. However, there is evidence that the UoA does not hinder the recovery and rebuilding of this minor primary species, as its percentage catch was just 0.02%.

Blue shark stock N (ICCAT 2015)

Scenarios with the Bayesian Surplus Production (BSP) estimated that the stock was not overfished as B_{2013}/B_{MSY} = 1.50 to 1.96, while estimates obtained with the SS3 models indicated that SSF2013/SSFMSY=1.35 to 3.45, as shown in Table 7.3.3.8. In both cases, and by assuming that PRI is defined as $0.5B_{MSY,}$ it is highly likely that the blueshark stock N is above the PRI.

Blue shark stock S (ICCAT 2015)

For the South Atlantic stock, all scenarios with the Bayesian surplus production model estimated that the stock was not overfished and that overfishing was not occurring, as concluded in the 2008 stock assessment. Estimates obtained with the Bayesian state-space surplus production model formulation should be considered more reliable than other Bayesian production models. These were less optimistic, predicting that the stock could be overfished and overfishing could be occurring. Acknowledging the high uncertainty of the results, it cannot be ruled out that the stock is overfished and experiencing overfishing. B_{2013}/B_{MSY} was estimated to be between 0.78 and 2.03 while F_{2015}/F_{MSY} between 0.01 and 1.19. According to FCR guidance clause GSA2.2.3.1, the proxy for the PRI is about $0.5B_{MSY}$, and considering that the lowest B_{2013}/B_{MSY} = 0.78 over the whole range of estimates (table above) it can therefore be deduced that it is highly likely that the blue shark stock is above the PRI (>80th %ile). However, the last assessment was performed in 2013 and recent catches have been all above the yield in 2013 (see table above), while the stock was already overfished and overfishing was occurring it might be likely that the stock is no longer above PRI. However, there is evidence that the UoA does not hinder the recovery and rebuilding of this minor primary species, as its percentage catch was just 0.06%.

North Atlantic Shortfin mako (ICCAT 2017)

The North Atlantic Shortfin mako stock was assessed by ICCAT in 2019 using several methods: Production models (BSP, JABBA), other models (CMSY), and Stock Synthesis models. For the North Atlantic stock, scenarios with the BSP2-JAGS estimated that the stock was both overfished (B_{2015}/B_{MSY}=0.63 to 0.85) and that overfishing was occurring (H_{2015}/H_{MSY}=1.93 to 3.58). The JABBA model indicated that the stock was both overfished (B_{2015}/B_{MSY}=0.57 to 0.76) and that overfishing was occurring (H_{2015}/H_{MSY}=3.75 to 4.37), resulting in a 92.6 – 99.9% probability of being in an overfished state and still experiencing overfishing. Estimates obtained with the final SS3 run predicted that the stock was probably overfished (SSF_{2015}/SSF_{MSY}=0.95, where SSF is spawning stock fecundity) and that overfishing was occurring (F_{2015}/F_{MSY}=4.38, CV=0.11) with a probability of 56.1% of being overfished and experiencing overfishing. The combined probability from all the models of being in an overfished state while still experiencing overfishing was 90%. The models agree that the northern stock was overfished and was undergoing overfishing.

South Atlantic Shortfin mako (ICCAT 2017))

For the South Atlantic stock, scenarios with the BSP2-JAGS estimated that the stock was not overfished (B_{2015}/B_{MSY}=1.69 to 1.75) but that overfishing may be occurring (F_{2015}/F_{MSY}=0.86 to 1.07). For the BSP2-JAGS model, estimates from the 2 runs indicated a 0.3-1.4% probability of the stock being overfished and overfishing occurring (red quadrant in Kobe plot), a 29-47.4% probability of the stock not being overfished but overfishing occurring, or alternatively, the stock being overfished but overfishing not occurring. In the JABBA model Kobe plot the South Atlantic stock trajectory reveals a clockwise pattern moving from an underexploited state to a recovery as a result of decreasing biomass under sustainable fishing, which is followed by a short period of overfishing, which is implausible.The models results were therefore not considered for management advice. Model estimates obtained for the CMSY model indicate that the stock could be overfished (B_{2015}/B_{MSY}= 0.65 to 1.12) and that overfishing is likely occurring (F_{2015}/F_{MSY}=1.02 to 3.67). The combined model results indicate a probability of 19% that the stock is both overfished and experiencing overfishing .The Group considers the stock status results for the South Atlantic to be highly uncertain. Despite this uncertainty, it is not possible to discount that in recent years the stock may have been at, or already below, B_{MSY} and that fishing mortality is already exceeding FMSY.

In the UoA, shortfin mako was reported as discarded (see Table 7.3.2.8) and representing only 0.001% of the total catch, therefore, there is evidence that the UoA does not hinder the recovery and rebuilding of the South Atlantic shortfin mako stock.

Also according to data collected by the observers on board the assessed vessels (**Table 7.3.2.8**) 0 tons of White Marlin were caught, while bycatches of billfishes were reduced to 0.07 tons of Swordfish/1,000 tons of production (YFT+SKJ+BET landed), 0.16 tons of blue marlin/1,000 tons of production and 0.36 tons of Sailfish/1,000 tons of production. **Table 2.1.1.2** shows MSY, current yield (2016) and estimated UoC annual catches based on the observer's data collected between 2014 and 2018. UoC catches would represent 0% of the current annual catch limit established for the white marlin and 0.01% in the case of the blue marlin. Observer's data collected between 2014 and 2018 (192 fishing trips) (**Table 7.3.2.8**) show that 544 billfishes were caught during that period. In this case, most of those individuals (450) were sailfish followed by blue marlin (41), and just 2 individuals of white marlin were recorded. Although this set of data shows a different pattern in relation to the sailfish species composition, it is consistent in relation to show a reduced interaction between the UoC and billfishes (544 individuals caught in 192 fishing trips result in an average of

2.8 individuals caught per fishing trip). Almost 100% of bycatches of billfishes are retained as it can be seen **Table 7.3.2.7** and **Table 7.3.2.8**).

Table 2.1.1.2. MSY, current yield, annual catch limitation and estimated UoC catches of the sailfish (East Atlantic), white marlin and blue marlin. Source: ICCAT and Sea Eye observer's data

	Albacore (South Atl)	Sailfish (East Atl)	White marlin	Blue marlin
MSY (t)	25,901 (15,270-31,768)	1,635-2,157	874 - 1604	2,837 (2,343 – 3,331)
Current yield (2016) (t)	13,679	1,421	452	1,295
TAC /Annual catch limit	24,000*	-	400**	2,000**
Estimated UoC annual catches (t) based on observers data 2017-18	0.007	0	0	0.01

(*) 2017 TAC; (**) Annual catch limit for 2016, 2017 and 2018

Table 2.1.1.1. Summary of the latest assessments available for all species assessed as minor primary components of the P2. Featured in GREEN are stocks, which are highly likely to be above PRI, while in ORANGE stocks where this condition is not fulfilled. Source: Prepared by BV

	Stock/s	Latest year^	$B_{last\ year}$ /B_{MSY}	$SSB_{last\ year}$ /SSB_{MSY}	$F_{last\ year}$ /F_{MSY}	Over fished	Over fishing
Albacore	Stock N	2015	1.36 (1.05-1.78)	-	0.54 (0.35-0.72)	No	No
	Stock S		1.10 (0.51-1.80)	-	0.54 (0.31-0.87)	No	No
Swordfish	Stock N	2015	1.04 (0.82 - 1.39)	-	0.72 (0.62-1.01)	No	No
	Stock S		0.72 (0.53 - 1.01)	-	0.98 (0.70-1.36)	Yes	No
Atlantic sailfish	Atl. East	2014	0.22-0.70	-	0.33-2.85	Yes	Possibly
Blue marlin	Atl.	2009	-	0.67 (0.53-0.81)	1.63 (1.11-2.16)	Yes	Yes
Atlantic White marlin	Atl.	2017	0.58 (0.27-0.87)	-	0.65 (0.45-0.93)	Yes	Not Likely
Blue shark	Stock N	2013	1.35-3.45	-	0.15-0.75	Not likely	Not likely
	Stock S		0.78-1.29	-	0.54-1.19	Undetermined	Undetermined
Bigeye		2017	-	0.59 (0.42-0.80)	1.6 (1.14-2.12)	yes	Yes
Atlantic shortfin mako	N	2015	0.57-0.85		1.93-4.37	Yes	Yes
Atlantic shortfin mako	S	2015	0.65-1.75		0.86-3.67	Possibly	Possibly

Based on the information presented above and summarized in Table 2.1.1.1, the assessment team considers that *North and South Atlantic albacore, Atlantic swordfish, South Atlantic shortfin mako* and *North Atlantic blue shark* stocks meet SG100 since it is highly likely that they are all above the PRI, while *Bigeye tuna ,Atlantic sailfish*, *blue marlin*, *Atlantic white marlin*, *South Atlantic Blue Shark* and the *North Atlantic Shortfin mako* shark stocks also meet SG100 since even though they are likely to be below the PRI, there is evidence that the UoC is not hindering their recovery and rebuilding. Therefore, all 12 minor secondary stocks assessed **meet SG100**.

References

ICCAT (2011e), ICCAT (2012b), ICCAT (2014b), ICCAT (2015c), ICCAT (2016f), ICCAT (2016g), ICCAT (2017a), ICCAT (2017b)

Draft scoring range for main scoring elements: Skipjack tuna	**≥80**
Draft scoring range for minor scoring elements: bigeye tuna, albacore stock N, albacore stock S, swordfish stock N, swordfish stock S, Atlantic sailfish East Atlantic stock, blue marlin, Atlantic white marlin, blue shark stock N, blue shark stock S, shortfin mako stock S and shortfin mako stock N.	**≥80**
Information gap indicator	**More information sought for the eastern skipjack.**

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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**	**Yes**	**Yes**
Rationale				

SG60 and SG80 deal only with Main primary species, which in the case of the assessed fishery is East Atlantic skipjack tuna. Therefore, this is the species component to be assessed in order to determine whether SG60 and SG80 are met.

MSC defines a “strategy” as a cohesive and strategic arrangement, which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. It also states that a strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

ICCAT established a comprehensive range of measures comprising monitoring, stock assessment and management measures, and it also provides the necessary tools and mechanisms so they can work jointly towards achieving the management objective to keep or rebuild their target stocks at levels consistent with MSY.

For the *East Atlantic skipjack*, main primary species impacted by the assessed fishery, there is a strategy which integrates regular stock assessments performed by SCRS, principles for the decision making (Rec 11-13), and the complete set of measures included in the Multi-annual conservation and management program for tropical tunas (Rec 16-01), in force since June 2017. This program has been reviewed annually since its first publication in 2011 (Rec 11-01), which only referred to bigeye and yellowfin tunas, while in 2014 (Rec 14-01) the skipjack was also included. Rec 16-01 has been described in detail in sections 3.3.8 and 3.5.1, and includes catch limits on bigeye and yellowfin tunas, capacity management measures, a complete set of measure for managing FADs, additional control measures, and other provisions.

Rec 16-01 establishes a TAC for 2016 subsequent years of 65,000 t for bigeye tuna and mechanisms for quota transfers and adjustments in cases of underage or overage of catches. The multi-annual program on tropical tunas was initially focused on limiting the catches on juvenile bigeye tunas aiming to rebuild the stock to MSY level. Efforts to limit bycatch on juvenile bigeye started in 1998 by establishing a closed area/season for the use of FADs in the East Atlantic since juveniles of this species are commonly associated to these devices. As explained in PI 2.1.1 SI(a), although the TAC is set in order to rebuild the stock to MSC levels, the stock is still classified as being overfished and overfishing is taking place, however it is still highly likely the bigeye tuna stock is above its PRI.

In the case of the East Atlantic skipjack the Committee recommends that the level of catch and effort should not exceed the catches of recent years but there is no TAC or any other specific regulation limiting the catches. The multi-annual program on tropical tunas was initially focused on limiting the catches on juvenile bigeye tunas, but by implication, as a side effect also resulted in management measures on the skipjack (Powers and Medley 2016), this has managed to keep the stock of skipjack above MSY levels (see PI2.1.1 SIa). Even though not much confidence is being put into the assessment model results, it can reliably be said that no indicator indicates that the stock is overfished or that overfishing is taking place (ICCAT 2014).

A recent ICCAT Recommendation (17-01) prohibiting discards of tropical tunas (YFT, SKJ, BET) by purse seiners just entered into force 11th June 2018. This Recommendation state that vessels shall retain on board and then land or

tranship to port all bigeye, skipjack and yellowfin tunas caught, except for two exceptions: (i) fish unfit for human consumption and, (ii) when caught during the last set of a trip and there is not enough storage capacity. This Recommendation also notes that CPC shall report all discards observed. The client has adopted an internal protocol of full retention of all tuna catches aligned with Rec17-01.

Therefore, **SG60 and SG80 are met**.

For assessing **SG100** all primary species (main AND minor have to be considered).

For the *Bigeye tuna*, there is a strategy which integrates regular stock assessments performed by SCRS, principles for the decision making (Rec 11-13), and the complete set of measures included in the Multi-annual conservation and management program for tropical tunas (Rec 16-01), in force since June 2017. This program has been reviewed annually since its first publication in 2011 (Rec 11-01), which only referred to bigeye and yellowfin tunas, while in 2014 (Rec 14-01) the skipjack was also included. Rec 16-01 has been described in detail in **sections 3.3.8** and **3.5.1**, and includes catch limits on bigeye and yellowfin tunas, capacity management measures, a complete set of measure for managing FADs, additional control measures, and other provisions.

Rec 16-06 on a multi-annual conservation and management program for *the North Atlantic albacore* establishes a TAC and catch limits for the most relevant CPCs targeting this stock, mechanisms for adjusting the quotas in cases of overage or underage of catch, capacity management and control measures, and subsequent Rec 17-04 had determined biological reference points and HCRs for this stock (the first one under ICCAT management). For the southern albacore, there is a TAC and catch limits for the period 2017-2020 (Rec 16-07).

There are individual regulations for the shortfin mako shark, i.e., Recommendation by ICCAT on Atlantic Shortfin Mako Sharks Caught in Association with ICCAT Fisheries [Rec. 10-06], including the obligation of CPCs to annually report Task I and Task II data for catches of sharks from all ICCAT fisheries, in accordance with ICCAT data reporting procedures; also Recommendation by ICCAT on Penalties Applicable in Case of non-fulfilment of Reporting Obligations [Rec.11-15].

In the case of the *North and South Atlantic stocks of swordfish*, TACs, catch limits, provision for quota transfer and adjustments and minimum sizes are set through Recs (17-02 and 17-03) respectively. These Recs are in force since 11 June 2018, and replaced previous Recs 16-03 and 16-04. TACs are set following the SCRS advice following to maintain (in the case of the N Atlantic stock) and rebuild (in the case of the S Atlantic stock) the stocks at levels consistent with MSY.

Rec 15-05 was implemented to further strengthen the plan to rebuild *blue marlin* and *white marlin stocks* and also to provide annual limits for both species for the period 2016-2018 and establishes other measures such as the obligation to provide annual estimates of live and dead discards. A new stock assessment for these two species is expected for 2018, and depending on the results, the SCRS shall evaluate progress towards the goals of the rebuilding program.
Until 2016 there was no specific management measure for the *Atlantic sailfish*, however Rec 16-11 has entered in force in June 2017 determining management measures for the conservation of this species. This Rec notes that if the total catches of either stock of Atlantic sailfish exceeds in any year the level corresponding to 67% of the average estimate of the MSY (i.e. 1,271 t for the East Atlantic) the Commission shall review the implementation and effectiveness of this recommendation.

The case of the *blue shark* is similar to that of the Atlantic sailfish since there were no specific management measures for this species until 2016. Rec 16-02 (in force since 12 June 2017) has established the following catch limit for the North Atlantic blue shark: “If the average total catch of the North Atlantic blue shark in any consecutive two years from 2017 onward exceeds the average level observed during the period 2011-2015 (i.e. 39,102 t), the Commission shall review the implementation and effectiveness of these measures”. Based on the review and the results of the next stock assessment scheduled for 2021 or at an earlier stage if enough information is provided to SCRS, the Commission shall consider introduction of additional measures. Also, based on the results of the next stock assessment, the Commission shall consider measures necessary to sustainably utilize the South Atlantic blue shark stock. Finally, Rec 16-02 also provides that, “in the light of the results of the next stock assessment of blue shark, the SCRS shall provide, if possible, options of HCR with the associated limit, target and threshold reference points for the management of this species in the ICCAT Convention area”.

The following provisions to reduce discards are included in Rec 16-01:
The CPCs shall:

- submit to the SCRS information on by-catches and discards made by fishing vessels flying their flag fishing for tropical tunas;
- encourage the vessel owners, masters and crew fishing for tropical tunas under their flag to implement good practices to better manage by-catches and reduce discards;

- consider designing and adopting management measures and/or management plans to better manage by-catch and reduce discards.
- The SCRS shall:
- evaluate the contribution of by-catches and discards to the overall catches in ICCAT tropical tuna fisheries, on a fishery by fishery basis;
- advise the Commission on possible measures allowing to reduce discards and to mitigate onboard post-harvest losses and by-catch in ICCAT tropical tuna fisheries.

The internal protocol aligned with Rec 17-01 adopted by the client is not restricted to catches of the three tropical tunas, it was took one-step forward since they extended it to all incidental catches. Therefore, restrictions for discarding stated in Rec 17-01 (see above), in the case of the assessed vessels are applicable to all catches. This internal protocol also details that “fish shall not be discarded from the vessel until an observer had estimated the species composition to be discarded”.

Rec (17-01) also mandate the SCRS to undertake work in 2020 to examine the benefits of retaining non-targeted species catches and present its recommendations to the Commission. The work should take into account all species that are usually discarded on all major gears.

Most of these Recommendations mandate or encourage (depending on the case) the CPCs to implement data collection programs that ensure the reporting of accurate catch, effort, size and live and dead discard data to ICCAT in full accordance with the ICCAT requirements for provision of Task I and Task II. The UoC has implemented a voluntary observer program that cover 100% of the fishing trips, well above the minimum of 5% of the fishing effort established by Rec (16-14) and also above the level recommended by the SCRS to provide reasonable estimates of total bycatch (Rec 16-01).

Furthermore, in 2012 the client signed a code of good practices on board which is based on a comprehensive manual developed by OPAGAC/AGAC and ANABAC-OPTUC with the assistance of AZTI. All the OPAGAC and ANABAC fleets adopted the code and initially AZTI was in charge of developing and implementing a system of verification of the code. Since the development and implementation of a specific standard for a sustainable tropical tuna purse seine fishery, the UNE1956006:2016, this code of conduct was embed as one of the sections of this standard. AZTI is now the institution in charge of assessing compliance with the implementation of this code. Additionally, a steering committee should also track its implementation. The manual on good practices provides detailed information on how to proceed to release sharks and rays, and includes specific forms for the observers to record these operations.

Therefore, it can be argued there is a strategy in place for managing main and minor primary species. **SG100 is 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**	**Yes**	**No**
Rationale				

The management measures and mechanisms designed and adopted by ICCAT based setting a TAC or catch limit following the advice of the SCRS, which in turn is based on regular stock assessments, is a well-known and sound way of managing the fisheries within the Commission area. ICCAT has a long story as an RFMO and has proven its capacity to manage in tuna stocks sustainably, and even to rebuild overfished stocks such as the Eastern Atlantic and Mediterranean Bluefin tuna (ICCAT 2017).

In addition, the partial recovery of the YFT tuna indicates that measures are likely to work under the auspices of ICCAT. The management quantities estimated in the 2011 and 2016 YFT stock assessment (ICCAT, 2012) (ICCAT, 2016b) (ICCAT 2019) were the following:

B_{2010}/B_{MSY}=0.85(0.61-1.12) F_{2010}/F_{MSY}=0.87 (0.68-1.4)

B_{2014}/B_{MSY}=0.95 (0.71-1.36) F_{2014}/F_{MSY}=0.77 (0.53-1.05)

B_{2018}/B_{MSY}=1.17 (0.75-1.2) F_{2018}/F_{MSY} = 0.96 (0.56-1.50)

The overall health of the stock increased by approximately 10%; the stock status increased by 10% and the fishing pressure decreased by that amount.

Based on all the information presented above, **SG60 is met**.

Even though, for the **eastern Atlantic skipjack stock** there is not much confidence in the stock assessment results (see **Figure 7.3.3.6**), it can reliably be said that no indicator classifies the stock as overfished, as all the estimates point to a lightly exploited stock. Hence, the high recent landings, even if above MSY, are unlikely to reduce the stock below B_{MSY} for several years, at which time the response of landings and CPUE indicators to several years of high landings could be re-evaluated (ICCAT 2014).

The **Atlantic bigeye tuna stock** was estimated to be overfished and that overfishing was occurring in 2014. Projections indicated that maintaining catch levels at the current TAC of 65,000 t was expected to recover the stock status to Convention objectives with 49% probability by 2028. However, 2016 catches (72,375 t) exceeded the TAC of 65,000 t by 11%. Therefore, if future catches are maintained at the level of 2016, the probability of achieving ($B>B_{MSY}$, $F<F_{MSY}$) is expected to decrease to around 38%, therefore there is some objective basis for confidence that he strategy will work, even if it takes longer.

Based on the analyses conducted in 2016 as well as in 2013, the Committee believed that the current TAC for the **North Atlantic albacore** would maintain the long-term objectives of the Commission as specified in Rec. 16-06. Although the SCRS will continue working in reviewing and improving the MSE for northern albacore, the MSE simulations conducted in 2017 allow the Committee to provide advice that is robust to a wide range of uncertainties, including those affecting the 2016 assessment. The different model scenarios considered in the south Atlantic albacore stock assessment provide different views on the future effects of alternative management actions. Projections at a level consistent with the 2016 TAC (24,000 t) showed that probabilities of being in the green quadrant of the Kobe plot across all scenarios would increase to 63% by 2020. Further reductions in TAC would increase the probability of being in the green zone in those timeframes.

In the case of the **N Atlantic swordfish**, current TAC of 13,700 t has a 36% probability of maintaining the stock in the green quadrant of the Kobe plot by 2028, whereas a TAC of 13,200 t would have a 50% probability, and would also result in the biomass being above B_{MSY} with a probability greater than 50%. While in the case of the South Atlantic swordfish stock, the current TAC of 15,000 t has a 26% probability of rebuilding the South Atlantic swordfish stock to within MSY reference levels by 2028, whereas a TAC of 14,000 t would have a 50% probability of rebuilding the stock.

The total allowable catch in the **South Atlantic swordfish** for the years 2007 through 2009 was 17,000 t. The reported catch during that period averaged 13,675 t, and did not exceed the TAC in any year. In 2010, the TAC was reduced to 15,000 t and in 2017 it was reduced to 14,000. The reported catch since 2010 averaged 10,658 t and did not exceed the TAC in any year.

For the **North Atlantic blue shark** stock, all scenarios considered with the Bayesian surplus production model and the integrated model (SS3) indicated that the stock was not overfished and that overfishing was not occurring, as was also concluded in the 2008 stock assessment. The limit adopted by the Commission (based on the average catch of the final five years used in the assessment model) was considered precautionary by the SCRS, and therefore it should allow the strategy to work.

Therefore, in the case of the skipjack, bigeye tuna, albacore and swordfish stocks and N Atlantic blue shark the assessment team consider that there is some objective basis for confidence that the strategy in place will work, based on information from the SCRS latest stock assessment.

On the other hand, uncertainty associated with stock assessments of **sailfish, marlins** and the **S Atlantic blue shark**, and also the fact that sailfish and marlins are overfished and possibly overfishing is occurring (see **Table 2.1.1.1**), puts some doubts on whether the ICCAT strategy will work for these stocks. However, the pro-active attitude showed by ICCAT in recent years towards the challenges faced by these stocks is a positive sign in the right direction. The assessment team remarks the following actions as signs of this pro-active attitude:

- The continuous revision and improvement of the Pluriannual program for tropical tunas (after the first Recommendation for a pluriannual program for tropical tunas in 2011 it was reviewed in 2013, 2014, 2015 and 2016),
- The Recommendation (15-05) to further strengthen the plan to rebuild blue marlin and white marlin stocks (issued in 2012),
- The recent Recommendation (16-11) on management measures for the conservation of the Atlantic sailfish
- The recent Recommendation (16-12) on management measures for the conservation of Atlantic blue shark caught in association with ICCAT fisheries

Most of these Recommendations have only been in force since June 2017, therefore it is not expected to see any results yet.

Table 7.3.2.4 already showed that bigeye tuna accounted for only 3.86 % of the total catches of the UoC between 2014 and 2018, while **Table 7.3.2.8** shows that bigeye represented up to 1.47 % of the total catches of the fishing trips observed by the observers between 2014 and 2018. The SCRS estimates the MSY for this stock to be 78,824 tons, while yield in 2016 was 72,375 tons. Annual catches of the UoC between 2014 and 2018 oscillated between 295 and 792 tons.

As presented in **Table 7.3.2.8** and already discussed in PI 2.1.1, UoC catches of sailfish and blue and white marlins are very small, representing annual catches between 0.16 tons in the case of blue marlin and 0.0 t in the case of white marlin.

Document SCRS/2019/095 summarized future projections developed intersessionally to evaluate the effectiveness of a subset of the 2017 conservation and management measures recommended by ICCAT as applied in SCRS/2019/095, related to TAC and minimum size limits, to reduce North Atlantic shortfin mako shark mortality in association with ICCAT fisheries and to rebuild the stock to the MSY level. Just 0.05 tons/1000 t production (YFT+SKJ+BET landed) of Shortfin mako shark were caught by the UoA between 2014 and 2018.19 individuals were caught in those 5 years of data collected, 62.43% of which was released alive and 30.12% discarded dead. Therefore, the discarded fraction generated by the UoC represents a negligible fraction as it represents 0% of all catches.

According to data recorded by the observers on board the assessed vessels between 2014 and 2018 blue shark accounts for 0.06% of the total UoC catches. Just a 0.4% of the blue shark caught during that period was retained, 29.4 % was discarded dead and the remaining 70.19 % released alive. This means that for every 1,000 tons of production (YFT+SKJ+BET landed) 5.9 tons of blue shark are discarded dead and 14.1 tons are released alive. According to **Table 7.3.2.7** average annual production of the UoC was 6,525 tons between 2014 and 2018. This means that every year the UoC would discard 5.9 tons of dead blue shark. The SCRS estimates the MSY for this species to be 24,077 tons and yield in 2013 to be 20,799 tons. Therefore, the discarded fraction generated by the UoC represents a negligible fraction of the MSY for this species.

Therefore, in the case of the bigeye tuna, sailfish stocks and N Atlantic blue shark the assessment team considers that there is some objective basis for confidence that the strategy in place will work, based on information collected by observers on board the assessed vessels, and also on the fact that there are new and recently reviewed Recommendations on these species.

Based on all the information presented above, the assessment team considers that **SG80 is met.**

In the case of the **East Atlantic skipjack**, the latest stock assessment did not allow the SCRS to provide a reliable estimate of MSY, and it was recognized that is still pending the submission of additional data which are necessary to improve the stock assessment. Also, the Committee has expressed its concern regarding uncertainties which the underreporting of skipjack catches may have on the perception of the state of the skipjack Atlantic stocks.

The **bigeye tuna** is still undergoing overfishing in its overfished state.

In the case of the **Atlantic swordfish stocks** the indices detailed above showed reduced % of success (between 36% and 50% for the N Atlantic stock and between 26% and 50% for the S Atlantic stock, depending on the TAC). Further, the Committee emphasized that their advice does not account for removals associated with the actual mortality of unreported dead and live discard, quota carryovers, quota transfers across the North and South stock management boundaries.

The **shortfin mako Northern stock** is overfished and is undergoing overfishing.

In the case of the **South Atlantic blue shark stock**, the Committee did not make a determination on the stock status, but cautions that the stock may have been overfished and overfishing may have occurred in recent years.

Those uncertainties are preventing to conclude that testing supports high confidence that the strategy will work for these stocks, based on information for their stock assessments.

In the case of the minor species/stocks, data collected by observers on board provide evidence that the UoC has a very small impact on them. Further, there is 100% observer's coverage and detailed information on bycatches is recorded. Therefore, this data could be taken as a proof supporting the strategy will work with these species/stocks. However, the historical data series available is still too short and due to some challenges about the compilation of the data from the IEO observers, the assessment team was faced with some limitation with the analysis of the data (data presented exclusively in number of individuals, the fate of the bycatch was aggregated for FOB and FSC, …).

Therefore, **SG100 is not met**

	Management strategy implementation			
c	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**	**Yes**
Rationale				

There are multiple evidences that the established management measures are being implemented. The following resources can be downloaded or consulted at the ICCAT website:

- Volume 4 of the ICCAT biennial reports present evidence that CPCs are complying with their obligations in relation to catch data reporting (Task I and II), although the degree of compliance varies according to the species. This volume also contains the Secretariat's Reports to the ICCAT Conservation and Management Measures Compliance Committee (COC)
- Stock assessments carried out by the SCRS, as well as technical reports issued by the related Working Groups, are evidence of the analysis carried based on catch data and other scientific studies. Volume 2 of the ICCAT biennial reports includes the Report of the SCRS and its appendices

Therefore, **SG80 is met.**

Furthermore, in the case of the UoC there is a 100% observer's coverage (all fishing trips are observed). Data recorded by the observers are compiled and analysed by AZTI and reported to the SCRS in accordance with Task II protocols. The assessed fleet is annually assessed by AZTI against the good practices on board included in the Norma UNA195006:2016. This annual assessment verifies (among other issues related to FADs) the implementation of release operations of incidental catches according to the procedures detailed in the manual, proper recording of those activities, and training of skippers, crews and observers. The assessed vessels got the declarations of conformity signed by AZTI for 2020.

Therefore, there is clear evidence that the strategy in place for managing main and minor primary species (as described in SIa) is being implemented successfully. In addition, the assessment team considers that the strategy is working since it has maintained the main primary species (skipjack tuna) at levels, which are highly likely to be above the PRI (despite the lack of a reliable estimate of a MSY for the skipjack tuna). Besides, observer data show that the impact of the UoC on the minor primary species is very limited and catches cannot be considered a threat for the conservation or recovery of these stocks. Further, ICCAT has taken steps towards the improved management of sailfish, shortfin mako and blue shark, and it also strengthened its management strategy for marlins. **SG100 is met**.

	Shark finning			
d	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**	**Yes**
Rationale				

Blue shark and shortfin mako shark are the only shark species impacted by the UoA and assessed as a primary component of the P2.

The client has an internal protocol that was adopted and approved in 2012 that states that "*The fleet is very strict and totally rejects shark finning practices. Shark finning is strictly forbidden on all vessels of the fleet"*.

This Code of Good Practices also includes a specific section on **Associated Species Release Manoeuvres**, including sharks:

"*While the number of sharks incidentally caught by purse seiners is not significant when compared to the number of individuals caught by other gears, it can be reduced by applying suitable handling and release protocols.*

If any sharks are discovered when the catch is being hauled on board, and following RFMOs recommendations[1] they must be released from the deck (provided that a single person can handle and release them), as quickly and carefully as possible, to avoid harming the animals. The necessary precautions must always be taken to keep crew safety during the release process of dangerous animals. Crew must particularly avoid grabbing sharks only from the tail or the gills, to avoid injuring the animal and to protect the crew from dangerous reactions. Nooses or poles may not be used to release sharks appearing on the water surface. If sharks are found inside the seine, crew must attempt to get them out of the net using the brailer employed to bring the catch on board, even if a certain amount of fish (2-3 tons) is lost, or else must use some other cradle-like device, to avoid the possibility of injury. Likewise, if sharks cannot be released immediately from deck, it is recommended to keep the animals wet, in the shade and if possible, breathing freely. The fleet is very strict and totally rejects shark finning practices. Shark finning is strictly forbidden on all vessels of the fleet. Ships are obligated to have a net carrier, a stretcher or a tarp on board and/or similar equipment alongside the brailer, so sharks found on deck can be handled more easily. Also, it is recommended to have hopper or ramps installed in the fishing deck for quicker and easier release of animals. Once the animal has been released, the crew must check if the animal is behaving normally and must record the operation in the fishing logbook. If any strange behaviour is observed, this must be recorded in the fishing logbook too".

Based on the above, **SG60 is met.**

At an EU level, therefore, Spain has also to follow them, Council Regulations (EC) No 1185/2003 and (EC) No 605/2013 establish a general prohibition of the practice of 'shark finning', whereby a shark's fins are removed and the remainder of the shark is discarded at sea.

The assessed fleet (in this case 192 fishing trips from 2014 to 2018) has a 100% observer's coverage. The fate of the bycatches (i.e., retained/discarded alive/discarded dead) was detailed in these reports and a column for shark finning was prepared to collect specific information on this issue.

In addition, as explained in detail in **section 7.4.1.3,** AZTI supervises on an annual basis the implementation of the ANABAC Code of good practices by the member's vessels, including shark finning. The client provided the team with a certificate from AZTI verifying that no shark finning events have taken place onboard the assessed vessels since 2015. Therefore, it can be confirmed with a high degree of certainty that shark finning is not taking place. Hence, **SG80** and **SG100 is met**.

	Review of alternative measures			
e	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 primary 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 primary 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 primary species, and they are implemented, as appropriate.
	Met?	**Yes**	**Yes**	**No**
Rationale				

According to data recorded by the observers on board the assessed vessels between 2014 and 2018 (**Table 7.3.2.8**), just 0.17 % of the skipjack caught by the UoC was discarded.

A recent ICCAT Recommendation (17-01) prohibiting discards of tropical tunas (YFT, SKJ, BET) by purse seiners just entered into force 11th June 2018. This Recommendation state that vessels shall retain on board and then land or transship to port all bigeye, skipjack and yellowfin tunas caught, except for two exceptions: (i) fish unfit for human consumption and, (ii) when caught during the last set of a trip and there is not enough storage capacity. This Recommendation also note that CPC shall report all discards observed. Finally, it is noted that in 2020 the SCRS shall assess the effectiveness of this Recommendation and submit recommendations to the Commission regarding potential improvements. The client has adopted an internal protocol of full retention of all tuna catches aligned with Rec17-01.

[1] ICCAT: Rec 03-10, Rec 04-10, Rec 09-07, Rec 10-06, Rec 10-07, Rec 10-08, Rec 11-08, Rec 14-06, Rec 15-06, Rec 16-12, Rec 18-06
IOTC: Res 05/05; Res 12/09; Res 13/06; Res 17/05; Res 18/02
IATTC: Res C-04-05; Res C05-03, Res C11-10, Res C15-04, Res C16-01, Res C16-04, Res C16-05, Res C16-06
WCPFC: CMM 2010-07; CMM 2011-04; CMM 2013-08

Therefore, discards recorded by observers on board the assessed fishery proved that discarding of skipjack tuna is almost nonexistent, and Rec (17-01) foresees a review of its effectiveness two years after its implementation.

Further, as explained in detail in **section 3.2.5** the UoA has implemented the code of good practices developed by OPAGAC/ANABAC, which has been later on included in the standard UNE196005, and assessed vessels are include in the ISSF PVR list. Both the UNE standard and the PVR list include measures aimed to minimize mortality of unwanted catch and means to verify its correct implementation (commitment to have a 100% observer coverage, training of skippers and crew, detailed record keeping) since they are being externally audited on an annually basis. In the case of the OPAGAC/ANABAC code of conduct there is a steering committee in charge of reviewing the performance of the results. After its implementation in 2012, the Code of Conduct has been reviewed and updated in 2015, 2017 and 2019.

Based on all the above, the team considered that there is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate., **SG60 and SG80 are met**

According to data recorded by the observers on board the assessed vessels between 2014 and 2018 (**Table 7.3.2.8**), 0 % of the bigeye tuna caught by the UoC was discarded.

Therefore, discards recorded by observers on board the assessed fishery proved that discarding of bigeye tuna is almost nonexistent, and also Rec (17-01) (see above) foresees a review of its effectiveness two years after its implementation.

Table below was extracted from **Table 7.3.2.8** and it is based on data provided by the observers on board the assessed vessels between 2014 and 2018. It can be seen that all billfishes (including swordfish) were retained, while in the case of the blue shark almost all catches 99.6% were discarded (70.19 % were released alive and 29.41 % were discarded dead).

Species name	% retained	% released alive	% discarded dead
Xiphias gladius	76.85%	0.00%	23.15%
Istiophorus albicans	98.49%	0.66%	0.85%
Makaira nigricans	94.08%	0.00%	5.92%
Prionace glauca	0.40%	70.19%	29.41%
Isurus oxyrinchus	7.45%	62.43%	30.12%

For the 8 species assessed as minor primary unwanted catches are kept at reduced levels and most of them are retained. The only exceptions are the shortfin mako and the blue shark since individuals caught are discarded, but it has to be taken into account that both species accounts for only 0.06% of the total catches (including discards), and it is estimated that around two thirds are returned alive to the sea. This means that for every 1,000 tons of production (YFT+SKJ+BET landed) the UoC discards less than 0.58 tons of blue shark and 0.05 tons of shortfin mako shark (**Table 7.3.2.8**).

Bycatch is recorded by the observers and data reported by the CPCs (in the case of the UoC it is done by the research institution in charge of the observer's program: before through IEO and now through AZTI) to the SCRS on a continuous basis. The SCRS compiles these data, together with other information (logbooks, landings, port sampling, and other research activities implemented or coordinated by ICCAT), and annually they are reviewed by specific working groups. The following specific ICCAT Working Groups are relevant to the seven species assessed as Primary components of the P2 for this fishery: (i) Tropical tunas; (ii) Swordfish; (iii) Billfishes; (iv) Sharks. Among other tasks, these Working Groups are responsible for reviewing measures to minimize the mortality of unwanted catches. Also, the sub-committee on Ecosystems and discards (integrated in the SCRS) is commissioned for reviewing alternative measures for minimizing bycatches and discards. However, this review is done according to the needs and it is not biennial. For instance Rec (01-04) for evaluating alternatives to reduce catches of juveniles or dead discards of swordfish remains in force since 2002, but it does not record a certain timeline for reviews. Rec (16-01) encourages CPCs to submit information on bycatches and discards and consider designing and adopting management measures to better manage bycatch and reduce discards, while mandates the SCRS to evaluate the contribution of bycatches and discards on a fishery by fishery basis and to advise the Commission on possible measures allowing to reduce discards and to mitigate onboard post-harvest losses and bycatch in ICCAT tropical tuna fisheries. Finally, Rec (17-01) also mandate the SCRS to undertake work in 2020 to examine the benefits of retaining non-targeted species catches and present its recommendations to the Commission. The work should take into account all species that are usually discarded on all major gears.

The internal protocol aligned with Rec 17-01 adopted by the client is not restricted to catches of the three tropical tunas, it was taken one step forward since they extended it to all unwanted fish catches. Therefore, restrictions for discarding stated in Rec 17-01 (see above), in the case of the assessed vessels are applicable to all fish catches.

There is a biennial review just for the Bigeye tuna but not for the rest of minor species, therefore, the team considers that **SG100 is not met**.

References

ICCAT (2011e), ICCAT (2012a), ICCAT (2012b), ICCAT (2014b), ICCAT (2015c), ICCAT (2016b), ICCAT (2016f), ICCAT (2016g), ICCAT (2017a), ICCAT (2017b), ICCAT (2018c)

IOTC: Res 05/05; Res 12/09; Res 13/06; Res 17/05; Res 18/02
IATTC: Res C-04-05; Res C05-03, Res C11-10, Res C15-04, Res C16-01, Res C16-04, Res C16-05, Res C16-06
WCPFC: CMM 2010-07; CMM 2011-04; CMM 2013-08

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

PI 2.1.3 – Primary species information

PI 2.1.3		**Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The obligation for all CPCs to record and report data on catches (Task I), and catch-effort and catch-at-size (Task II) allows the SCRS to have updated and complete information on all removals of skipjack stocks.

A number of standardized indices of abundance have been developed for skipjack tuna by national scientists for selected fleets for which data were available at greater spatial and/or spatial temporal resolution for the assessment.

The SCRS is continuously working on improving the fishery indicators and the models used in their regular stock assessments of tropical tuna stocks. Below are some examples of the work done in recent years:

- The historical series of commercial catches of skipjack and bigeye tuna were corrected since it was detected that about 30% of the landings occurring in the Ivory Coast and reported as ‘faux poisson’ (different fish species and sizes rejected by the canning industry) consisted of skipjack and also significant catches of small bigeye tuna were found to be channelled to local West African markets in this way.
- Species composition and catch at size from the Ghanaian fleet of bait boats and purse seiners, has been thoroughly reviewed during the past few years. This review has led to new estimates of Task I, and partially Task II catch and effort and size, for these fleets for the period 1973-2013.
- Average rate of discards of skipjack on FADs by European purse seiners operating in the eastern Atlantic has been estimated based on on-board observer programs, and these data are regularly integrated into the models.
- IUU fishing affecting tropical tunas has been estimated by comparing monitored landings in West African ports and cannery data against catches reported to ICCAT. These catches have been partially included and the associated sizes in the skipjack assessment.
- The use of data series on the yearly progression of the sale prices of tropical species by commercial category has been used in order to identify the years when skipjack is more targeted by purse seiners.
- Data from different tagging studies (a total of 42,520 tagged individuals released between 1960 and 2011) have been used to gain knowledge on the stock structure and growth models to be incorporated into the models. Rec 14-02 launched the implementation of the Atlantic Tuna Tagging Program (AOTTP). Tagging activity began at the end of June 2016 in Azores, EU-Portugal waters and is currently ongoing in West African waters. To date more than 12,000 tropical tunas, across species and size-ranges have been tagged and released. The most commonly tagged species so far were skipjack (ca 40%), bigeye (ca 30%) (ICCAT 2017c).
- Port sampling program which is being used by the SCRS assess the results of the of the area/time closure to FADs, but also to estimate IUU fishing or to review catch species composition declared at the logbooks (e.g. Ghanaian catches between 2006 and 2012 were found to be underestimated and corrected).

Still, there are still a lot of limitations in the information available (uncertainties on the stock structure, spatial differences in growth rates, improved CPUE trends responsive to the stock status are needed in the case of the skipjack, underreporting of catches…) and challenges to be faced (difficulties in assessing the effects of fishing mortality due to continuous reproduction in the case of the skipjack, difficulties to discriminate fishing effort on FOB and FSC, how to integrate into stock assessment models the numerous changes that have occurred in the fishery since the early 1990s…). However, regular stock assessments and annual executive summary on the species produced by the SCRS are adequate to assess and monitor the abundance and stock status of both skipjack tuna.
Data reported to ICCAT as Task I and Task II are mainly based on the information collected in the logbooks by the captains and the information collected by the observers on board.
Rec 16-01 only requires the presence of an observer during the area/time closure to FADs, while and Rec 16-14 establishes that CPCs shall ensure a minimum of 5% observer coverage of fishing effort in purse seine fisheries. However, the assessed fleet has been carrying a scientific observer on every fishing trip (100% coverage) since 2012, as already explained in **section 7.3.2(e)**. As shown in this section, these observers collect detail information on the fishing operations, catches and bycatch species composition and sampling (size). Fate of the bycatches (retained, released alive, discarded dead) is also being recorded.
Between 2014 and 2018, the observer program on board the assessed vessels was run by the IEO, which is the Institution in charge of reporting this data to ICCAT. Data on catches and bycatches composition of the UoC is presented in **Table 7.3.2.2**, **Table 7.3.2.3, Table 7.3.2.7, and Table 7.3.2.8**.
Based on all the information presented above the assessment team concludes that quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoC on main primary species (skipjack tuna) with respect to status. **SG60, SG80 andSG100 are met.**

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				

As explained in PI 2.1.1 SI (b) the SCRS perform regular stock assessments for all the minor species and stocks assessed as minor primary: bigeye tuna (*Thunnus obesus*), albacore (*Thunnus albacares*) North & South stocks, swordfish (*Xiphias gladius*) North & South stocks, Atlantic sailfish (*Istiophorus albicans*), blue marlin (*Makaira nigricans*), Atlantic white marlin (*Tetrapturus albicans*), shortfin mako (*Isurus oxyrinchus*) and blue shark (*Prionace glauca*) North & South stocks. Despite the degree of uncertainty, which varies greatly between the 11 different stocks it, can be concluded that regular stock assessments and annual executive summaries on the species are produced by the SCRS, which are adequate to assess and monitor the abundance and stock status for all of them.

As explained in the previous SI, the assessed fleet has been carrying a scientific observer on every fishing trip (100% coverage) since 2012. As shown in section 7.3.2e) these observers collect detail information on the fishing operations, catches and bycatch species composition and sampling (size). Fate of the bycatches (retained, released alive, discarded dead) is also recorded. Observers' data on bycatch composition of the UoC is presented **Table 7.3.2.2**, **Table 7.3.2.3, Table 7.3.2.7, and Table 7.3.2.8**. **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 degree of certainty** whether the strategy is achieving its objective.
	Met?	**Yes**	**Yes**	**No**
Rationale				

As previously argued in PI 2.1.2 SI (a), there is a strategy in place for managing main and minor primary species. Most of the Recommendations integrating this strategy mandate or encourage (depending on the case) the CPCs to

implement data collection programs that ensure the reporting of accurate catch, effort, size and live an dead discard data to ICCAT in full accordance with the ICCAT requirements for provision of Task I and Task II.
The assessed vessels have a 100% observer's coverage since 2012, and these observers are proceeding in accordance with the National Observer Data Collection Program established by ICCAT. Data collected the observers' on board the assessed vessels is sent and reviewed by AZTI, analysed and reported to ICCAT.

Therefore, the information which have been presented and discussed in previous SI (a) and SI (b) is considered adequate to support the strategy in place for managing main and minor primary species as described PI 2.1.2 SI (a). **SG60 and SG80 are met.**

Further, the assessment team considers the strategy is achieving its overall objective since it has maintained the main primary species (skipjack tuna) at levels which are highly likely to be above the PRI, and also observer's data show that the impact of the UoC on the minor primary species is very limited and catches cannot be considered a threat for the conservation or recovery of these stocks.

However, there are still a lot of uncertainties affecting the stock assessment and status determination which prevent the assessment team to conclude that the available information allows evaluating **with a high degree of certainty** whether the strategy is achieving its objective (e.g. the lack of a reliable estimate of a MSY for the skipjack, the fact that bigeye tuna is still being overfished whilst below MSY level, sailfish and marlins are overfished and possibly overfishing is occurring). **SG100 is not met.**

References

ICCAT 2017c, ICCAT 2017d, ICCAT 2018c.

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
	Main secondary species stock status			
a	Guide post	Main secondary species are **likely** to be above biologically based limits. OR If below biologically based limits, there are **measures** in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits. OR If below biologically based limits, there is either **evidence of recovery** or a **demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are **considerable**, there is either **evidence of recovery** or a, **demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main secondary species are above biologically based limits.
	Met?	**Not relevant**	**Not relevant**	**Not relevant**
Rationale				

Table 7.3.2.9 presents all P2 species scoring elements considered in this assessment, including its assignment to the P2 species categories provided by MSC ('Primary/Secondary/ETP' and 'Main/Minor').
The resulting comprehensive list include 46 species to be assessed as Secondary components of the P2: 2 rays, 1 shark, 6 tunas and tuna-like species, 3 billfishes and 34 other bony fishes. According to all the different sources of information consulted (see **section 7.3.2**), catches for all the above mentioned species would fall far below the threshold to be considered 'Main' subcomponents. Therefore, the assessed fishery does not impact pobon any P2 main subcomponent. Thus, this **SI is not relevant**.

	Minor secondary species stock status			
b	Guide post			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			**No**

Rationale

As explained in previous SI, the resulting comprehensive list includes 46 species to be assessed as minor secondary components of the P2: 2 rays, 1 shark, 6 tunas and tuna-like species, 3 billfishes and 34 other bony fishes. See **Table 7.3.2.9** for the complete list.
The SCRS issues an annual report on the status of small tuna stocks that include the 6 tuna species classified as minor secondary, but the report is limited to collecting catch statistics, analysing trends and verifying the limitations of the information available. In 2017, the Ecological Risk Analysis (ERA) was updated for the small tuna caught by longline and purse seine fisheries in the Atlantic (as reported in ICCAT 2018d). The study found that the top 3 stocks at risk in the Atlantic Ocean that should deserve most of the managers' attention were E. alleteratus, A. solandri and S. cavalla (only E. alleteratus is impacted by the by the assessed fishery).
The SCRS has developed indicators for small tunas, however, their robustness still need to be evaluated before they can be used to provide management advice to the Commission.
Arrizabalaga et al in 2011 performed an Ecological Risk Assessment to all the species caught by the different tuna fisheries occurring in the Atlantic. Several of the species assessed as minor secondary got high risk values.
In any case, biologically based limits have not been established for any of the species assessed as minor secondary.
Since stock status reference points are not available for any of the minor secondary species impacted by the UoC, they were all classified as Data Deficient species according to FCP7.7.3 (see Table 3 17) and a RBF shall be triggered for assessing this SI. 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 taxa 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.**

References

Arrizabalaga et al 2011, ICCAT 2018d.

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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**	**Yes**
Rationale				

Since the UoC impacts no main secondary species, **SG60 and SG80 are met by default.**

The SCRS issues a report on the status of small tuna stocks that include the 6 tuna species classified as minor secondary. The report collects catch statistics, analyses trends and verifies the limitations of the information available. Also, ecological Risk Assessments have been performed small tunas caught by longline and purse seine fisheries in the Atlantic, the latest being performed in 2017 (ICCAT 2018d).
Recommendation 11-10 encourages CPCs to require the collection of by-catch and discard data in both observer programs and logbooks.
Recommendation 04-10 on the conservation of sharks caught in association with fisheries managed by ICCAT established some measures regarding reporting and encouraging the release of live shark, especially juveniles, to the extent possible that are caught incidentally and are not used for food.
The following provisions to reduce discards are included in Rec 16-01:
The CPCs shall:

- submit to the SCRS information on by-catches and discards made by fishing vessels flying their flag fishing for tropical tunas;
- encourage the vessel owners, masters and crew fishing for tropical tunas under their flag to implement good practices to better manage by-catches and reduce discards;
- consider designing and adopting management measures and/or management plans to better manage by-catch and reduce discards.

The SCRS shall:

- evaluate the contribution of by-catches and discards to the overall catches in ICCAT tropical tuna fisheries, on a fishery by fishery basis;
- advise the Commission on possible measures allowing to reduce discards and to mitigate on board post-harvest losses and by-catch in ICCAT tropical tuna fisheries.

ICCAT is also promoting specific research programs on some of the minor secondary species, such as: the Enhanced Billfish Research Program (EBRP), the Small Tuna Year Program (SMTYP), the Shark Research and Data Collection Program (SRDCP) and the Atlantic Ocean Tropical tuna Tagging Program (AOTTP) which includes some small tunas.
Most of these Recommendations mandate or encourage (depending on the case) the CPCs to implement data collection programs that ensure an accurate of the bycatches (including live and dead discards) to ICCAT. The UoC has implemented a voluntary observer program that cover 100% of the fishing trips, well above the minimum of 5% of the fishing effort established by Rec (16-14) and also above the level recommended by the SCRS to provide reasonable estimates of total bycatch (Rec 16-01).
In 2012 the client signed a code of good practices on board which is based on a comprehensive manual developed by OPAGAC/AGAC and ANABAC-OPTUC with the assistance of AZTI. All the OPAGAC and ANABAC fleets adopted the code and AZTI was in charge of developing and implementing a system of verification of the contents of the code. Since the development and implementation of a specific standard for a sustainable tropical tuna purse seine fishery, the UNE1956006:2016, this code of conduct was embed as one of the sections of this standard. AZTI verifies, on an annual basis, compliance the implementation of this code in each of the vessels from the OPAGAC members (including the assessed vessels). Additionally, a steering committee should also track its implementation. The manual on good

practices provides detailed information on how to proceed to release sharks and rays, and includes specific forms for the observers to record these operations.
Based on all the information above the assessment team considers that there is a strategy in place for managing main and minor secondary species. **SG100 is 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**	**Yes**	**No**
Rationale				

In the case of the minor species/stocks, data collected by observers on board provide evidence that the UoC has a much reduced impact on them.

According to data recorded by the observers 25,4t of small tunas are caught for every 1,000t of production (YFT+SKJ+BET landed), while in the case of other bony fish species the ratio would be 0.41t/1,000 production and in the case of the pelagic stingray it would result in 0t/1,000t production. Since average annual production of the UoC between 2014 and 2018 amounted up to 6,698t, the annual catch of the UoC would include between 170t of small tunas and 2.74t of other bony fishes.

Further, there is 100% observer's coverage and detailed information on bycatches recorded. Therefore, there is some objective basis for confidence that the strategy will work based on observer's data from the UoC. **SG80 is met.**
However, the historical series of data available is still too short and some shortages on the way data from the IEO observers were presented to the assessment team limited the analysis (data presented exclusively in number of individuals, the fate of the bycatch was aggregated for FOB and FSC…).

Further, although the SCRS has the mandate from the Commission to evaluate the contribution of by-catches and discards to the overall catches in ICCAT tropical tuna fisheries, on a fishery-by-fishery basis, the assessment team is not aware of any specific study on this issue.
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**	**Yes**
Rationale				

The annual report of the small tuna species group provides evidence of the analysis carried based on catch data and other scientific studies.

The SCRS issues a report on the status of small tuna stocks that include the 6 tuna species classified as minor secondary. The report collects catch statistics, analyses trends and verifies the limitations of the information available. Also, Ecological Risk Assessments have been performed small tunas caught by longline and purse seine fisheries in the Atlantic, the latest being performed in 2017.

Further, in the case of the UoC there is a 100% observer's coverage (all fishing trips are observed). Data recorded by the observers are compiled and analysed by AZTI and reported to the SCRS.

The assessed fleet is annually assessed by AZTI against the good practices on board included in the Standard UNE195006:2016. This annual assessment verifies (among other issues related to FADs) the implementation of release

operations of incidental catches according to the procedures detailed in the manual, proper recording of those activities, and training of skippers, crews and observers.

Therefore, there are clear evidences that the strategy in place is being implemented successfully. In addition, the assessment team considers the strategy is achieving its overall objective since the UoC does not impact on main subcomponents and data recorded by observer on board show that the impact of the UoC on the minor primary species is very limited and catches cannot be considered a threat for the conservation or recovery of these stocks. **SG80 and SG100 are met.**

	Shark finning			
d	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**	**Yes**
Rationale				

Cookie cutter shark is the only shark species impacted by the UoA and assessed as a secondary component of the P2.

The client has an internal protocol that was adopted and approved in 2012 that states that "*The fleet is very strict and totally rejects shark finning practices. Shark finning is strictly forbidden on all vessels of the fleet"*.

This Code of Good Practices also includes a specific section on **Associated Species Release Manoeuvres**, including sharks:

"*While the number of sharks incidentally caught by purse seiners is not significant when compared to the number of individuals caught by other gears, it can be reduced by applying suitable handling and release protocols.*

If any sharks are discovered when the catch is being hauled on board, and following RFMOs recommendations[2] they must be released from the deck (provided that a single person can handle and release them), as quickly and carefully as possible, to avoid harming the animals. The necessary precautions must always be taken to keep crew safety during the release process of dangerous animals. Crew must particularly avoid grabbing sharks only from the tail or the gills, to avoid injuring the animal and to protect the crew from dangerous reactions. Nooses or poles may not be used to release sharks appearing on the water surface. If sharks are found inside the seine, crew must attempt to get them out of the net using the brailer employed to bring the catch on board, even if a certain amount of fish (2-3 tons) is lost, or else must use some other cradle-like device, to avoid the possibility of injury. Likewise, if sharks cannot be released immediately from deck, it is recommended to keep the animals wet, in the shade and if possible, breathing freely. The fleet is very strict and totally rejects shark finning practices. Shark finning is strictly forbidden on all vessels of the fleet. Ships are obligated to have a net carrier, a stretcher or a tarp on board and/or similar equipment alongside the brailer, so sharks found on deck can be handled more easily. Also, it is recommended to have hopper or ramps installed in the fishing deck for quicker and easier release of animals. Once the animal has been released, the crew must check if the animal is behaving normally and must record the operation in the fishing logbook. If any strange behaviour is observed, this must be recorded in the fishing logbook too".

Based on the above, **SG60 is met.**

At an EU level, therefore, Spain has also to follow them, Council Regulations (EC) No 1185/2003 and (EC) No 605/2013 establish a general prohibition of the practice of 'shark finning', whereby a shark's fins are removed and the remainder of the shark is discarded at sea.

The assessed fleet (in this case 192 fishing trips from 2014 to 2018) has a 100% observer's coverage. The fate of the bycatches (i.e., retained/discarded alive/discarded dead) was detailed in these reports and a column for shark finning was prepared to collect specific information on this issue.

In addition, as explained in detail in **section 7.4.1.3,** AZTI supervises on an annual basis the implementation of the ANABAC Code of good practices by the member's vessels, including shark finning. The client provided the team with a certificate from AZTI verifying that no shark finning events have taken place onboard the assessed vessels since 2015.

[2] ICCAT: Rec 03-10, Rec 04-10, Rec 09-07, Rec 10-06, Rec 10-07, Rec 10-08, Rec 11-08, Rec 14-06, Rec 15-06, Rec 16-12, Rec 18-06
IOTC: Res 05/05; Res 12/09; Res 13/06; Res 17/05; Res 18/02
IATTC: Res C-04-05; Res C05-03, Res C11-10, Res C15-04, Res C16-01, Res C16-04, Res C16-05, Res C16-06
WCPFC: CMM 2010-07; CMM 2011-04; CMM 2013-08

Therefore, it can be confirmed with a high degree of certainty that shark finning is not taking place. Hence, **SG80** and **SG100 is met**.

	Review of alternative measures to minimise mortality of unwanted catch			
e	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?	**Yes**	**Yes**	**No**
Rationale				

Since the UoC impacts no main secondary species, **SG60 and SG80 are met.**

Unwanted catches (discards) are recorded by the observers and these data are reported by the CPCs (in the case of the UoC is done by the research institution in charge of the observer's program, i.e., AZTI) to the SCRS on a continuous basis. The SCRS compiles these data, together with other information (logbooks, landings, port sampling, and other research activities implemented or coordinated by ICCAT), and annually they are reviewed by specific working groups. The following specific ICCAT Working Groups are relevant to the Secondary components of the P2 for this fishery: (i) Billfishes; (ii) Small tunas. Also, the sub-committee on Ecosystems and discards (integrated in the SCRS) is commissioned for reviewing alternative measures for minimizing bycatches and discards. Efforts such as a macro-risk analysis (PSA) covering all incidental catches of tuna fisheries in the Atlantic, such as that carried out by Arrizabalaga et al 2011, are the result of work carried out by this Sub-Committee.

Among other tasks, these Working Groups are responsible for reviewing measures to minimize the mortality of unwanted catches. However, this review is done according to the needs and it is not biennial.

As part of the provisions aimed to reduce discards in Rec (16-01), it is stated that: "When revising this Recommendation, the Commission shall consider the adoption of possible provisions for a better management of by-catches and reduction of discards in ICCAT tropical tuna fisheries". Later Rec (17-01) mandate the SCRS to undertake work in 2020 to examine the benefits of retaining non-targeted species catches and present its recommendations to the Commission. The work should take into account all species that are usually discarded on all major gears.

Since there is no biennial review in the case of minor species the team considers that **SG100 is not met**.

References

ICCAT 2018c, ICCAT 2018d

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

PI 2.2.3		**Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Since there is a 100% observer coverage of the fishing trips performed by the assessed vessels, and that information is matching with data reported in the UoA logbooks, the assessment team considers that quantitative information is available and adequate to assess with high degree of certainty that there is no impact of the UoA on main secondary species**,** if there were any. Therefore, **SG60, SG80 and SG100 are met.**

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 assessed fleet has been carrying a scientific observer on every fishing trip (100% coverage) since 2012. As shown in **section 7.3.2e)** these observers collect detail information on the fishing operations, catches and bycatch species composition and sampling (size). Fate of the bycatches (retained, released alive, discarded dead) is also recorded. Observers' data on bycatches composition of the UoC is presented in tables **Table 7.3.2.2**, **Table 7.3.2.3**, **Table 7.3.2.7**, and **Table 7.3.2.8**.

Knowledge on the biology and fishery of small tunas is very fragmented. Furthermore, the quality of the knowledge varies according to the species concerned. This is due in large part to the fact that these species usually have little economic importance compared to other tunas and tuna-like species, and to the difficulties in conducting sampling of the landings from artisanal fisheries, which constitute a high proportion of the fisheries exploiting small tuna resources. The large industrial fleets often discard small tuna catches at sea or sell them on local markets mixed with other by-catches, especially in Africa. The amount caught is rarely reported in logbooks; however, observer programs from purse seine fleets have recently provided estimates of catches of small tunas (this is the case of the UoC as explained above). Based on the available information the SCRS issues an annual on the status of small tuna stocks that include the 6 tuna species classified as minor secondary. Further, the SCRS has performed Ecological Risk Analysis (ERA) for the small tuna caught by longline and purse seine fisheries in the Atlantic, the latest in 2017. Despite the SCRS has developed

indicators for small tunas, their robustness still need to be evaluated before they can be used to provide management advice to the Commission.

Stock status of the remaining minor secondary species (2 rays, 1 shark, 3 billfish and 34 other bony fishes) have not been determined, apart from the Ecological Risk Assessment performed by Arrizabalaga et al in 2011 to several species caught by the different tuna fisheries occurring in the Atlantic.

In summary, although observers on board the UoC are providing detailed quantitative information to estimate the impact of the UoC on minor secondary species, this impact cannot be related to the stock status of those species. **SG100 is not met.**

	Information adequacy for management strategy			
c	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

Since the UoC impacts no main secondary species, **SG60 and SG80 are met by default.**

Data collected by the observers on board the UoC provides enough details on its impacts on minor secondary species. Furthermore, observers' coverage achieves 100% of fishing trips and, on a year basis, AZTI assesses the implementation of the good practices on board according to requirements established in the Standard UNE195006:2016 and the OPAGAC/ANABAC code of conduct.

However, despite efforts made by ICCAT regarding gaining knowledge on the biology through research programs (e.g. EBRP, SMTYP, SRDCP, AOTTP) and stock status of those species (evaluation of data-limited approaches in order to provide scientific information on the status of small tunas), there are still a lot of uncertainties. Therefore, the assessment team cannot conclude that the available information allows evaluating **with a high degree of certainty** whether the strategy is achieving its objective. **SG100 is not met.**

References

Arrizabalaga et al in 2011, ICCAT 2018c, ICCAT 2018d

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	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?	**NA**	**NA**	**NA**
Rationale				

This scoring issue (SIa) is not scored on the reason that there are not known national nor international requirements that set limits pertaining to the ETP species of the relevant UoA.

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?	**Marine mammals: YES** **Sea turtles: YES** **Sharks and rays: YES**	**Marine Mammals: YES** **Sea turtles: YES** **Sharks and rays: YES**	**Marine Mammals: NO** **Sea turtles: NO** **Sharks and rays: NO**
Rationale				

Marine mammals

Twelve marine mammals were recorded during the period 2014-2018, although just 4 individuals of Bryde´s whale were identified. All individuals were released alive before the retrieval of the net.

Bryde´s whales are IUCN red listed as Least Concern, but they are listed on CITIES Appendix 1 and on the CMS Appendix 2. The International Whaling Commission (IWC) has no estimates of Bryde´s whale stock abundance for the eastern south Atlantic (https://iwc.int/estimate).

Cetacean bycatches are regulated by the EU (EC - No 520/2007 (Art. 29)), but ICCAT does not include a recommendation for prohibiting intentional sets to cetaceans. Interactions mainly occur with large cetaceans (e.g. humpback whale; Megaptera novaeangliae) in specific areas and seasons and they generally escape from the net before its closure or by breaking the net (Escalle et al., 2015).

Arrizabalaga et al. (2011) performed a comprehensive PSA exercise using the by-catch species included in the ICCAT list for Atlantic tuna fisheries. The results showed that, although marine mammals have the highest average intrinsic vulnerability to population decline, their susceptibility scores is extremely low in the case of purse seine owing to the low frequency of interactions. As a result, the authors did not include this taxonomic group in the final risk ranking (Arrizabalaga et al., 2011).

Therefore, the fishery **meets the SG60s** that the known direct effects of the UoA are likely to not hinder recovery of the marine mammal ETP species, because the takes or interactions reasonable low, despite not knowing the status of the species involved, and all are released alive.

The ANABAC member fishing vessels do not fish with dolphins and the interaction with cetaceans, principally baleen whales, is rare and non-intentional. They also have an internal Code of Good Practice that includes different measures with release manoeuvres in case that any large whale is caught accidentally in their nets (see PI 2.3.2 SI(b) for further details).

The assessed fleet had 12 interactions with 4 individuals of Bryde´s whale and 8 unidentified large whales during all the 192 fishing trips from 8 vessels carried out between 2014-2018 and 100% were realesed alive, following the techniques included in the Code of Good Practices mentioned above Therefore, the team considers that even if the status of the marine mammals is unkown, the direct effects of the UoA are **highly likely** to not **hinder recovery** of the marine mammal species, thus, the fishery **meets the SG80 requirements**.

Sea turtles

Olive Ridley turtles are IUCN red listed as vulnerable, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. Thirty-nine Olive Ridley sea turtles were taken by the assessed fleet between 2014-2018, all of them released alive. According to the IUCN red list, the abundance of olive Ridley turtles is in decline, and the exact abundance of the stock is unknown (http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T11534A3292503.en).

Loggerhead turtles are IUCN red listed as vulnerable, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. A total number of 36 loggerhead sea turtles were taken between 2014-2018 period, and 100% were released alive. According to the IUCN red list, the overall abundance of loggerhead sea turtles is decreasing, including the sub-population of the eastern north Atlantic. The exact abundance of the stock in unknown (http://www.iucnredlist.org/species/3897/119333622#assessment-information).

Green turtles are IUCN red listed as endangered, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. Four green sea turtles were taken in the 2014-2018 period, and 100% were released alive. According to the IUCN red list, the overall abundance of green sea turtles is decreasing, including the sub-population of the eastern south Atlantic. The exact abundance of the stock in unknown (http://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en).

Leatherback turtles are IUCN red listed as vulnerable, and are listed in CITES Appendix 1, the CMS Appendix 1, and in the Atlantic Turtles MOU. Thirteen leatherback sea turtle were taken in the 2014-2018 period. All (100%) were released alive. According to the IUCN red list, the overall abundance of leatherback sea turtles is decreasing, including the sub-population of the eastern south Atlantic. The exact abundance of the stock in unknown (http://dx.doi.org/10.2305/IUCN.UK.2013-2.RLTS.T6494A43526147.en).

Kemp´s Ridley turtles are UICN red listed as critically endangered, and are listed in CITES Appendix, and in the Atlantic Turtles MOU. A total number of 2 were caught by the assessed fleet and both of them released alive.

In ANABAC Code of Good Conduct, an "Associated Species Release Manoeuvres" section is included which specifically indicates all procedures to follow on sea turtles: "*Following the recommendations of the RFMOs on sea turtles2, crew must attempt by all means to release every turtle entangled in floating objects or encircled by the purse seine net. If an entangled turtle is found, the net hauling operation must be stopped immediately so that the animal does not go through the powerblock. Whenever possible, the crew must release all turtles they find inside the net, trying to prevent any injury. If an animal is accidentally injured in any way during the operation, it must be kept on board in a wet, cool place, and it must be completely recovered before it is released. If the turtle is carrying any plastic items or bits of nets on it, or if it has any longline hooks embedded, the foreign items must be removed and/or disentangled, even if these materials do not originate from that vessel. Likewise, if crew find an entangled turtle when visiting a FAD without setting on it, it must disentangle the turtle and release it using the same procedure. To handle a turtle, crew must hold the animal by the shell but avoiding just the head area, to protect from catching their hands if the turtle should draw its head in. It is extremely important not to hold the animal by its flippers, because turtle's flippers are sensitive and could become dislocated. If a turtle appears not to respond to stimuli or is inactive, it is recommended if necessary, to place it in the resuscitation position to help it recover more easily. To place a turtle in the resuscitation position, crew must lift the animal by its rear legs about 15 cm, with its head pointing downwards, and place something beneath it to maintain the turtle in this position. The crew must wet the turtle from time to time and keep it out of direct sunlight.*
Thanks to these practices, the mortality rate of sea turtles in the OPAGAC/AGAC and ANABAC purse seine fleet is practically null.
Once the animal has been released, the crew must check that the animal is behaving normally and must record the operation in the fishing logbook. If any strange behaviour is observed, this must also be recorded in the fishing logbook".

In summary, the assessed fleet between 2014-2018 captured 101 sea turtles. All of them were released alive.

Therefore, **the fishery meets the SG60 and 80 requirements** that the known direct effects of the UoA are highly likely to not hinder recovery of the sea turtle ETP species, because the takes or interactions are reasonably low, despite not knowing the status of the species involved, and all of them are released alive. The **SG100 requirements are not met**, as there is not a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.

Sharks and rays

Hammerhead sharks (Sphyniridae family), silky sharks and oceanic whitetip sharks have been identified as endangered species due to the impact of fisheries within the ICCAT Convention area and therefore between 2009 and 2011 different Recommendations were formulated (Recs [09-07], [10-07], [10-08], [11-08]) that prohibit the retention on board of the species in question, as well as their transhipment, landing, storage, sale or offering for sale, either of the entire casing or of any part separately.

Some of the species of sharks included in the assessed fleet bycatch and considered as ETPs for the team are silky shark (*Carcharhinus falciformis*), oceanic whitetip shark (*Carcharhinus longimanus*), 3 sphyrna sp (scalloped hammerhead, great hammerhead, smooth hammerhead) and whale shark (*Rhincodon typus*). For the period 2014-2018, observers in FSC sets recorded around 1600 individuals of ETP sharks; but those individuals represented less than 0.5% of the total catch weight (**Table 7.3.2.8**). Most of these individual (around 68%) were released alive

ETP sharks		t/1000t	Number	Released alive	Release dead
Silky sharks	*C.falciformis*	4.69	1425	55%	45%
Oceanic Whitetip shark	*C.longimanus*	0.03	12	70%	30%
Scalloped hammerhead	*Sphyrna lewini*	0.09	62	81%	18%
Great hammerhead	*Sphyrna mokarran*	0.06	24	12%	87%
Smooth hammerhead	*Sphyrna zygaena*	0.01	6	100%	
Whale shark	*Rhincodon typus*	0.52	10	100%	

Table 2.3.1.1. Data on catch composition on ETP sharks of FSC sets and fate of each of the species caught. Data recorded by observers on board the assessed vessels between 2014 and 2018.

Despite being the most frequent sensitive species group in tropical tuna purse seine bycatch, sharks bycatch rate in tis fishery is relatively low (i.e. <1 of the total catch weight). This estimate can vary with ocean, region, and season and fishing mode, i.e. FOB vs. Free schools (Gilman 2011; Amandè et al., 2012; Hall and Roman, 2013; Ruiz Gondra et al., 2017a; Ruiz Gondra et al., 2018; Lezama-Ochoa et al., 2016).

Different studies suggested that the survival of silky sharks would be expected to increase by around 71% for the purse seines if some mitigation measures are applied (Restrepo et al. 2016, 2017). Considering that silky sharks composed over the 90% of the shark bycatch and due to the vulnerability of this species, many studies are taking place in collaboration with the fishing sector to find viable a mitigation measures for the reduction of the non-intentional mortality.

Silky sharks caught by the assessed fleet between 2014-2018 corresponded to 1425 individuals and 55% of them were released alive. Silky sharks are covered with an ICCAT Rec (11-08). The stock status of silky sharks is unknown, but the there is concern for the stock as it caught in large numbers in the purse seine FAD fishery. The average annual catch of silky shark in ANABAC FSC sets is estimated to be about 285 individuals, with total records of 1,425 individuals in the entire period with <0.4% of the total catch (Table 13 and 21). More than 50% of the animals were observed to be released alive. Of the silky sharks that are released alive, between 20% and 40% survive. This implies an overall survival rate of 10% - 20% of those captured (Poisson et al. 2011, Poisson et al. 2014, Hutchinson et al. 2015, and Eddy et al. 2016).

In the case of the *oceanic whitetip sharks*, a total number of 12 individuals was caught and 70% of them released alive. Oceanic white tip sharks are identified here an ETP species and ICCAT Rec (10-07) covers them.

6 individuals of *smooth hammerhead* (100% was released alive). Smooth hammerhead sharks are included in CMS appendix 1 and the CMS MOU. Also, 62 individuals of *scalloped hammerhead sharks* (81.71% released alive) were captured in the period 2014-2018. *Great hammerhead* bycatch consisted on 24 individuals with just 12% released alive. The *great hammerhead* and *Scallop hammerhead* sharks are also listed by the CMS but in the appendix 2 and the CMS MOU. The status of each of these stocks in unknown.

Whale sharks have recently been listed as Endangered (June 2016, Vulnerable previously) by the International Union for Conservation of Nature (IUCN; www.redlist.org), and is included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; www.cites.org) and in both Appendix II of the Convention of Migratory Species of Wild Animals since 1999 and Appendix I since 2017(CMS; www.cms.int).

Whale sharks, corresponding to 10 individuals of *Rhincodon typus* were reported by observers (**Table 7.3.2.7**). Individuals were taken alive from the net, escaped by their own or were released from the vessel.

Three different species of large ray were captured including *spinetail mobula, devil ray* and a *giant manta*. Catches of these species were 39, 76, 39 individuals in the 2014-2018 period, respectively, and about 68% were released alive. These species are listed on the CMS Appendix 1 and by the Shark CMS MOU, therefore they are identified as MSC ETP species. The stock status of these species is unknown.

Ships are obligated to have a net carrier, a stretcher or a tarp on board and/or similar equipment alongside the brailer, so sharks found on deck can be handled more easily. In addition, it is recommended to have hopper or ramps installed in the fishing deck for quicker and easier release of animals.

Therefore, the fishery **meets the SG60** for sharks and rays.

As mentioned above, the takes or interactions on sharks and rays are reasonably low and there are procedures in place in the Code of Good Practices to release sharks and rays caught accidentally by the net. Therefore, despite the fact that the status of most of these sharks and rays is unknown and some of them are being overfished, the team considers that the known direct effects of the UoA are **highly likely** to not hinder recovery of the shark and ray ETP species and hence,the fishery**meets the SG80 requirements**.

The fishery **does not meet the SG100 requirements,** as there is not a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species because there is little known about the stock status of these 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?		**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: No** **Sea turtles: No** **Sharks and rays: No**
Rationale				

Indirect impacts of the UoC fishery on ETP species potentially include the reduction in the available prey abundance for the ETP species, changes in abundance the predators of the ETP species, changes in the habitat that could affect the ETP species. The assessment team believes that indirect effects of free school purse seine fishing on ETP species are believed to be minimal, if they exist at all. This determination is based on experience. Therefore, the indirect effects of the UoA have been considered and are thought highly unlikely to not create unacceptable impacts on ETP species.
The **SG80 requirements are meet for all elements.** The SG100 requirements are not meet as there is not a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.

References

Escalle et al 2016
https://iwc.int/estimate
http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T11534A3292503.en
http://www.iucnredlist.org/species/3897/119333622#assessment-information
http://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en
http://dx.doi.org/10.2305/IUCN.UK.2013-2.RLTS.T6494A43526147.en

Scoring elements for marine mammals (N=1): ***Balaenoptera edeni***	**≥80**
Scoring elements for sea turtles (N=5): ***Lepidochelys kempii, Lepidochelys olivácea, Caretta caretta, Chelonia mydas, Dermochelys coriacea***	**≥80**
Scoring element for sharks and rays (N=10): ***Carcharhinus falciformis, Carcharinhus longimanus, Isurus oxyrinchus, Rhincodon typus, Sphyrna zygaena, Sphyrna mokarra, Sphyrna lewini, Mobula japonica, Mobula mobular, Manta birostris***	**≥80**

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

The assessment team followed MSC FCR v2.0 7.10.7 to score PIs with different scoring elements. Table 4: Combining element scores was used to assign the overall score for this PI; All elements meet SG60; most achieve higher performance, at or exceeding SG80; only a few fail to achieve SG80 and require intervention action.

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

Overall Performance Indicator score	
Condition number (if relevant)	**1**

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** - **meet national and international requirements;** - **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to 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?	**NA**	**NA**	**NA**
Rationale				

As previously explained in PI2.3.1, SIa, none of the ETP species that appear in **Table 7.3.2.9** and that are captured by the UoA have catch limits applicable to the assessed fishery, therefore SIa for PI2.3.2 does not apply.

b	Management strategy in place (alternative)			
	Guide post	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: No** **Sea turtles: No** **Sharks and rays: No**
Rationale				

Bycatch mitigation options for endangered, threatened or protected (ETP) species range from implementation of time area closures to live release from the deck or applying modifications to the fishing gear (e.g. FAD design). For bycatch species that can be utilized, the main measure to avoid waste and data loss are full retention policies and market innovation, essentially making them non-target retained catch, which is a positive outcome.

The ANABAC purse seine fishery primarily targets tuna, a large predatory fish, with the about 99% of the catch by weight and numbers comprised of tuna. There is a small bycatch of other species including billfish, rays, sharks, and some small bony fishes. In addition to these species, some ETP species including other sharks and rays, marine mammals, and marine turtles are also caught

ICCAT has adopted a number of measures that are in place to ensure that the UoA does not hinder the recovery of ETP species. Together these measures form a strategy that is in place again to ensure that the UoA does not hinder the recovery of ETP species.

The management by ICCAT of ETP species that interact with the UoA includes the following measures: The obligation to register (both in observer programs and in logbooks) and to report by-catches and discards according to Recommendation [11-10]. The different measures established in Recommendations [09-07], [10-07], [10-08], [11-08] for the conservation and management of protected sharks, which prohibit retaining these species on board, returning live the species whenever possible, and report all interactions indicating the state (live / dead).The more recent recommendation [17-08] that addresses the North Atlantic stock of shortfin mako shark, required vessels to release

captured shortfin mako, unless dead, and then only unless certain reporting requirements were met. These Recommendations prohibit retaining these species on board, returning live the species whenever possible, and report all interactions indicating the state -live / dead-. Recommendation [10-09], subsequently amended by Rec [13-11], establishes a set of measures to mitigate and evaluate the impact of fisheries in the Convention area on marine turtles.

Recommendations include the obligation to report in detail the interactions as well as establishing good practices of on-board handling for the release of individuals. The Ecosystem Sub-Committee integrates all the research and monitoring activities required by the SCRS in its advisory work to the Commission, including the following tasks related to bycatches of protected species:

(i) monitor and improve information on interactions with species that are not objective of the fisheries of ICCAT, and especially those for which there are no specific working groups (turtles, birds ...);
(ii) characterize the volume, composition and disposition of incidentally caught species;
(iii) investigate the impact of changes in fishing gear to reduce bycatch;
(iv) investigate, through models, potential benefits (at the ecosystem level) of alternative management strategies such as, for example, spatio-temporal closures.

In the case of the UoA/UoC, the existence of a 100% on-board observer coverage makes it possible to quantitatively determine the interactions and their result, complying with the recommendations regarding data recording.

The UoA/UoC is part of the industry association, OPAGAC, and it uses the AZTI prepared handbook of good practices for the release sharks, rays, sea turtles, and whale sharks, etc. This handbook also addresses non-entangling FADS. While this handbook is useful, it can only be considered a measure, which may be part of an overall strategy. It is certainly not a comprehensive strategy in and of itself.

As described in PI2.3.1, SIb, the interactions with ETP species by the UoA are reasonably low for sea turtle, shark and ray ETP species, so by definition the UoA will not hinder the recovery of ETP species. Therefore, the assessment team believes that for sea turtles and sharks/rays that there is a strategy (a group of measures working together and subject to evaluation) in place that is expected to ensure the UoA does not hinder the recovery of these ETP species. With regard to marine mammals, the UoA has evidenced by the 12 interactions with large whales in the 2014-2018 observer data and therefore it has an interaction problem. Despite this, the assessed fleet do not fish with dolphins and the interaction with cetaceans, principally baleen whales (not used as FADs), is rare and non-intentional as they have implemented a Code of Good Practices in 2019 that includes different measures with release manoeuvres in case that any large whale is caught accidentally in their nets. Following the recommendations established (see below), with the objective of minimizing impacts on accidentally trapped individuals, and despite the inherent difficulty of the release maneuver, if a whale shark or a whale is found in the purse seine, the crew must take the all actions to prevent damage to the animal. The crew should haul the net carefully to isolate the animal in a small area of the bunt. After this, crew may take the following measures, depending on the sea conditions and the animal's behavior. At all times crew safety must be guaranteed.

Code of Good Practices recommendations:

A) When the animal is floating on the surface
A.1. The fishermen must gradually haul the net to bring the animal towards the closest cork line. The net must always be pulled from the animal's tail toward its head, along its belly, attempting to make the fish move towards the cork line.
A.2. If the animal is small (2 metres long minimum), it may be released carefully using the brailer.
A.3. Partially sink the cork line to enable the animal to leave over the net.
A.4. Wait for the animal to freely swim out of the net.
A.5. The catch may be brought on board only after the animal has been released from the net.
B) When the animal does not appear on the surface
Crew may begin bringing the catch on board until the animal appears on the surface. At this point crew must cease brailing the tuna and follow the procedure in point A.
C) When the animal pushes the net with its head before the corks go down
Sometimes the animal will nudge or push the net before the crew can submerge the cork line, and it is difficult to get the animal to move backwards. In this case, the crew must work from the boat to submerge the cork line by maneuvering the net or with the aid of weights or poles to enable the animal to get its head free above the cork line.
D) When the animal is trapped in the bunt with its head facing sternward
In this case, the release maneuver to get the animal out over the cork line becomes very difficult, and the most effective maneuver known is this: Once the animal is in the bunt, the crew must locate the purse line closest to the animal's head and cut a couple of fathoms of net from where the purse line is attached, to make a window through which the animal can escape, lowering the net a little to place the window underwater.

No matter what the circumstances to release the animal, crew must check that the animal is behaving normally and must record the operation in the fishing logbook. If any strange behavior is observed, this must be recorded in the fishing logbook too.

Therefore, the assessment team believes that there are some measures in place that could be construed as a strategy for sea turtles, sharks, rays and marine mammals, as whale sets are prohibited since the new Code of Good Practices in 2019. Thus, the fishery meets the **SG 60 and 80** requirements **for all the ETPs species.** None of the fishery elements reaches the **SG100** level requirements, as there is no comprehensive strategy to address UoC impacts on ETP species.

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?	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: No** **Sea turtles: No** **Sharks and rays: No**
Rationale				

The data collected by observers on board the assessed fleet evaluated across between 2014 and 2018, demonstrate the relatively low interaction rate of the UoA with ETP species. Therefore, it can be considered that the type of fishing evaluated (FSC sets) is in itself a measure that allows reducing the discards of ETP species, and compared to both FAD sets in the purse seine fishery, and other fisheries. In addition, to the low interaction / capture rate, most of the larger captured ETP species are released alive, with the exception of the smaller sharks, and about 69 % of those are released alive.

ANABAC has developed a Code of Conduct for Good Practices for a responsible tuna purse-seine fishery that includes, in addition to the commitment to embark observers in 100% of the sets, explicit guidelines for the release manoeuvres of the different associated species, as well as the training of skippers, crew and observers. Measures related to the construction of FADs and their management are also included, but this is outside the scope of the current UoA and therefore is not evaluated in this assessment. The Code of Conduct has been provided by the client to the audit team, which has been able to verify how the guidelines for the release of the different groups of incidentally caught species (sharks, turtles, whales, rays and rays) are very detailed and aligned with the main international guidelines in this regard (e.g.: FAO). This code of conduct also specifies that its correct implementation will be verified by a third party (a scientific body) and by a Review Commission. Based on this evidence, the assessment team believes that there are measures in place are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species) for all elements of the ETP catch of the fishery: marine mammals, sea turtles and sharks and rays. Therefore, the **all ETP elements of the fishery meets the SG60 requirements.**

Regarding the SG80 requirements, that 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, there is information (catch data) that demonstrates that these measures are working. With regard to marine mammals in this specific fleet, the total number of individuals was 12 marine mammals, all released alive. Regarding sea turtles, the assessed fleet between 2014-2018 captured 101 individuals, which were all of them released alive. Also between 2014-2018, 0.61% of the total cath were sharks and rays, of which 69% were realeased alive, In addition, in 2019 ANABAC approved a New Code of Good Practices where large whales will not be used as FSC and therefore, the potential catch of these animals will be unintentionally and that by itself it can be considered as a strategy to reduce impacts of ETP marine mammals. Therefore, **all the ETP species meet the SG80 level requirements.**

The SG100 level requirements are that 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. So, while there is a strategy in place for the ETP species by the UoC, there is no quantitative analysis supports high confidence that the strategy will work, so the UoC **does not meet the SG100 level requirements.**

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?		**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: No** **Sea turtles: No** **Sharks and rays: No**
Rationale				

There is some evidence that the measures/strategy is being implemented successfully. As noted in PI2.1.2 SIa, in 2012 the client signed a code of good practices on board which is based on a comprehensive manual developed by ANABAC with the assistance of AZTI. All the OPAGAC and ANABAC fleets adopted the Code and initially AZTI was in charge of developing and implementing a system of verification of the code. Since the development and implementation of a specific standard for a sustainable tropical tuna purse seine fishery, the UNE195006:2016, this Code of Good Practices was embedded as one of the sections of this standard. AZTI is now the institution in charge of assessing compliance with the implementation of this code. Additionally, a steering committee tracks its implementation. The manual on good practices provides detailed information on how to proceed to release sharks and rays, sea turtles and large whales and includes specific forms for the observers to record these operations. AZTI details that vessels are in conformity with: non-entangling FADs, good handling practices on board to release alive non-target species, record all activities performed to release species, and training of the crew. Additionally, there is 100% observer coverage of the UoA, so sufficient data was available to complete the scoring. As noted in SIs b and c of this PI, there is evidence that some measures and a strategy for all ETP catch elements have been clearly implemented successfully. **Therefore, the SG80 requirements are met.** However, there is not 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), therefore **the SG100 level requirements are not met.**

e	Review of alternative measures to minimize 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?	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals:Yes** **Sea turtles: Yes** **Sharks and rays: Yes**
Rationale				

As previously mentioned, among the tasks of the ecosystem subcommittee is to review whether alternative measures to minimize the mortality of ETPs could be feasible and effective. This sub-committee meets annually to review the estimated mortalities of incidental catches and to avoid the mitigation measures used when there is sufficient data.

Furthermore, as explained in detail in **section 7.4.1.5** the UoA has implemented the code of good practices developed by OPAGAC/ANABAC, which has been later on included in the standard UNE196005, and assessed vessels are included in the ISSF PVR list. Both the UNE standard and the PVR list include measures aimed to minize mortality of unwanted catches and means to verify its correct implementation (commitment to have a 100% observer coverage, training of skippers and crew, detailed record keeping) since they are being externally audited on an annually basis by a third party. In the case of the OPAGAC/ANABAC code of conduct there is a steering committee in charge of reviewing the performance of the results. After its implementation in 2012, the Code of Conduct has been reviewed and updated in 2015, 2017 and 2019.

Therefore, 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**. All elements of the ETP catch of the UoA meet the SG60 and 80 requirements.**

The results are used to make biannual compliance reports and provide specific advice when necessary and to continuously improve the good practice code, by specific advice and decisions agreed by a Steering Committee. This Committee will meet half-yearly to examine how the code is applied, find practical solutions for both punctual and structural problems and keep the programme updated, always following the recommendations and suggestions of the scientific advisors." **Therefore, the elements meet the SG100 level requirements,** which is 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**.**

References

ICCAT 2018c

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

PI 2.3.3 – ETP species information

PI 2.3.3		**Relevant information is collected to support the management of UoA impacts on ETP species, including:** - **Information for the development of the management strategy;** - **Information to assess the effectiveness of the management strategy; and** - **Information to determine the outcome status of ETP species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: No** **Sea turtles: No** **Sharks and rays: No**
Rationale				

Recommendations for the conservation of protected sharks (Recs [09-07], [10-07], [10-08], and [11-08]) and marine turtles (Recs [10-09 and [13- 11) urge CPCs to record and report very detailed information about interactions with these species. Likewise, Recommendation [11-10] encourages the recording and reporting (both in observer programs and in logbooks) of by-catches and discards.

As already explained in PI 2.3.2, the Subcommittee on Ecosystems integrates the results of all the research and follow-up activities required by the SCRS in its advisory work to the Commission. In the case of the UoA, the existence of 100% observer coverage on board allows the interactions to be determined quantitatively and their result (retained / discarded alive / discarded dead).

The ETP observer catch data used in this assessment as described PI2.3.1, SIb included both qualitative and some quantitative information, and the assessment team considers that it was 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. **Therefore, all elements of the ETP catch of the UoA fishery meet the SG60 and 80 requirements.**

The existing quantitative information allows the assessment team to evaluate the mortality and the impact caused by the UoA and to determine if it is a danger for the protection and recovery of the ETP species with which it interacts. However, the limited knowledge of the state of the populations of these species makes it impossible to know with a high degree of certainty the consequences that this may have for the status of these species. **Therefore, the SG100 requirements are not met.**

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, minimize mortality and injury of ETP species, and evaluate with a **high degree of**

				certainty whether a strategy is achieving its objectives.
	Met?	**Marine mammals: Yes** **Sea turtles: Yes** **Sharks and rays: Yes**	**Marine mammals: No** **Sea turtles: Yes** **Sharks and rays: No**	**Marine mammals: No** **Sea turtles: No** **Sharks and rays: No**

Rationale

A specific number of measures are in place for the ANABAC fishery to manage impacts of all ETP species, and these are described in justification of PI 2.3.2, SIb. The ETP catch information from the observer program is adequate to support measures to manage the impacts of the UoA on ETP species. **Therefore, the fishery meets the SG60 level requirements.**

As noted in the justifications for PI 2.3.2, the various measures in place for the sea turtle, marine mammals and shark and ray catches have resulted in a relatively low bycatch of these ETP species, thereby suggesting that there is a strategy in place for these species, and there is adequate information of the catch of ETP species from the observer program to measure trends and support a strategy to manage impacts of the UoA on ETP species.

In the observer´s data (2014-2018) there is the report of 10 whale sharks being taken. All these individuals of whale shark recorded by the observers on board of the assessed fleet during the 2014-2018 were all caught in 2016 (9 individuals) and 2015 (1 individual), before Rec 16-01 was implemented, therefore still including whale sharks as FSC sets, according to ICCAT's definition at the time. This different classification of the whale shaks data given by the client for the period assessed (2014-2018) indicates to the assessment team that the information is not adequate to measure trends and support a **strategy** to manage impacts on some of the ETP species. Therefore, **SG80 for sharks and rays is not met.**

Even though ANABAC established even a stronger strategy for managing ETPs when they introduced in 2019 the New Code of Good Practices, **the marine mammals do not meet the SG80 requirements.** This is due to the fact that the team has not data yet from the UoA impacts on ETPs since this new Code was introduced and cannot determine if the interaction with baleen whales has decreased due to this new management strategy.Also, in the observer´s data provided to the team, there are 8 unidentified large whales during the period 2014-2018. The team considers that this has to be improved to have a better information and understanding of which species are being impacted by the UoA.

That is, **not all ETP catch elements of the fishery meet the SG80 requirements**, **only the sea turtles meet the SG80 requirements.**

Additionally, the information is not adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. Therefore, **all ETP catch elements** of the fishery **do not meet the SG100 level requirements.**

References

ICCAT 2018 c.

Scoring elements for marine mammals (N=1): ***Balaenoptera edeni***	**60-79**
Scoring elements for sea turtles (N=5): ***Lepidochelys kempii, Lepidochelys olivácea, Caretta caretta, Chelonia mydas, Dermochelys coriacea***	**≥80**
Scoring element for sharks and rays (N=10): ***Carcharhinus falciformis, Carcharinhus longimanus, Isurus oxyrinchus, Rhincodon typus, Sphyrna zygaena, Sphyrna mokarra, Sphyrna lewini, Mobula japonica, Mobula mobular, Manta birostris***	**60-79**
Draft scoring range	**60-79**
Information gap indicator	**More information sought**

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

Overall Performance Indicator score	
Condition number (if relevant)	

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				

Purse seine fishing gear used by the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery operates in the surface or epipelagic portion in deep oceanic waters in the water column in the east central and southeast Atlantic (FAO areas 34 and 47). This is the commonly encountered habitat for this fishery. The gear is suspended from floats with netting below the surface. The fishery is carried out entirely in the epipelagic ecosystem, at all times above 120m depth. While the net has a depth of 260m, due to the way of operating with the purse line (a drawstring) to close the bottom of the seine, it never operates more than 120m deep. The fishery is conducted always in waters considerably deeper (up to several thousand meters). Therefore, purse seines never come into contact with the seabed or affect vulnerable marine habitats.

There is evidence that forage density, surface water temperature and currents play a key role in the distribution and movement patterns of tropical tunas (Bertignac et al., 1998, Lehodey et al., 1998). Therefore, it is very unlikely that the fishery will reduce the structure and function of the habitat to a point where there is serious or irreversible damage. This gear is highly unlikely to interact with the benthic habitat.

Purse seine gear displaces biota from the space occupied by the gear, and it probably interferes with the movement of some organisms in the vicinity of the gear. However, these effects on pelagic habitat are likely temporary and there is no evidence of adverse impacts on the structure or functioning of either benthic or pelagic habitat.

The UoA/UoC is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. **SG80 is met.**

Evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm would be:

1. Surveys of habitat before and after the fishery occurs that show no change in habitat structure.
2. Studies of habitat function (e.g., shelter for juvenile fish, vertical mixing that recycles nutrients) that shows no changes before and after the fishing occurs.
3. Studies that demonstrate that changes in function, such as loss of shelter for juvenile fish, do not results in harm, such as an increase in juvenile fish mortality.
4. Long term studies that show that changes in structure and function moderate and disappear over time when fishing does not occur.

Based on experience and logic of the assessment team, it is considered that it is highly unlikely that the fishery reduces habitat structure and function to a point where there would be serious or irreversible harm, but it is not aware of evidences as described in 1-4. Such studies are unlikely to be a priority for funding since the likelihood of serious or irreversible harm is so low and there is no 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. **SG100 is not met.**

b	VME habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function	The UoA is **highly unlikely** to reduce structure and	There is **evidence** that the UoA is highly unlikely to

		of the VME habitats to a point where there would be serious or irreversible harm.	function of the VME habitats to a point where there would be serious or irreversible harm.	reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	**NA**	**NA**	**NA**
Rationale				

The ANABAC unassociated purse seine Atlantic yellowfin tuna fishery operates in the surface portion of the deep oceanic waters in the east central and southeast Atlantic Ocean. The gear does not come in contact with benthic habitat and it only interacts with the water column. There is no lost fishing gear. The open waters pelagic habitat is not included in the definitions of the paragraph 42, subparagraph (i)-(v) of the FAO guidelines on Vulnerable Marine Ecosystems (VMEs), as described in MSC FCR GSA3.13.3.2. Therefore, this **SI** is considered **not applicable (NA).**

c	Minor habitat status			
	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				

There are no identified minor habitats, as the entire fishing area are described in the justification of PI2.4.1, SIa is considered main, commonly encountered habitat.

However, studies to gain knowledge about the impact of the fishery on the bottom habitats' structure and function (see justification for PI2.4.1, SIa) are unlikely to be a priority for funding since the likelihood of serious or irreversible harm is so low and there is no evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered or VME habitats to a point where there would be serious or irreversible harm. **SG100 is not met**.

References

Bertignac et al (1998), Lehodey et al (1998).

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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				

The purse seine fishing gear used in the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery operates at the surface of deep oceanic water. The very functioning of tuna purse-seine fisheries, which use gear without reinforcements designed to catch tuna in the open ocean (usually in the surface layer of very deep water), guarantees that there will never be interactions with the seabed. The price of a tuna purse seine network can reach € 800,000, so the costs associated with damage to the craft would make the momentary contact with the seabed prohibitive. Therefore, the fishing operation itself and the gear used is a partial strategy that is expected to result in the fishery effectively not reducing the structure or functionality of the seabed habitats. There are no cases recorded by the observers or in the logbooks of damage to the fishing gear due to interactions with the seabed.

Considering that this fishery is unlikely to impact benthic habitats, the term 'if necessary' applies here and management measures should not be required (MSC Standard v2.01 Table SA8, states "*the term "if necessary" is used in the management strategy PIs at SG60 and 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*"). **The SG 60 and SG80 requirements are met**.

Table GSA8 from MSC Standard v2.01 states "*The use of the gear, the understanding that comes from years of peer-reviewed research about its impacts, and the specific management strategy that mandates only its use could be construed as a cohesive and strategic arrangement. This is supported by demonstrable understanding about how the use of pelagic longlines work to avoid impacting benthic habitats specifically, and some understanding about the impacts of lost gear on habitat and the relative effects of such impacts are deemed to be low risk for overall habitat health. Periodic assessments (i.e., directed research and risk assessments) are undertaken to inform management decision makers about lost-gear impacts to ensure that management strategies are working and are demonstrably avoiding serious or irreversible harm to "main" habitats and to determine whether changes need to be made to mitigate unacceptable impacts*".

There is no strategy in place that specifically aims to manage the impacts of the fishery on habitat types, based on the comments above the **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/habitats).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The fishery takes place in deep oceanic waters as confirmed by logbook, and VMS data for the fleet. The observer reports also confirm that this fishery does not interact directly with any benthic habitats. As stated in SIa for this PI,

management measures as described under **SGs 60 and 80 are not required, therefore the SG requirements are met.**

In the absence of a full strategy, which has been tested, testing has not occurred because of the likely minimal impacts of the gear on habitats and therefore, **SG100 is not met.**

c	Management strategy implementation			
	Guide post		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		**Yes**	**No**
Rationale				

The fishery takes place in deep oceanic waters as confirmed by logbook, and VMS data for the fleet. The observer reports also confirm that this fishery does not interact directly with any benthic habitats. As stated in SIa of this PI, management measures as described under **SG 80 are not required and therefore SG requirements are met**.
In the absence of a strategy, **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?	**Not relevant**	**Not relevant**	**Not relevant.**
Rationale				

The ANABAC unassociated purse seine Atlantic yellowfin tuna fishery operates at the surface in deep oceanic water in national and international waters of the North Atlantic Ocean. Considering that the fishery is highly unlikely to impact benthic habitats, and is highly likely to have very low impact in the pelagic habitat, there is clear quantitative evidence that the UoA complies with its management requirements to protect VME. The fishery takes place in deep oceanic waters as confirmed by logbook and VMS data for the fleet. The observer reports also confirm that this fishery does not interact directly with any benthic habitats.

In the MSC Fisheries Standard version 2.01, for PI2.4.2 SId it is obliged to present evidence that Vulnerable Habitats are being protected by all UoAs from other fisheries certified or in evaluation that overlap with the assessed fishery. At this time, there are no other fisheries that meet these characteristics; therefore, it is not necessary to evaluate these cumulative impacts.

SG60, SG80 and SG100 requirements are not relevant.

References

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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**. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The ANABAC unassociated purse seine yellowfin tuna fishery takes place in the epipelagic habitat. There are no habitat types present considered vulnerable. The current sea charts and bathymetric maps demonstrate the distribution of the pelagic habitat within the spatial range in which the fishery operates. Outside this epipelagic habitat, many areas of the Atlantic Ocean have been mapped and there is information related to the occurrence of sensitive and / or vulnerable habitats in the seabed. However, the seabed habitat is outside the spatial range of the fishery and therefore is not relevant here. There are no sensitive habitats in the pelagic ecosystem that can be damaged or impacted by the use of purse seines.

The marine habitats in the east-central and southeast Atlantic Ocean are studied by national and international organizations (e.g. IEO, CSIC, etc.). The distribution of water column types (in terms plankton, primary and secondary productivity, temperature, salinity, nutrients, stratification, currents, gyres and rings, etc.) and the nature of the seabed is well known in large parts of the Atlantic Ocean. This information was gathered in scientific and fishing campaigns several years ago. Therefore, the distribution of most habitats is known over the range on the fishery, with particular attention to the occurrence of vulnerable habitats. It is considered that the physical impacts of the purse seine fishery in the pelagic ecosystem are very unlikely**. Therefore, the SG60 and 80 requirements are met**.

However, a precautionary approach to fisheries would suggest that the possibility of impacts should be investigated, and specific investigations in this regard could be justified. In the pelagic habitat in which the fishery operates subtle physical (Tª) and chemical (salinity) variations occur over time. Some of these, including temperature, turbidity and salinity are subject to seasonal variations and can be easily controlled and detected by remote sensing (e.g., satellite images). Other changes such as the movement of water (density and ocean currents driven by the wind, tidal currents, etc.) require more direct techniques for measurement. Different studies have studied historical series of physico-chemical parameters to find the relationship between the variations of these parameters and the abundance and recruitment of tropical tunas (Bertignacet al., 1998, Lehodey et al., 1998), including the long-term changes resulting from global warming (Loukos et al., 2003). Therefore, the distribution of all habitats is not known over their range, with particular attention to the occurrence of vulnerable habitats. **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 habitats, including spatial	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the	The physical impacts of the gear on all habitats have been quantified fully.

		overlap of habitat with fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	spatial extent of interaction and on the timing and location of use of the fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	**Yes**	**Yes**	**No**
Rationale				

The nature of the purse seine fishing gear means that seabed is not impacted, while impacts to the surface pelagic habitat are highly likely to be imperceptible and highly transient.

The available data are descriptions of the purse seine fishing gear methodology, observers' data, logbooks data, and vessel monitoring system (VMS) data on where fishing occurs. Information on the impact of the fishery on habitat types comes from knowledge of the fishing methodology and logical inference that it does not alter characteristics of water column habitat. Therefore, information is adequate to allow for identification of the main impacts of the UoAs on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear**. SG60 and 80 are met**.

Purse seine fishing does not impact habitat, but the physical impact is not fully quantified and is only inferred by logic and experience. Thus, **SG100 is not met**.

	Monitoring			
c	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**	**Yes**
Rationale				

Data on spatial distribution of fishing continues to be collected by the VMS. Tropical tunas inhabit the first meters of the water column, and they are very sensitive to changes in certain parameters of this habitat (e.g. Seasurface temperature, primary production, chlorophyll concentration…). Oceanographic data on water column characteristics also continues to be collected by IEO, CSIC and many academic institutions. Observers continue to be present on the ANABAC fishing vessels and they should detect changes in the method of fishing that might increase risk to habitat. **SG 80 is met.**

The Sub-committee on Ecosystems deals with many issues, including the effects of the environment on tuna populations. According to the ICCAT website (https://old.iccat.int/en/SC_ENV.htm) they use the GAO software for processing oceanographic data for fisheries research. They feed this software with:

(i) In-situ data collections (Climate Analysis Section, Climate Diagnosis Center, Data reanalysis , Climate Prediction Center, Comprehensive Ocean-Atmosphere Data Set, International Research Institute for Climate Prediction, Joint Environmental Data Analysis Center);

(ii) (ii) Remote sensing databases (Advanced Very High Resolution Radiometers, AVISO –altimetry, orbitographic and precise location missions, French ERS Processing and Archiving Facility, National Geophysical Data Center, Ocean Color Data from various sensors –CZCS, OCTS, SeaWifs and MODIS-Aqua); and (iii) Model outputs (ECMWF –European Centre for Medium-Range Weather Forecasting-, MERCATOR –Océanographie opérationelle-).

Information on sea surface temperature and chlorophyll concentration is being continuously monitored on board the fishing vessels to take decisions in real time about the fishing activity.

Changes over time in habitat distributions are monitored. **SG 100 is met**.

References
Bertignac et al (1998), Lehodeyet al (1998), Loukoset al (2003)

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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

The key elements of the central-eastern and south eastern Atlantic ecosystem include abiotic and biotic factors, such as sea surface temperature, stratification, abundance of phytoplankton, zooplankton bio volume, total fish biomass , ratio of pelagic biomass to demersal biomass, size distribution of the fish community , epipelagic trophic networks , abundance of predators and the availability of forage species, the capture or landings of all fisheries, the average trophic level of catches, etc.

The evaluated fishery does not impact abiotic elements, while the impacts on various key elements of the ecosystem (retained species, bycatch, threatened and protected species and habitats) have already been considered separately in previous PIs relative to 'impact' ('outcome') of P2 (2.1.1, 2.2.1, 2.3.1, 2.4.1). Other aspects of the potential impacts on the biotic elements of the ecosystem are considered below, especially in relation to the impact that the UoA can cause in the relationships and the balance between them, since the normal function of an ecosystem depends to a large extent on the relative stability that the main biotic elements maintain among themselves.

The fishery might disrupt a number of key ecosystem elements, including trophic relationships, size composition, biodiversity, and species distribution. The elements considered of primary importance and to be most likely to be threatened by the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery (UoA), is the trophic structure. A fishery can alter the structure and functioning of ecosystems through trophic interactions by removing forage species upon which higher trophic level species depend, through top down trophic cascades or fishing down the food web. The former mechanism is not applicable to this fishery because the fishery does not catch forage species.

Several scientific studies support that fishing has caused changes in pelagic fish communities in different oceans. Ward and Myers (2005) estimated that the biomass of large predators decreased by a factor of 10 between the 1950s and the 1990s in the Tropical Pacific, while the biomass of other smaller species increased (to a lesser extent) (like the pelagic line). According to Ward and Myers of the three possible explanations (fishing, environmental variability, and sampling bias), the available evidence pointed to fishing as the most probable cause. Worm et al. (2005) studied the trends in diversity of tuna species and 'billfishes' in the different oceans in the last 50 years and found a loss of diversity between 10 and 50% that linked both the fishing and the variability of ecosystems to climate change of cascade effects that this causes in ecosystems (top-down effects) (Baum and Worm, 2009, Myers et al 2007). The study by Worm et al (2006) concludes that the loss of marine biodiversity is increasingly damaging the oceans' ability to provide food, maintain water quality and recover from disturbances (decreasing their resilience). On the contrary, they also estimated that when biodiversity is restored through appropriate measures, resilience increases by 21% and productivity is multiplied by four. Therefore, these researchers conclude that the buffering effect of species diversity on the resilience and recovery of ecosystem services generates value that must be incorporated into future economic evaluations and management decisions. The study by Worm et al (2006) suggests that the situation is still at a point where the observed trends of a generalized decrease in biodiversity can be reversed.

In relation to the UoC, the level of catches of tuna and tuna-like species follows the recommendations of ICCAT, which according to the SCRS council ensures that exploitation of these species is sustainable according to the precautionary principle (ICCAT Res [15-12]) and the ecosystem approach (ICCAT Res [15-11]). The impact of UoA on retained species, bycatch and protected species has already been evaluated in PIs 2.1.1, 2.2.1 and 2.3.1. On the other hand, it is believed that the increasing use of FADs since the early 1990s has caused various changes in the ecosystem, as recognized by the SCRS (ICCAT 2014), namely: They have been able to produce significant changes in the composition

of tuna schools not associated with FADs ('free swimming schools'). The association with FADs may also be affecting the biology (food intake, growth rate) and ecology (displacement rate, movement orientation) of bigeye and yellowfin. Andersen and Pedersen (2009) use a size- and trait-based model to explore how marine ecosystems might react to perturbations from different types of fishing pressure. They conclude that cascades are damped further away from the perturbed trophic level. Fishing on several trophic levels leads to a disappearance of the signature of trophic cascades. The ecosystems in which the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery (UoA) occurs are fished at all trophic levels. Furthermore, management of tuna fisheries by ICCAT and of fisheries for most high trophic level predators by the highly migratory species fishery management plan mitigate depletion of top predators, and make it highly unlikely that the underlying ecosystem structure and function will be disrupted to a point of serious or irreversible harm. Furthermore, Pershing et al. 2015 suggests that trophic cascade regime shifts are rare in open ocean ecosystems and that their likelihood increases as the residence time of water in the system increases.

The UoA (ANABAC unassociated purse seine Atlantic yellowfin tuna fishery) is highly unlikely to disrupt trophic structure of the ecosystem to extreme irreversible levels, due to the scale at which the fishery operates relative the scale of species distributions impacted by the fishery. The fishery does not remove a substantial amount of high trophic level species (target, primary, secondary or ETP) relative to the overall abundance of these species, and does not impact lower trophic levels.

Therefore, the assessment team concludes that it is highly unlikely that this UoA disrupts key elements of ecosystem structure and function to the point where there would be serious or irreversible harm. **SG60 and 80 requirements are met**.

The papers by Andersen and Pedersen (2009), Branch et. al. (2010) and Persching (2015) are recent evidence that it is highly unlikely that the fishery disrupts key elements of ecosystem structure and function to the point where there would be serious or irreversible harm. However, they are not direct evidence for the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery.

Direct evidence from the fishery could be produced by long term (to account for natural variability) studies of the structure and function of ecosystems with and without the fishery occurring, the relationship between ecosystem structure and function in order to define a harmful, the response of the ecosystem to a cessation fishing and models that integrate all available ecosystem information. Such evidence would be extremely costly, and it is unlikely to be a research priority since the likelihood of adverse impacts is so low. **SG100 is not met**.

References

Andersen and Pedersen (2009), Baumand and Worm (2009), Branch et al (2010), Myers et al (2007), Pershing et al (2015) , Ward and Myers (2005), Worm et al (2005), Worm et al (2006)

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Regarding the tropical tuna purse seine fishery, several papers and documents in the past have provided information on bycatches and discards (Peatman et al., 2017; Hall and Roman, 2013; Amandè et al., 2008), some of them referring specifically to the European purse seine fishery operating in the Atlantic Ocean (Amandè et al., 2010; Amandè et al., 2011; Ruiz et al., 2017). Sets on floating objects have a higher rate of bycatch than sets on free-swimming schools (Fonteneau et al., 2000, Dagorn et al. 2013). ISSF in 2016 reported bycatch estimates in the Atlantic Ocean for observers coverage in FSC set around 4% of volume caught.

ICCAT has implemented a few management measures specific to bycatch in the purse seine fishery, including requiring member countries to collect and report information on bycatch and discards. Countries are also encouraged to provide identification guides for sharks, seabirds, sea turtles, and marine mammals to vessels fishing in the Convention area. Measures are in place for some sharks and sea turtles if incidentally captured, and there are conservation measures for other bycatch species (**Table 2.5.2.1**).

Table 2.5.2.1. Summary of the main resolutions and recommendations specifying management measures relating to elasmobranchs implemented by t-RFMOs during the period 2003 to 2019. ICCAT: recommendation binding, resolution non-binding.

Management measure	**ICCAT**
Implementation of shark National Plan of Action	Res. 03-10, Rec. 18-06
Report catch	Rec.04-10
Full utilization of shark products	Rec.04-10
5% fins/body ratio	Rec.04-10
Mitigation research	Rec.04-10
Reporting in logbooks	Rec.07-06
Observers	Rec.11-10
Prohibition of retention of:	
– Thresher sharks Alopias spp.	Rec.09-07
– Oceanic whitetip shark Carcharhinus longimanus	Rec.10-07
– Hammerhead sharks Sphyrna spp.,	Rec.10-08
– Silky sharks Carcharhinus falciformis	Rec.11-08
Prohibition of large scale driftnets in the high seas	Rec.03-04
Encourage the release of live sharks, especially juveniles	Rec.18-06
Encourage research on shortfin mako	Rec.17-08, Rec. 19-06

The fishery (UoC) is managed in accordance with the regulatory framework established by ICCAT for the management of the tropical tuna species (see PIs 1.2.1, 1.2.2, and 2.1.2) as well as the other bycatch (see PIs. 2.1.2 and 2.2.2) and protected species (see PI 2.3.2). All these are key elements of the ecosystem according to the nature and scale of the fishery. This regulatory framework has Recommendations and Resolutions that incorporate management measures, access rules, scientific monitoring measures and follow - up, monitoring and inspection, all of them already described and evaluated in previous PIs. The management objectives of ICCAT are not only to guarantee the sustainability of the

species with which the fishery interacts, but in accordance with Resolution [15-11] the formulation of Recommendations must be based on an ecosystem approach and always in agreement to the precautionary principle (Resolution [15-12]) .The formulation of the Multiannual Conservation and Management Program for Tropical Tunas recognizes the multi-specific nature of the tropical tuna purse seine fisheries and the need for joint stock management, as well as adopting practices to reduce discards and bycatches (Rec. [16-01]). One of the measures included in the program (and indeed their existence -and since 1999 precedes the first formulation of one Multiannual Program for yellowfin and bigeye tuna -2011) is the spatio-temporal ban the use of FADs in the Gulf of Guinea, and its objective has been to reduce fishing mortality of juvenile bigeye since its inception. Most recently, ICCAT approved Resolution [16-23] that addresses Ecosystem Based Fisheries Management and in particular, the SCRS will examine the available information on the trophic ecology of pelagic ecosystems.

An important element in advising the Commission on ecosystem management is the work carried out by the Ecosystem Sub-Committee, whose objectives include including the ecosystem approach in the Fisheries managed by the Commission, as well as the oceanographic variables that affect the biology of tunas and their fisheries. The sub-Committee on Ecosystems has acknowledged the effects of the environment on tuna populations, and is working with large-scale oceanographic models to better understand the relationships between the environment and tuna abundance and distribution.
In the case of the UoA, the existence of a 100% on-board observer coverage makes it possible to quantitatively determine and verify with an external party all the captures and interactions, as well as their result, complying with the Recommendations regarding data recording.

With regard to the requirements of the scoring guideposts, a partial strategy is a cohesive arrangement, which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically. In this case, the **partial strategy** is: manage fishing on all main primary species at a level that maintains them, or rebuilds them, to a high level of productivity; managed the fishery to prevent depletion of secondary species and not hinder their recovery if they are depleted, manage the fishery to minimize the risk of extinction of species threatened or endanger of extinction; manage the fishery to minimize the impact on marine mammals, sea turtles, sea birds and protected sharks. Essential fish habitat is identified and measures are implemented, if necessary, to protect it from harm from fishing or other activities.

Within ICCAT, there is a legal, framework, management plans and regulatory measures in place to protect virtually all aspects of ecosystems. While the partial strategy is not necessarily designed to manage the impact of the fishery on ecosystem structure and function, it should prevent irreversible harm. **Based on all the above, the evaluation team considers that the assessed fishery complies with all SG60 and SG80**.

The key difference between a “partial strategy” and a “strategy” is intent. A partial strategy may not have been designed with avoiding harm to ecosystem structure and function as the objective, whereas this is presumable the objective of a strategy, where there is an understanding of how the measures work to achieve an outcome and which should be designed to manage impact on that component specifically. In this regard, there is no specific strategy for the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery designed with the intention of avoiding harm to ecosystems. **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				

The ***partial strategy*** described in the justification of SIa for this PI uses information on primary and ETP species to minimize impacts and takes measures for the conservation of habitats and species, such as fishing ban, area closures, etc. to ensure no serious or irreversible harm to the key elements of ecosystem structure and function. There is some objective basis for confidence that the partial strategy will work. **SG 80 is met**.

Although a partial strategy is in place and there is some basis of confidence, there is still some impacts that have never being tested (e.g. the impact of the gear on different types of habitats, as seabed). Thus, testing do not supports high confidence that the partial strategy will work. **SG 100 is not met**.

	Management strategy implementation			
c	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 partial strategy is being implemented successfully as stock assessments that indicate that several species are at high levels of productivity and/or that management measures are in place so that the fishery does not hinder recovery of stocks that are not. **SG80 is met**.

Because there is no specific strategy relative to this fishery, there is not clear evidence that the strategy is being implemented successfully and is achieving its objective, therefore the **SG100 not met**.

References

Andersen and Pedersen (2009), Branch et al (2010), ICCAT 2018 c, Pershing et al (2015)

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

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 key elements of the east-central and southeast Atlantic ecosystems where the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery (UoA) occurs, are well understood for this ecosystem. Adequate amounts of information of sufficient quality are available to broadly understand the key elements of the ecosystem. Significant quantities of regularly updated data in relation to abiotic ecosystem elements are available from a wide range of sources and entities that monitor and carry out research into environmental (physical and chemical) parameters in the east-central and southeast Atlantic Ocean. Most coastal states in the North and South Atlantic Ocean carry out at least some scientific research and /or monitoring of environmental conditions within the EEZ. A range of organizations that have interests in researching and monitoring global environmental conditions carries out significant amounts of research in the North and South Atlantic Ocean. Information available covers all main areas of relevance in the context of understanding key abiotic and biological elements of the North and South Atlantic Ocean ecosystem. Information on these ecosystems is accessible through the Large Marine Ecosystem of the World Website (http://lme.edc.uri.edu/). The available information of direct relevance to the management of fisheries impacts through the various working groups ICCAT (e.g. Working Group Tuna Tropical, Working Group on Ecosystem) is available.

The data coming from the on-board observer program implemented by the UoA allows determining quantitatively and in detail (100% coverage of all sets) the impacts on other species of tunas, other fish, sharks, turtles and cetaceans that interact with the UoA. However, there is uncertainty regarding possible changes in the trophic structure of ocean ecosystems derived from the removal of large predators.

The main ecosystem functions of the species affected by the purse seine fishery of the East Atlantic Ocean are known. It is sufficient to identify the range of the species concerned and to determine information on their role as low trophic level key species (key low trophic level species), dams high trophic level, forage, predators and possible roles in the transfer of energy and nutrients between diverse pelagic habitats (epipelagic, mesopelagic, bathypelagic) or between pelagic and demersal habitats. The main functions of the pelagic habitat are known and the potential impacts of the purse seine fisheries are understood.

The main consequences of the ecosystem impacts associated with the purse seine fishery can be inferred from: i) existing information on the removal of target, retained, discarded and protected species ; ii) the information available in relation to the sensitivity or vulnerability of species and habitats to fishing interactions. Information regarding the distribution, abundance and biological / biological characteristics of many species affected by the fishery is known at an adequate level to allow inferring consequences and impacts. While the information available in relation to the biology of some species is significantly higher than for others, the general understanding of the resilience, the status and strength of many of the affected populations allows us to infer the general consequences.

Therefore, a wide range of biological and environmental information is collected continuously by different organizations and institutions interested in the East Atlantic, including the CPCs of the zone. As already explained in previous PIs (see PI 1.2.3, 2.1.3, 2.2.3, 2.3.3, and 2.4.3) the information collected includes captures, discards and other interactions of the UoC (specifying its destination: alive, dead), VMS, catch-effort, information from specific scientific programs (e.g.: tuna tagging) . However, there are still deficiencies in the availability of information that allows the development and implementation of strategies for ecosystem management. For example, only recently has systematic information on interactions with ETPs been systematically collected by tropical tuna purse seine fleets. It is necessary to continue gathering information that allows for a more accurate assessment of the impacts and to formulate more effective measures to mitigate them.

SG60 and 80 requirements are met.

	Investigation of UoA impacts			
b	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 fishery on key elements of the ecosystem are mortality of high level predators with the potential for altering the food web. The food web of the ecosystems in the areas where the fishery occurs is broadly understood and some ecosystems have been investigated in detail (Sherman et. al., 2013). The **SG60 and 80 requirements are met**.

The main interactions between the fishery and ecosystem elements are alteration of the trophic web by removing high level predators. These interactions can be inferred, but they have not been investigated comprehensively enough.
The SG 100 level requirements are not met.

	Understanding of component functions			
c	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		**Yes**	**No**
Rationale				

The target species, primary, secondary species function as high-level predators. ETP species as large whales are also high-level predators. ETP sea turtles feed gelatines plankton (e.g., jellyfish). The main functions of the components in the ecosystems are known. **SG80 is met**.

However, the impacts of the fishery are not understood well enough to meet the **SG 100 level**.

	Information relevance			
d	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				

Information on the landings of catch, at sea discard rates and mortality (fate of discard and ETP species are recorded by observers and in logbooks), stock assessments for key species, trophic relationships and possible consequence outcomes are collected and available. There is 100% observer coverage of this fishery. This information then analysed in ecosystem modelling at assess the impacts of the fishery overall on ecosystem components. Therefore, adequate information is available on the impacts of the UoA on these components to allow the dome of the main consequences of the fishery (UoA) for the ecosystem to be inferred. **The SG80 level requirements are met**.

However, there is not sufficient understanding of the ecosystem interactions for all of the consequences on the ecosystem too be able to fully assess impacts of the fishery. **The SG 100 level is not met.**

	Monitoring			
e	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

As noted in the justification of PI2.4.3 SIc, the Sub-committee on Ecosystems deals with many issues, including the effects of the environment on tuna populations. According to the ICCAT website (https://old.iccat.int/en/SC_ENV.htm) they use the GAO software for processing oceanographic data for fisheries research.

They feed this software with:

(i) In-situ data collections (Climate Analysis Section, Climate Diagnosis Center, Data reanalysis, Climate Prediction Center, Comprehensive Ocean-Atmosphere Data Set, International Research Institute for Climate Prediction, Joint Environmental Data Analysis Center)

(ii) (ii) Remote sensing databases (Advanced Very High Resolution Radiometers, AVISO –altimetry, orbitographic and precise location missions, French ERS Processing and Archiving Facility, National Geophysical Data Center, Ocean Color Data from various sensors –CZCS, OCTS, SeaWifs and MODIS-Aqua); and (iii) Model outputs (ECMWF –European Centre for Medium-Range Weather Forecasting-, MERCATOR –Océanographie opérationelle-)

A wide range of fishery, biological and environmental data continues to be collected on the impact of the fishery on the target species, retained species, bycatch species and ETP species such that change in their status that might increase the risk to the ecosystem should be detected by many different organizations with an interest in the east-central and southeast Atlantic Ocean, including Spain, other EU nations and most other coastal states that are members of ICCAT or which are co-operating non-contracting ICCAT parties. Data are collected in relation to:

- Catches of all species at ICCAT member level for different gear types and means of fishing
- Data in relation to the spatial and temporal operation of the fishery (VMS)
- Data in relation to catch by area
- Data in relation to fishing effort
- Data in relation to the biology of many vulnerable species potentially impacted by the fishery
- Data in relation to levels of bycatch (in relation to fleet level operations) from observer programs

Data is continuously being updated for most of these criteria and is available to indicate potential or actual changes in risk to ecosystem elements and components. The risk to ecosystems is that one or more of these species is depleted such that there is a trophic cascade. Therefore, adequate data continue to be collected to detect any increase in risk level**. SG80 level requirement is met.**

There is probably enough information to support development of a strategy, but since none has been developed specifically for the ANABAC unassociated purse seine Atlantic yellowfin tuna fishery, the **SG 100 level is not met.**

References

Sherman et al (2013)

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

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

Overall Performance Indicator score	
Condition number (if relevant)	**NA**

7.4 Principle 3

7.4.1 Principle 3 background

The report shall have a summary of the UoA and the fishery-specific management system based on the topics below, referencing electronic or other documents used:

- Area of operation of the UoA and under which jurisdiction it falls (see also point 2 below).
- Particulars of the recognised groups with interests in the UoA.
- Details of consultations leading to the formulation of the management plan.
- Arrangements for on-going consultations with interest groups.
- Details of other non-MSC fishery users or activities, which could affect the UoA, and arrangements for liaison and co-ordination.
- Details of the decision-making process or processes, including the recognised participants.
- Objectives for the fishery (referring to any or all of the following if relevant):
    - Resource
    - Environmental
    - Biodiversity and ecological
    - Technological
    - Social
    - Economic
- Outline the fleet types or fishing categories participating in the fishery.
- Details of those individuals or groups granted rights of access to the fishery and particulars of the nature of those rights.
- Description of the measures agreed upon for the regulation of fishing in order to meet the objectives within a specified period. These may include general and specific measures, precautionary measures, contingency plans, mechanisms for emergency decisions, etc.
- Particulars of arrangements and responsibilities for monitoring, control and surveillance and enforcement.
- Details of any planned education and training for interest groups.
- Date of next review and audit of the management plan.

Some of the above may be of a generic nature and hence be dealt with in the general rules of fishing (e.g. a national fishery legislation), in which case these can be referred to in the plan, without repeating all the details. However, specific points or detail may be required for specific fisheries.

The report shall indicate which combination of jurisdictional categories apply to the management system of the UoA, including consideration of formal, informal and/or traditional management systems when assessing performance of UoAs under Principle 3, including:

- Single jurisdiction
- Single jurisdiction with indigenous component
- Shared stocks
- Straddling stocks
- Stocks of highly migratory species (HMS)
- Stocks of discrete high seas non-HMS

Any information used as supporting rationale should be provided in the scoring tables.

Reference(s): Fisheries Standard v2.01

7.4.1.1 Fleet type, area of operation and Jurisdiction

Yellowfin tuna constitutes a single pan-Atlantic stock. The assessed fleet consists of industrial purse seine fishing vessels operating in the Eastern Atlantic Ocean and varying in length from around 45 m to 80 m (**Table 7.4.1**).

These vessels operate in the tropical East-Central and South-East Atlantic (FAO areas 34 and 47, see **Figure 5.1.1**), which extends along the African coast from Cape Blanco in Mauritania to the Tigres Peninsula on the coast of Angola. Thus, the fishery is developed under the jurisdiction of the International Commission for the Conservation of Atlantic Tunas (ICCAT), of which Belize, Cape Verde and Spain (the flagging States of the assessed purse seine vessels) are Contracting Parties since 19/07/2005, 11/10/1979 and 14/11/1997, respectively.

Therefore, the jurisdictional category applicable to the management system of the UoA, when assessing its performance under Principle 3, is: 'Stocks of highly migratory species' (HMS), 'shared stocks' and straddling stocks.

Table 7.4.1 Technical characteristics of the vessels included in the UoA. Source: Client Checklist.

Vessel name	Call sign	IMO	Flag	Port of Registry	Gross Tonnage	Net Tonnage	T.R.B.	Length (m)	Beam (m)	Moulded Depth	Year built	Certificate of Classification
EGALUZE	EFHD	8109620	Spain	Bermeo	912	274	703.05	46.70	10.7	5.05	1983	36L028
ALBONIGA	EDKU	8613267	Spain	Bermeo	940	282	692.56	47.63	10.7	7.40	1987	37U692
ZUBEROA	EGVV	8906456	Spain	Bermeo	2172	652	1520.63	68.33	13.6	9.05	1991	38T450
PLAYA DE NOJA	EFAO	8806955	Spain	Bermeo	2110	633	1586.32	66.00	13.6	9.05	1989	37B951
PLAYA DE BAKIO	EGWJ	9010345	Spain	Bermeo	2101	630	1575.01	67.37	13.6	9.05	1991	38C527
PLAYA DE RIS	EAKV	9684548	Spain	Bermeo	2591	777	1718.81	75.89	14.2	6.55	2013	24259V
EGALABUR	D4GX	9710995	Cape Verde	S.Vicente	2863	858	1919.00	76.60	14.7	9.50	2013	23923F
PLAYA DE AZKORRI	V3ML9	9476111	Belize	Belize City	2548	764	1781.80	74.98	14.2	9.05	2008	12705M

7.4.1.2 Regulatory framework applicable to the assessed fishery

The intent of MSC Principle 3 is to ensure that there is an institutional and operational framework appropriate to the size and scale of the UoA for implementing Principles 1 and 2 and that the management system is capable of delivering sustainable fisheries in accordance with these Principles. To meet this goal the fishery must comply with all local (if appropriate), national and international regulations and have a management framework capable to respond to any change or circumstance affecting the fishery, but maintaining its long term sustainability.

a. International regulatory framework

UNCLOS and UNFSA

At a world-wide level, the overarching regulatory framework is comprised mainly by the United Nations Convention on the Law of the Sea of 1982 (**UNCLOS**) and the United Nations Agreement on straddling and highly migratory fish stocks of 1995 (**UNFSA**). UNFSA aims to facilitate the application of certain provisions of UNCLOS relating to the conservation and management of these type of stocks. UNFSA complements the 1993 FAO Agreement to promote compliance with international measures for the conservation and management of fishing vessels on the high seas (FAO Compliance Agreement of 1993) and the 1995 FAO Code of Conduct for Responsible Fisheries (non-binding).

Table 7.4.2 shows that Belize, Cape Verde and the European Union (flag State of the assessed fleets), and all the West African coastal countries in whose EEZ the UoA may operate have ratified the UNCLOS. However, that is not the case for the UNFSA, since so far it has only been ratified by Belize, the European Union, Ghana, Guinea Conakry, Ivory Coast, Liberia and Senegal; while Gabon, Guinea Bissau and Mauritania have signed it but not ratified it.

Table 7.4.2. All countries involved in the assessed fishery showing ratification dates for UNCLOS, UNFSA and PSMA, also ICCAT membership date is shown. Source: UNCLOS webpage (https://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm), FAO PSMA webpage (http://www.fao.org/port-state-measures/en/) and ICCAT webpage (https://www.iccat.int/en/contracting.html).

Country	UNCLOS ratification date	UNFSA ratification date	ICCAT memebership date	PSMA ratified
Angola	05/12/1990	-	29/07/1976	No
Belize	13/08/1983	14/07/2005	19/07/2005	(**)
Cape Verde	10/08/1987	-	11/10/1979	Yes
Equatorial Guinea	21/07/1997	-	13/05/1987	(**)
European Union	01/04/1998	19/12/2003	14/11/1997	Yes
Gabon	11/03/1998	(*)	19/09/1977	Yes

Ghana	07/06/1983	27/01/2017(a)	17/04/1968	Yes
Guinea Bissau	25/08/1986	(*)	13/05/2016	(**)
Guinea (Conakry)	06/09/1985	16/09/2005(a)	05/06/1991	Yes
Ivory Coast	21/09/1992	(*)	06/12/1972	Yes
Liberia	25/09/2008	16/09/2005(a)	14/02/2014	Yes
Mauritania	17/07/1996	(*)	04/12/2008	Yes
Sao Tome and Principe	03/11/1987	-	15/09/1983	Yes
Senegal	25/10/1984	30/01/1997	21/12/2004	Yes
Sierra Leone	12/12/1994	-	13/10/2008	Yes

(*) Countries that have signed but not ratified UNFSA
(a) Accesssion
(**) Countries that are not signatories of PSMA

PSMA

Another agreement that affects some of the countries where the fishery occurs is the FAO Agreement on Port State Measures (PSMA). This agreement was approved by the FAO Conference in 2009 at its Thirty-sixth Session (Rome, 18-23 November 2009) and is in force since June 2016. The Agreement was registered with the Secretariat of the United Nations on 26 January 2017, under No. I-54133 and is subject to ratification, acceptance or approval by the signatories. Instruments of ratification, acceptance or approval are to be deposited with the Director-General of FAO, the depositary of the Agreement.

The PSMA has the main objective of preventing, deterring and eliminating Illegal, Unreported and Unregulated (IUU) fishing through the application of vigorous measures by the port States. The Agreement provides that the parties, in their capacity as port State, apply the Agreement effectively to foreign vessels that try to enter ports or while in port. The Agreement is binding and establishes the minimum measures of the port States. However, countries are free to adopt more stringent measures than those stipulated in the Agreement.

The UoA, in fact, is landing in 3 different ports, with Abidjan (Ivory Coast) being the main one, followed by Dakar (Senegal), Mindelo (Cape Verde) and Spain.

Table 7.4.2 shows that Senegal, Cape Verde and Spain have ratified the PSMA, while Belize, Equatorial Guinea, Guinea Bissau, the Ivory Coast, and Liberia have not. However, as most of the RFMOs, ICCAT also regulates member nations' port State controls as part of their management measures. This ensures that these governments have minimum standards in place, regardless of whether they are a party to the PSMA.

ICCAT

Tunas and other large highly-migratory species (also known as tuna-like species) are typically assessed and managed through international arrangements reached at regional levels (e.g. Atlantic Ocean, Indian Ocean, Pacific Ocean). Since the distribution of such stocks is not limited to the waters of any single sovereign nation, such arrangements are necessary to share the available research and fishery information.

The Conference of the Food and Agriculture Organization of the United Nations, at its Thirteenth Session held in Rome in November and December 1965, authorized the Director-General of that Organization to call a Conference of Plenipotentiaries to prepare and adopt a Convention for the purpose of establishing a Commission for the conservation of tuna and tuna-like fishes in the Atlantic Ocean. The following year, the Conference of Plenipotentiaries held in Rio de Janeiro (Brazil) was called to work on a draft of the Basic Texts of the Convention prepared by the FAO Working Party for Rational Utilization on Tuna Resources in the Atlantic Ocean. A final version was agreed and opened for signature during the Rio de Janeiro Conference in Rio de Janeiro. After a ratification process, the Convention entered formally into force in 1969. Revised and updated versions of the Basic Texts were issued in 1977, 1985, 2003, 2005, 2007, 2017 and 2018 (ICCAT, 2019a).

The International Commission for the Conservation of Atlantic Tunas (ICCAT) is established under Article III of the Convention as an intergovernmental fisheries organization responsible for the conservation of tuna and tuna-like species in the Atlantic Ocean and adjacent seas. Although ICCAT pre-dates UNCLOS, UNFSA, and FAO Agreement and Code for Responsible Fishing, it complies with these regulations and with the requirements of other relevant laws for the management of shared stocks. The Commission may be joined by any government that is a member of the United Nations (UN), any specialized UN agency, or any inter-governmental economic integration organization constituted by States that have transferred to it competence over the matters governed by the ICCAT Convention.

The Commission has also created a special status known as Cooperating Non-Contracting Party, Entity or Fishing Entity. Parties, entities or fishing entities that are granted this status have many of the same obligations, and are entitled to many of the same privileges, as are Contracting Parties. Instruments of ratification, approval, or adherence may be deposited with the Director-General of the Food and Agriculture Organization of the United Nations (FAO), and membership is effective on the date of such deposit. Currently, there are 53 Contracting Parties.

Belize, Cape Verde, the European Union, as well as all the West African coastal countries in whose EEZ the UoA may operate, are Contracting Parties of the Commission (CPCs). Also, those countries where landings occur (to containers or to reefer vessels) are ICCAT CPCs. Thus, all countries involved in the assessed fishery are CPCs (see **Table 7.4.2**).

To carry out the objectives of the Convention, the Commission is responsible for "the study of the populations of tuna and tuna-like fishes and such other species of fishes exploited in tuna fishing in the Convention area as are not under investigation by another international fishery organization. Such study include research on the abundance, biometry and ecology of the fishes; the oceanography of their environment; and the effects of natural and human factors upon their abundance. The Commission, in carrying out these responsibilities shall, insofar as feasible, utilise the technical and scientific services of, and information from, official agencies of the Contracting Parties and their political sub-divisions and may, when desirable, utilise the available services and information of any public or private institution, organization or individual, and may undertake within the limits of its budget independent research to supplement the research work being done by governments, national institutions or other international organizations". Therefore, the Commission compiles fishery statistics of the CPCs and non-contracting Parties, Entities and Fishing Entities that fish these species in the Atlantic Ocean and coordinates the investigation, including stock assessments, on behalf of its members. Based on the data collected and the scientific studies prepared, the Commission advises on management matters (through Recommendations, Resolutions and other decisions) in order to achieve sustainable exploitation of these resources and the ecosystem. In accordance with Article VIII.2 of the basic text of the Convention, the **Recommendations** will be applicable to the CPCs and will enter into force 6 months after the official date of communication by the Commission (although point 3 of the same Article provides certain exceptions). On the contrary, **Resolutions** are non-binding guidelines for the Commission.

The most relevant **ICCAT Resolutions and Recommendations** applicable to the assessed fishery are listed below, grouped by topic. This is not intended to be an exhaustive list, the compendium of all active ICCAT Recommendations and Resolutions (ICCAT, 2019b) is annually reviewed and published by ICCAT at its website (https://www.iccat.int/en/RecRes.asp). Recommendations and Resolutions are ordered by date of publication.

Tropical tunas:

- **Recommendation 14-02 concerning the implementation of an Atlantic Ocean tropical tuna tagging programme (AOTTP)**. Entered into force 3 June 2015. Establishes the implementation of a coordinated tagging programme in the Atlantic for the main tropical tuna stocks (yellowfin tuna, bigeye tuna and skipjack tuna) as well as for neritic small tunas of high importance for coastal populations.

- **Recommendation 16-01 on a multi-annual conservation and management programme for tropical tunas.** Entered into force the 12 June 2017. CPCs whose vessels fish bigeye and/or yellowfin tunas in the Convention area shall implement the Multi-annual Management and Conservation Programme initiated in 2012. As from 2015, such programme shall also apply to the eastern stock of skipjack tuna. This Recommendation establishes: (i) TACs for the bigeye and yellowfin tuna, and in the case of the bigeye tuna it also establishes catch limits for certain CPCs and mechanisms for quota transfer and to adjust it in case of overage or underage; (ii) Capacity limitation measures for the bigeye tuna; (iii) management measures for FADs (e.g. area/time closure for protecting juveniles, limitation of FADs, FAD management plan, FAD logbook, reporting obligations on FADs, obligations in terms of non-entangling and biodegradable FADs); (iv) control measures (specific authorization, list of active vessels, data recording and reporting requirements, obligation to get scientific observers on board and maintain the port sampling programme during the are/time closure) and other final provisions.

- **Recommendation 16-02 to establish an *ad hoc* working group on fish aggregating devices (FADs)**. Entered into force 12 June 2017.

- **Recommendation 17-01 on prohibition on discards of tropical tunas caught by purse seiners.** Entered into force the 11 June 2018. The objective of this recommendation is to achieve a substantial reduction in discards of tropical tunas by 2020. Contracting Parties and Cooperating Non-Contracting Parties, Entities or Fishing Entities (CPCs) whose purse seiners are authorised to fish for bigeye and/or yellowfin and/or skipjack tuna in the Convention area, pursuant to paragraph 25 of Recommendation 16-01, must require these vessels to retain on board then land or tranship to port all bigeye, skipjack and yellowfin tunas caught, except under two circumstances which are described in detail –(i) fish 'unfit for human consumption and (ii) catches of the last set of the trip which cannot be stored-. The CPC shall report all discards observed.

- **Recommendation 18-01 on supplementing and amending Rec. 16-01 on a Multi Annual Conservation and Management Programme of Tropical Tunas.** This recommendation establishes: (i) TACs of Recommendation 16-01 shall continue to apply through 2019; (ii) Capacity limitation measures for the bigeye tuna; (iii) management measures for FADs (e.g. area/time closure for protecting juveniles, limitation of FADs, FAD management plan, FAD logbook, reporting obligations on FADs, obligations in terms of non-entangling and biodegradable FADs); (iv) control measures (specific authorization, list of active vessels, data recording and reporting requirements, obligation to get scientific observers on board and maintain the port sampling programme during the are/time closure) and other final provisions.

- **Recommendation 19-02**, pending activation, on replacing Rec. 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.

Albacore:

- **Recommendation 16-06 establishes a Multi-annual conservation and management program for the North Atlantic Albacore** (in force since 12 June 2017), while **Recommendation 17-04** supplements the plan by including HCRs (in force since 11 June 2018).

- **Recommendation 16-07 on the Southern albacore establishes catches limits for the period 2017-2020**.

- **Recommendation 17-04 on a Harvest Control Rule for the North Atlantic Albacore** Supplementing the Multiannual Conservation and Management Programme, Rec 16-06.

- **Recommendation 17-05 establishes Management Measures for the Stock of Mediterranean Albacore**.

Tuna-like species:

- **Recommendation 15-05 to further strengthen the plan to rebuild blue marlin and white marlin stocks.** This Recommendation was later amended by Recommendation 16-11.

- **Recommendation 16-11 on management measures for the conservation of Atlantic sailfish**.

- **Recommendations 17-02 and 17-03 establish measures for the conservation of the Swordfish in the North and South Atlantic**, respectively.

- **Recommendation 18-04** which replaces Recommendation 15-05 to **further strengthen the Plan to Rebuild Blue Marlin and White Marlin Stocks**.

- **Recommendation 18-05 on improvement on compliance review of conservation and management measures regarding billfish caught in the ICCAT convention area**.

- **Recommendation 19-14 on development of initial management objectives for North Atlantic Swordfish**.

- **Recommendation 19-03**, pending activation, on amending the Rec. 17-02 for the conservation of North Atlantic Swordfish.

- **Recommendation 19-05**, pending activation, to establish rebuilding programs for Blue Marlin and White Marlin/Roundscale Spearfish.

By-catch species:

- **Recommendations 04-10, 07-06, 10-06, 10-07, 10-08, 11-08, 12-05, 14-06, 16-12,17-08 and 18-06 establish different conservation and management measures for sharks caught associated to ICCAT fisheries**. In general, all the recommendations call for the CPCs to comply with the ICCAT requirements for the presentation of catch, effort and size data (Tasks I and II), and for the observer's programs in place to record and report all interactions with these species, including the outcome (live / dead). In the case of silky sharks and hammerhead sharks, Rec [11-08] and [10-08] respectively require the release of all live or dead specimens and they urge to take additional measures to increase the survival of the individuals accidentally caught. Rec [10-08] also requires that interactions with hammerhead sharks and their outcome (live / dead) be recorded in logbooks.

Rec 16-12 establishes a catch limit for the North Atlantic blue shark, while Rec 17-08 obliges to promptly release North Atlantic shortfin mako in a manner that causes the least harm (although it can be caught, retained and transhipped under certain circumstances).

- **Recommendation 10-09 on the by-catch of sea turtles in ICCAT Fisheries** (amended by Rec 13-11).

- **Recommendation 11-10 on information collection and harmonization of data on by-catch and discards in ICCAT fisheries**.

- **Recommendation 19-06**, pending activation, on the conservation of North Atlantic Stock of Shortfin Mako caught in association with ICCAT fisheries.

- **Recommendation 19-07**, pending activation, on amending the Rec. 16-12 on management measures for the conservation of the North Atlantic Blue Shark caught in association with ICCAT fisheries.

Monitoring and Compliance:

- **Recommendation 03-13 concerning the recording of catch by fishing vessels in the ICCAT Convention Area**. This Recommendation establishes that all commercial vessels over 24 m length overall shall keep a bound or electronic logbook.

- **Recommendation 11-13 on the Principles of Decision Making for ICCAT Conservation and Management Measures**. This Recommendation establishes principles based on the status of stocks as represented by the Kobe plot, shall guide the development of management measures for ICCAT-managed stocks.

- **Recommendation 11-15 on Penalties applicable in case of non-fulfilment of reporting obligations** CPCs shall include information in their annual reports on actions taken to implement their reporting obligations for all ICCAT fisheries, in particular the steps taken to improve their Task I and Task II data collection for direct and incidental catches. CPCs that do not report Task I data, including zero catches, for one or more species for a given year, shall be prohibited from retaining such species as of the year following the lack or incomplete reporting until such data have been received by the ICCAT Secretariat.

- **Recommendation 13-13 concerning the establishment of an ICCAT record of vessels ≥20 m in length authorized to operate in the Convention Area**. Each CPC shall submit to the ICCAT Secretariat the list of its large-scale fishing vessels authorised to fish for tuna and tuna-like species in the Convention area.

- **Recommendation 14-08 for an ICCAT scheme for minimum standards for inspection in port**. With a view to monitor compliance with ICCAT conservation and management measures, each CPC, shall apply this Recommendation for an effective scheme of ports inspections in respect of foreign fishing vessels carrying ICCAT-managed species and/or fish products originating from such species that have not been previously landed or transhipped at port.

- **Recommendation 15-07 on the development of harvest control rules and of management strategy evaluation**. The purpose of this Recommendation is the consideration by the SCRS of Management Strategy evaluation (MSE) and Harvest Control Rules (HCRs) implementation. The SCRS shall advise the Commission on options for limit, target and threshold reference points and associated HCRs for tropical tunas.

- **Recommendation 16-14 to establish minimum standards for fishing vessel scientific observer programs**. It details minimum observer coverage required for the different fishing gear, the observer's qualifications and tasks, and the use of electronic monitoring systems to complement human observer programs.

- **Recommendation 18-08 establishing a list of vessels presumed to have carried out Illegal, Unreported and Unregulated fishing activities in the ICCAT Convention Area**. Establishes the procedures to develop, update and transmit a list of vessels flying resumed to have carried out illegal, unreported and unregulated fishing activity in the ICCAT Convention Area. It aims to maintain appropriate contacts with the Secretariats of other RFMOs managing tuna or likely tuna species in order to obtain copies of these RFMOs' IUU vessel list.

- **Recommendation 18-09 on Port State Measures to prevent, deter and eliminate Illegal, Unreported and Unregulated fishing**.

- **Recommendation 18-10 concerning minimum standards for the establishment of vessel monitoring systems in the ICCAT Convention Area**. Each CPC shall implement a vessel monitoring system for its commercial fishing vessels ≥20m

- **Resolution 19-17**, amending Res. 18-11, **on establishing a pilot program for the voluntary exchange of inspection personnel in fisheries managed by ICCAT**.

Miscellaneous:

- **Resolution 15-11 concerning the application of an ecosystem approach to fisheries management**. The Commission should apply an ecosystem-based approach to fisheries management, considering the interdependence of stock and species and the impacts of fishing and other human activities.

- **Resolution 15-12 concerning the use of a precautionary approach in implementing ICCAT conservation and management measures**. The Commission should apply a precautionary approach when making Recommendations.

- **Resolution 15-13 on criteria for the allocation of fishing possibilities**. It details the allocation criteria apply considering historical catches and the interest, fishing patterns and the interest of artisanal, subsistence and small-scale coastal fishers.

- **Resolution 16-23 on ecosystems that are important and unique for ICCAT species**.

b. National regulatory framework

Since the assessed vessels are flying the flags of Belize, Cape Verde and Spain, those country regulations are also applicable:

BELIZE

(https://www.bhsfu.gov.bz/legislation/)

a. High Seas Fishing Act (HSFA)

The main legislation governing the High Seas fishing by Belize flagged vessels is the High Seas Fishing Act (HSFA), 2013, and the regulations, rules, notices and directions promulgated in accordance with that Act (https://www.bhsfu.gov.bz/legislation/). The fleet which fishes in the high seas is registered by the International Merchant Marine Registry of Belize (IMMARBE) and is licensed by the Belize High Seas Fisheries Unit (BHSFU) under the Ministry of Finance of the Government of Belize. This Act, last revised in 2013, makes provisions for the adoption of and compliance with all conservation and management measures adopted by the relevant RFMOs for the protection of the High Seas resources.

The main objectives of the Act, among others, are to ensure full compliance with its international and regional obligations with regards to responsible fisheries management and operations of vessels flying its flag.

The current legal framework makes use of many of the tools for combating IUU fishing pursuant to the instruments which Belize subscribes.

b. Regulations and National Plans

- **Licensing Regulations** (S.I. 33 of 2014) allow for a robust licensing regime.
- **Monitoring, Control and Surveillance Regulations** (S.I. 39 of 2014) allow for the establishment of observer and inspection programs, and also allow for new regulations for transhipment at sea, and catch and effort reporting.
- **Sanction Regulations** (S.I. 32 of 2014) introduced a more holistic sanctioning system for IUU fishing operations.
- In addition, the following have been developed by the Belize High Seas Fisheries Unit (BHSFU):
    - National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing on the High Seas (https://www.bhsfu.gov.bz/wp-content/uploads/2014/05/NPOA-IUU-BELIZE-HIGH-SEAS-FLEET.pdf)

- National Plan of Action for the Conservation and Management of Sharks on the High Seas (https://www.bhsfu.gov.bz/wp-content/uploads/2014/10/BELIZE-NPOA_Sharks.pdf)
- National Plan for Reducing Incidental Catch of Seabirds in Long Line Fisheries (https://www.bhsfu.gov.bz/wp-content/uploads/2014/10/BELIZE-NPOA_Seabirds.pdf)
- High Seas Fleet Policy (https://www.bhsfu.gov.bz/wp-content/uploads/2014/10/High-Seas-Fisheries-Fleet-Policy-R1.pdf)
- National Inspection Program (https://www.bhsfu.gov.bz/mcs/national-inspector-program/)

Monitoring, Control and Surveillance Regulations (S.I. 39 of 2014)

All licence holders shall complete and provide to the BHSFU, catch, effort and landing data for each particular type of activity using the prescribed format.

Reporting shall be done by a compulsory electronic reporting system.

In addition to reporting requirements, the Regulations provide with: (1) an observer programme established by the BHSFU (called BHSFOP), (2) vessel monitoring, (3) (authorization of) transhipment, and (4) port inspections:

1. *The BHSFOP program:*

   Shall cover all vessels including transhipment vessels and shall be carried out in conjunction with any RFMO Regional Observer Program.

   Data on observer coverage is collected based on agreement with the company providing observer services (i.e., Sea Eye) and takes into consideration relevant ICCAT recommendations (see **Table 7.4.3**)

2. *Vessel Monitoring:*

   The Fisheries Monitoring Center, established under the authority of the BHSFU, shall be responsible for 24-hour monitoring of all vessels regardless of their geographical location.

   All vessels licensed to fish or carry out fishing related activities under the Belize flag shall be required to have an operational mobile transceiver unit (MTU) on board. The Regulations set out standards for such MTU.

3. *Transhipment:*

   In general, transhipments at sea are prohibited and shall be allowed only subject to authorization and at a designated port under the control and inspection of the competent authority of that port State and/or an authorized fisheries inspector of Belize.

   Transhipments at sea regulated by an RFMO may be authorized at the discretion of the Director.

   Vessels shall transmit a transhipment declaration to the BHSFU.

   The master of receiving Belize flagged vessel or his representative shall, within 24 hours, notify the BHSFU of the landing and provide a declaration of landing.

4. *Port Inspections:*

   The landing of all fisheries products shall be inspected at port by an authorized fisheries inspector and/or the competent authority of the port and shall be carried out in accordance with any bilateral agreement or arrangement with that country which allows for cooperation between States for the exchange of information.

The Regulations require vessels to notify BHSFU before landing and provide with respect to port inspections.

National Plan of Action for the Conservation and Management of Sharks on the High Seas (NPOA-Sharks-High Seas)

The Belize National Plan of Action for the Conservation and Management of Sharks on the High Seas (NPOA-Sharks-High Seas) is developed in the context of the FAO's Code of Conduct for Responsible Fishing and its general objective

for sustainable fishing and follows the guidelines of the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) to reduce the incidental catch of sharks.

The High Seas shark fishery of Belize comprises sharks caught by Belize flagged vessels which operate on the high seas. The main objectives of NPOA-Sharks-High Seas are as follows:

a. Ensure that shark catches from directed and non-directed fisheries are sustainable;
b. Ascertain and provide special attention to vulnerable shark stocks;
c. Minimize waste and discards from shark catches pursuant to Article 7.2.2(g) of the FAO Code of Conduct for Responsible Fisheries (example, shark finning);
d. Encourage full use of dead sharks;
e. Simplify the documentation/categorization and reporting of species-specific catch and landing data and monitoring of shark catches through bilateral cooperation between States;
f. Endeavour to cooperate through regional and sub-regional fisheries organizations or arrangements, and other forms of cooperation, with the aim of ensuring the sustainability of shark
g. stocks. Including, where applicable, the development of regional or sub-regional shark management plans;
h. Cooperate with other States to strive to ensure effective conservation and management of trans- boundary, straddling, highly migratory and high seas stocks of sharks and data sharing; and
i. Endeavour to collaborate through FAO and the major RFMOs and other international arrangements in research, training and the production of information and educational material.
j. Adopt measures, such as national inspection programs and observer coverage for vessels that target shark exclusively so as to ensure proper monitoring, data collection and recording.

These regulations from Belize, are formulated in accordance with the United Nations Fish Stocks Agreement and the FAO Compliance Agreement and Coded of Conduct for Responsible Fisheries, are used generally and collectively with their supporting guidelines and instructions to manage Belize's high seas fisheries (**Table 7.4.3**).

c. Circulars and Notices

Circulars and Notices are used to promulgate polices and national requirements for fishing vessels in respect to safety and compliance with fishing regulations and other related matters not otherwise specifically addressed by the High Seas Fishing Act, 2013 and its subsidiary regulations.

d. International Agreements/Treaties

The international legal bases for the management of the fleet are the various agreements that Belize has adopted, ratified, or acceded to (**Table 7.4.2**). These international agreements include:

a. the United National Convention on the Laws of the Sea (**UNCLOS**),
b. the **FAO Compliance Agreement**; and
c. the **UN Fish Stocks Agreement**.

Belize is also a party to a number of environmental treaties that have an impact on fisheries such as the Convention on Biological Diversity and Convention on the International Trade in Endangered Species of Wild Flora and Fauna (**CITES**). In addition, it is also committed to implementing non-binding international instruments such as the **FAO Code of Conduct for Responsible Fisheries**, the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (**IPOA IUU**) and the **FAO Voluntary Guidelines for Flag State Performance**. In doing so Belize adopted its National Plan of Action to Prevent, Deter and Eliminate IUU Fishing for the High Seas on 20th May 2014.

As member of the International Commission for the Conservation of Atlantic Tunas (**ICCAT**), Belize implements its responsibilities under the respective regional conventions and conservation and management measures adopted by this regional body. Belize is also conscious of its obligation to cooperate within the framework of other regional organizations and bodies which may have an impact on fisheries management policies. They are also mindful of various international rules that affect other aspects of fisheries management such as trade, particularly World Trade

Organization (**WTO**) rules on tariff and non-tariff barriers, sanitary and phytosanitary measures. Other trade related measures implemented under regional fisheries management organizations also apply, such as catch documentation schemes, the **EU IUU Catch Documentation Scheme** and other such trade related measures.

e. Quota allocation and Management System

Belize has implemented a quota allocation and management system:

Quota allocation

One of the important factors that are considered when allocating quotas is the total available catch that has been allocated to Belize for each species. Belize's quota allocation and management system is quite simple as the primary focus when allocating quota is to ensure that they remain within the limits set by the relevant ICCAT recommendations.

The allocation system summarized below is for all quota allocations regardless of gear type but are allocated per individual vessel.

a) Once the total allowable catch for each species has been determined based on the relevant ICCAT recommendation for each species, a total allowable commercial catch is set for each vessel in accordance with individual applications made by a vessel owner.
b) Quotas are only allocated to those vessel owners that hold a high seas fishing license. Each vessel owner has the right to catch and sell their quota.
c) Quotas are allocated in metric tons and are allocated from the time of approval of application to the end of the current fiscal year in which it is approved.
d) Any unused quotas allocated to a vessel owner cannot be transferred therefore operators must ensure full utilization. Any unused quotas shall be considered lost; however, a percentage of the unused quota may be considered for transfer only after careful consideration of the circumstances.
e) Overharvest of allocated quotas is discouraged and will be subject to a payback scheme by a reduced quota allocation of similar amount the following year or any other measures our Administration considers appropriate.
f) Annual quota renewal requests are considered upon submission of a new application and will be approved based on the activities of the vessel, its previous utilization and the availability of a catch allocation for such specie.
g) Where there is no capacity/quota limitation by ICCAT for a species, the same process is still utilized, except for internal catch limits which this Administration establishes for these species. It should be noted that Belize makes exceptions for any overharvest or by-catches by their vessels by ensuring that 10% of its total allowable catch remains in reserve.

Port inspections

In the case of Belize, port inspections of landed products are inspected by an authorised fisheries inspector or the competent authority of the port. Each year, an inspection of not less than 5% of all discharges is carried out except for those products that are intended for the EU market, in which case 100% of discharges is inspected.

Quotas administration and monitoring

At Belize level, the Administration has established procedures to administer and monitor quotas based on an arrangement that assesses the flow of catches from the sea to port and then to reconcile these catches with quotas allocated.

During each calendar year, catches by quota holders are progressively counted against their quota allocation. To ensure compliance, a very strict and comprehensive reporting process is followed. Detailed reporting of catches at sea by vessel operators and any landings made at port ensure a robust documentation of catches and how they are distributed. The Administration ensures compliance with these reporting obligations by auditing and analysing these paper trails in addition to other surveillance measures.

Non-compliance by vessel owners and operators with these reporting measures could result in disciplinary actions, including forfeiture of their quotas, suspension of fishing license or the imposition of a fine, inter alia.

In cases where quotas are over harvested, the vessel owner/operator may purchase further quotas, if available. Conversely, a vessel owner/operator may take catches up to 10% more than their allocation. The additional amount of catch will be deducted from their subsequent year's catch entitlement.

f. Fisheries Monitoring

In Belize, the **Fisheries Monitoring Centre** (FMC) of Belize is established under the authority of the BHSFU. The FMC carries out monitoring and surveillance of all vessels equipped with a **Vessel Monitoring System** (VMS) that are operating on the high seas or within the jurisdictional areas of other States. The FMC is responsible to closely monitor the activities of vessels from the date and time of entry to the date and time of exit for the following areas:

1. any maritime areas where specific rules on access to waters and resources apply;
2. the regulated areas of the regional fisheries management organization to which Belize is a party;
3. the jurisdictional waters of another country;
4. any other area, restricted or otherwise, which may be designated by Belize.

The FMC is responsible for the retention of all VMS data in a computer readable form for a period of at least five years. The FMC also acts as the designated competent authority for receipt of catch and effort data reporting. The operational effort level is verified by VMS which is applicable for all vessels regardless of size. As a result, VMS coverage is 100%.

Table 7.4.3. Tropical Tuna Fishing Management Plan from Belize (source: Doc. No. PA1-501 / 2018 from ICCAT).

ICCAT requirements (per 16-01)	**Explication of the actions taken by the CPC for the purposes of implementation**	**Relevant internal laws or regulations (if applicable)**
Catch reporting (para 5)	Belize reports it quarterly catches to Secretariat.	
Implementation of the area/time closure (para 38), including control and inspection measures	Each year, two months prior to the closure period, Belize notifies its vessels owner/operators of the area/time closure period with instructions that vessel should not engage in fishing operation in that area or during that period	Legally binding Fishing Vessels Circular in accordance with Part VIII Section 50(1)(c) of Belize High Seas Fishing Act, 2013 This is monitored via vessel monitoring system which provides hourly reports.
Use and limitation of FADs (para 16)	Belize has issued instructions to vessel owners operating a purse seine fishery regarding the use of FADs and its management measures can be found in our FAD management plan	Legally binding Fishing Vessels Circular in accordance with Part VIII Section 50(1)(c) of Belize High Seas Fishing Act, 2013
CPC Scientific Observer (para 39 and Annex 5)	Belize has scientific observer placement on both its long line and purse seine fishery. Data on observer coverage is collected based on agreement with the company providing observer services and takes into consideration relevant ICCAT recommendations.	Part III Section 15-25 of the High Seas (Monitoring, Control and Surveillance) Regulation, 2014. (Belize's National Observer Program is contracted to Sea Eye from Côte d'Ivoire)
Quota transfers (para 8)	Belize has not engaged in any quota transfers of its BET capacity limits	
Capacity management (para 12)	This paragraph does not apply to Belize as we do not have a capacity limitation	
Maximum by-catch limit established for non-authorized vessels (para 27)	Belize has issued a legally binding circular regarding the management of by-catch and discards. The maximum bycatch limits that can be taken by non-authorized vessels is 10 m/t of a specie.	Legally binding Fishing Vessels Circular in accordance with Part VIII Section 50(1)(c) of Belize High Seas Fishing Act, 2013

CAPE VERDE

(http://spcsrp.org/en/cabo-verde and FarFish Project (https://www.farfish.eu/))

a. Fisheries Law

The fisheries sector is mainly regulated by Decree-Law No. 53/2005 of 8 August, amended and republished by the Legislative Decree No. 2/2015 of 9 October on the Policy on Sustainable Exploitation of Fisheries Resources, and is hereinafter referred to as the Fisheries Law. Under the Fisheries Law, foreign fishing vessels are only allowed to operate in the maritime waters of Cabo Verde under international agreements with the flag state of the vessel, or with the organisations representing them, or exceptionally, when duly authorized by the member of the Government responsible for Fisheries.

Very recently, Law No. 71/IX/2020 (http://extwprlegs1.fao.org/docs/pdf/cvi192832.pdf) approving the Legislative Authorization on the General Regime for the Sustainable Exploitation of Fisheries Resources was published (on 31 Januray 2020), repealing the Legislative Decree No. 2/2015. This Law, establishes the Legislative Authorization on the General Regime for the Sustainable Exploitation of Fisheries Resources (which has a duration of 180 days), approved by Decree-Law No. 53/2005. In particular, as regards the general regime for the sustainable exploitation of fisheries resources in national maritime waters and on the high seas, the authorization has the following meaning and extension:

- Allow as a means of evidence the information from the VMS-Vessel Monitoring System, etc. as stated by Decree Law No. 32/2012;
- Establish a new sanctioning regime with definition of new maximum limits;
- Classify as a sanction the inclusion of the offending vessel in the list of illegal, unreported and unregulated fishing vessels (IUU);
- Allow witness policy for the identification of any illegal activity of fishing vessels;
- Establish guiding principles by which fisheries management and planning should be governed, ensuring that all fishing vessels involved really observe the principles and standards of conservation and management;
- Create a set of rules and principles through a general regime applicable to the fight against illegal fishing in national maritime waters and regulating fishing activity;
- Establish rules and principles applicable to the commercial fishing licensing and related fishing operations, as well as to fishing on the high seas;
- Classify fishing vessels and respective registers, and rule the inspection and monitoring devices, entry and leaving declaration the Exclusive Economic Zone (EEZ) and periodic inspection;
- Establish principles for the use of base ports and landing points;
- Legalize and regulate commercial diving fishing;
- Regulate non-commercial fishing modalities, namely, scientific research fishing, amateur and subsistence fishing;
- Classify violations and administrative offenses, reducing the amounts of fines, especially in relation to artisanal and semi-industrial fishing vessels;
- Adapt the general regime for the sustainable exploitation of fishery resources to the current requirements of international law.

And even more recently, the new Legislative Decree No. 2/2020 (https://kiosk.incv.cv/V/2020/3/19/1.1.33.3167/) approving the General Regime Regulating Fishing Activities in National Maritime Waters and the High Seas was published on 19 March 2020.

Even though with the Legislative Decree No. 2/2015 an effort was made to update the Fisheries Law , there was a need to revise and update the fishing legislation more widely in order to adapt it to the current requirements of international law, to improve the arrangement of the matters dealt with in the artices in such a way as to facilitate the understanding of the decree by all users, to deal with new matters, to reduce the amounts of fines, especially in relation to small-scale fishing and semi-industrial vessels, to more realistic values and to simplify the language and standardize the concepts.

On the other hand, with this exercise of updating the fishing legislation, it is intended to improve the framework to achieve a higher level of legal control in the sustainable exploitation of fisheries resources and thus obtain more resources for the country and the population involved and promote more effective measures in the conservation of these resources.

b. Fisheries Policy Charter

The Fisheries Policy Charter (Carta da Política das Pescas - CPP) was adopted in 2014 by Resolution 17/2014 and establishes the Government's strategic options for the fisheries sector over the period 2013-2018. It aligns with wider

economic and social development plans and its objective is for integrated and sustained development of the sector, thus contributing to improved living conditions of the various directly or indirectly related actors.

c. National Council of Fisheries

A National Council of Fisheries was established by the Fisheries Law to advise the Government on the definition and implementation of the policy for the Fisheries sector. This was recently replaced by the National Council of Maritime Economy, which is not yet operational.

d. Fishery Resource Management Plan (PGRP)

The Fishery Resource Management Plan (Plano de Gestão dos Recursos da Pesca - PGRP) was adopted in 2004 under the National Environment Plan 2004-2014 (Plano de Acção Nacional para o Ambiente - PANA II) with the objective to ensure that the fisheries of Cabo Verde contribute to increase national production, food safety, quality of fishery products, employment, and to decrease the balance of payments deficit. The Plan covers different segments of the fisheries activities, with sections relating to industrial fisheries, artisanal fisheries, foreign fishing, sport and amateur fishing. In each case, it sets out the problems to be resolved, the sub-sectoral objectives, the results to be achieved and the proposed activities.

A review of the plan is pending, and in the meantime, the plan is implemented by means of Biannual Executive Plans, published in the Boletim Oficial da República de Cabo Verde, detailing the regulations and management measures. The current execution of the plan concerns the period 2018-2019. The plan sets out a number of policy restrictions on foreign fishing in general, as well as specific measures in relation to specific fisheries, including foreign fishing. In respect of tuna fishing, the Plan estimates the potential available in the EEZ, allows a gradual development of the fishery, and proposes a cautious expansion of the fishing effort, subject to control of the number of fishing licenses issued. Fishing for live bait by foreign vessels is prohibited within the 12 nautical miles. Live bait is usually caught within 3 nautical miles, an area reserved exclusively for artisanal fishing; support vessels are however allowed to operate in bays and in non-inhabited areas within 3 nautical miles, exclusively to catch live bait; bait caught under such circumstances shall under no circumstances be marketed for consumption.

e. Institutional setup

The recent institutional reform of the Government moved fisheries, previously under the **Ministry of Infrastructures and Maritime Economy**, under the **Ministry of Economy and Employment** (MEE), which is in charge of proposing, implementing and evaluating public policies in a number of fields including fisheries. However, it is not entirely clear whether an announced remodelling of the Government has come to a conclusion, placing fisheries affairs under a **Ministry of Tourism, Transport, and Maritime Economy** (Governo de Capo Verde, 2018). The following description of the institutional setup is expected to continue in a similar structure under the new ministry:

- The **National Directorate of Maritime Economy** (Direcção Nacional de Economia Marítima - DNEM) is a central service of the Ministry of Economy and Employment (MEE) in charge of the elaboration, implementation and coordination of the maritime, marine resources, fisheries and aquaculture policies. It is the competent authority responsible for the issue of fishing licenses to national vessels and to advise regarding applications for fishing licenses by foreign vessels which are subsequently issued by the Minister.

- Under the DNEM, the **Marine Resources, Aquaculture and Fisheries Service** (Serviço de Recursos Marinhos, Aquacultura e Pescas - SRMAP) is in charge of keeping a database of the licensing of fishing activities by nationals or foreigners in the EEZ of Cabo Verde, and promoting continuous updating, in conjunction with other relevant departments, of statistical data in the field of fisheries, aquaculture and marine living resources.
  For Cape Verde, DNEM is in charge of ensuring the control of the fishing activities in the country involving technical measures, fishing activity and other conditions that ensure safety and catch standardization; coordinating the execution of the inspection functions and ensuring the inspection and control of the fishing activities; instructing processes resulting from violations of laws and regulations and proposing the correspondent sanction scheme.

- The **National Fisheries Development Institute** (Instituto Nacional do Desenvolvimento das Pescas - **INDP**) is a scientific public body in charge of assessing stocks, monitoring and developing fisheries at the country level. It has the responsibility for research and development inputs for fisheries management with core activities in

stock assessment, elaboration of management measures, compilation of statistics in the fisheries sector, promotion and development (co-management and support to fishing communities).
The INDP is based in Mindelo and has an office in Praia. The collection of biological and statistical data on the main species is carried out in the ports and markets, by INDP scientists, followed by digitization, processing and analysis. The compiled data, including Task I and Task II data, as well as the number of fishing vessels, have been regularly submitted to the ICCAT Secretariat, thereby contributing to the updating of the ICCAT statistics and stock assessments.

- The **Coast Guard**, part of the Armed Forces of Cabo Verde, plays a key role in MCS with functions such as search and rescue, fisheries control and surveillance, and marine controls on immigration, smuggling, pollution etc. The Coast Guard Command oversees the **Maritime Safety Operations Centre** (Centro de Coordenação de Segurança Marítima – COSMAR). This is an interagency organisation that coordinates the work of the various specialized national agencies with competence in the area of maritime safety (Navy, Coast Guard, Maritime Police, Customs, Borders Services and DNEM). Each year the Coast Guard develops a joint plan on routine inspections in coordination with DNEM, which is then formalized through a MoU.

- **Maritime and Ports Authority** (AMP - Agência Marítima e Portuária) was established in 2013, to replace the Maritime and Ports Institute, as an independent entity with the purpose of performing the technical and economic regulation and supervision of the maritime and ports sector. It should be noted that the two major ports in Mindelo on Sao Vicente island and Praia Port on Santiago Island are operated by the state-owned port company National Company of Ports Administration (Empresa Nacional de Administração dos Portos – ENAPOR).

- The **Maritime Police** was previously under the Maritime and Ports Institute (replaced by AMP), but since 2006 is a branch of the National Police (Ministry of Internal Affairs). The Maritime Police takes part in inspections at sea within the territorial limit of 12 nautical miles but is mainly involved with port inspections together with DNEM, Costal Guard, and ENAPOR.

f. Observer program

The new Legislative Decree No. 2/2020, article 22 (Negotiation of access agreements or contracts) includes a provision for observers. In this Legislative Decree it is stated that: “When negotiating the agreements or contracts for access to fishing in national sea waters (…), they shall include in particular: (f) The obligation to receive and accommodate national observers on board”.

g. VMS

In Cape Verde, VMS is required by the Fisheries Law (amended in Legislative Decree 2/2015 of 9 October) and applies to semi-industrial and industrial fishing vessels, both domestic and foreign; national fishing vessels operating in international waters and/or in third countries; and to fishing vessels used exclusively for aquaculture and recreational fishing. COSMAR operates and hosts the VMS Centre (as well as other monitoring tools such as AIS, surveillance and inspection reports etc.) which is based in Praia.

SPAIN

Spain is a member of **ICCAT** via the European Union. The management framework for fisheries in European waters is provided by the **Common Fisheries Policy** (CFP), with the latest reform introduced on 1 January 2014. However, the management of tuna and tuna-liked species is undertaken by RFMOs, of which the EU is a member and jointly responsible alongside member states for ensuring the resolutions approved by ICCAT are applied. All regulatory measures adopted by ICCAT are immediately incorporated into European law and therefore immediately applicable to the Spanish fleet. The fleet is subject to a strict regulatory and supervisory framework of its activity by both Spanish and European authorities, through a system of control rules set out in the CFP: European legislation on conservation and control (http://eur-lex.europa.eu/en/legis/latest/chap04103020.htm).

The European Union (EU) has adopted a series of Regulations to effect compliance with the measures recommended by ICCAT. Spain, as a Member State of the EU, has the obligation to adopt and enforce these. Most Recommendations of ICCAT and EU Regulations have been transferred into Spanish legislation, with linked enforcement sanctions. The Spanish Government, through the **Fisheries General Secretariat** (Secretaría General de Pesca, SGP), belonging to the **Ministry of Agriculture, Food and Environment** (Ministerio de Agricultura, Alimentación y Medio Ambiente, MAGRAMA) is responsible for applying the management measures to the national fisheries sector.

a. Fishing Law (Law 3/2001)

The legislative framework for fisheries in Spain is the **State Maritime Fishing Law** from 2001 (LEY 3/2001, de 26 de marzo, de Pesca Marítima del Estado), which covers the directives of the EU CFP, adapts them to the specific circumstances of the Spanish fishing sector, and applies them through a range of Royal Decrees and Ministerial Orders in order to regulate the different fleets and fisheries (**Table 7.4.4**):

- **Council Regulation (EC) No 1224/2009** of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amended by Regulations 1379/2013, 1380/2013, 1385/2013, 508/2014, 2015/812, 2019/473, and 2019/1241.
- **Commission Implementing Regulation (EU) No 404/2011** of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy, amended by Regulations 2015/1962 and 2020/30.
- **Council Regulation (EC) No 1005/2008** establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amended by Regulations 1010/2009, 86/2010, and 202/2011.
- **Commission Regulation (EC) No 1010/2009** laying down detailed rules for development of Regulation (EC) No 1005/2008, amended by Regulations 86/2010, 395/2010, 202/2011, 1222/2011, 336/2013 and 865/2013.
- **Regulation (EU) No 2017/2403** of the European Parliament and of the Council on the sustainable development of the external fishing fleets.
- **Regulation (EU) No 1380/2013** of the European Parliament and of the Council on the Common Fisheries Policy Common Fisheries Policy, amended by Regulations 1385/2013, 2015/812, 2017/2092, and 2019/1241.

b. Fisheries MCS and enforcement

When it comes to MCS activities, the EU Member States are responsible for complying with the agreed regulations within the CFP framework at an EU level. The European Fisheries Control Agency (EFCA) was set up in 2007. Its goal is to coordinate fisheries inspection and control operational activities of Member States, as well as provide assistance to the Member States in their application of the CFP. EFCA was established to strengthen and harmonize compliance, and to combat IUU fishing (EC, 2005). This role extends to cooperation with third countries and to international organisations dealing with fisheries (including RFMOs). At present, EFCA is involved in the PESCAO project, funded under the European Development Fund (EDF). This project aims to improve regional fisheries governance in Western Africa through better coordination of national fisheries policies. Further, PESCAO aims to contribute to strengthened prevention and control measures against IUU fishing by improving MCS at national and regional levels.

In Spain, general rules on the organisation of fisheries control and enforcement are provided in **Law 3/2001** and further developed into a wide range of national regulations.

The **Control and Inspection Sub-Directorate** (Subdirección de Control e Inspección) is part of the SGP, which is the competent authority for MCS activities both at sea and on land, that coordinates the different activities in this area, occasionally supported by the Autonomous Regions.

Since **Regulation (EC) Nº 1077/2008** took effect in 2008 (now repealed by **Regulation (EU) No 404/2011**), laying down detailed rules on electronic recording and reporting of fishing activities, as well as means of remote sensing, it has

become compulsory to use an Onboard Electronic Logbook on most fishing boats, reporting data of each boat's catch to the control centres.

Under this control system, Spanish flagged purse seiners carry onboard the electronic logbook, known as the **DEA**, with which data on all fishing sets and activities are reported in near real time to the Centro de Seguimiento de Pesca (Fisheries Monitoring Centre, FMC), located in the facilities of the Subdirección General de Control e Inspección of the SGP (Madrid).

In addition, data from landing and transhipment in port are reported electronically, through the same system, which covers all the unloading of tuna corresponding to fishing sets made by Spanish purse seiners. According to the Council Regulation in place (**(EC) No 1224/2009**), the difference between logbook catch reports and landing declarations cannot exceed 10% for all species whose retained catch is over 50kg.

Moreover, boats over 15 metres long are obliged to use the so-called blue or VMS, which allow the boat to be monitored every two hours, indicating its precise position and the nature of the activity being undertaken at the time (fishing, sailing, etc.).

c. Catch certificate

From 1 January 2010, the EU has adopted a rigid control system (**Council Regulation (EC) No 1224/2009**) whereby vessels must submit a catch certificate attesting that fishing has been conducted in accordance with the European regulations to combat illegal fishing.

ANABAC's tuna fleet is included in the census of Spanish fishing fleet operating in the frozen tuna segment. To control ANABAC's imports of tuna into the EU, operators who want to enter fishery products that have been landed, transhipped and unloaded or processed in a third country into the EU, require a Catch certificate for export issued and validated by the Subdirectorate General for Control and Inspection, in accordance with Article 15 of **Council Regulation (EC) No 1005/2008**. Thus, when these products are introduced into a third country, this may require the presentation of the said Certificate. For this purpose, the SGP monitors the entire ANABAC fleet, including Belize and Cape Verde vessels (i.e. ANABAC has a private agreement with Institut Pasteur of Dakar (IPD), by which they monthly send an inspector to Abidjan to perform on-site inspections of the Cape Verdian vessel (they inspect several issues, including fishing gear, different records – logbooks, fish hold plant, etc). The monthly reports prepared by IPD's inspectors performed in Abidjan are reported to Cape Verde and to the Instituto Español de Oceanografía (IEO).

d. IUU fishing

IUU Regulation (**Council Regulation (EC) No 1005/2008**) provisions were incorporated into the Spanish legal system through the approval of **Order ARM/2077/2010**, of 27 July. Specific provisions on IUU fishing were also introduced by a 2014 amendment to Law 3/2001.

e. Fishing capacity control

The European and Spanish regulations (**Regulation (EC) n. º 1198/2006** (European Fisheries Fund) repealed by **Regulation (EU) No 508/2014** (European Maritime and Fisheries Fund), and **Royal Decree 1549/2009 -** amended by **Royal Decree 1586/2012 of 23 November**) require that in order to build a new ship, the ship being built must replace one or more operating vessels that have been taken out of service. European rules provide for the consideration of the capacity in gross tonnage (GT) and machine power (kW), so given the impossibility of increasing the vessel's fishing capacity and the need to complete the stringent European safety and habitability in the construction of new ships, for each new ship built, there is a depletion in fishing capacity in relation to the ship that is being taken out of service.

f. Tropical tuna management plan

Spain's tropical tunas management plan has been implemented on the basis of Law 3/2001 and implements the mandatory provisions of **ICCAT Recommendation 16-01** as well as Spain's fishing opportunities for bigeye tuna stock which are contained in **Council Regulation (EU) No 2018/120** of 23 January 2018 fixing for 2018 the fishing opportunities for certain stocks and groups of fish stocks, applicable in EU waters, and, for EU fishing vessels, in certain non-EU waters and amending Council Regulation (EU) No 2017/127.

g. Research Centres

The Instituto Español de Oceanografía (IEO) and AZTI undertake scientific research that forms the basis for advice delivered to the SGP with regards to fisheries management. IEO and AZTI provide information on, inter alia, the status of the fishery resources caught by Spanish fleets, where they operate; and fishing possibilities in new areas. Scientist from those research institutes also contribute directly to the work of ICCAT with publications and analysis.

Moreover, to comply with **ICCAT Recommendation 16/01**, AZTI under a contract signed with ANABAC, provides monthly records of the number of instrumented buoys per vessel which have been recorded from buoy supply companies. This information is sent to the SGP under the provisions contained in the FAD Management Plan of the Directorate General of Fisheries Resources. Additionally, the captain of the vessel is required to make an entry in the electronic logbook for each set and state if the catches have been made on fish aggregating devices, on natural objects or if they are sets on free schools.

h. Spanish fisheries federations and associations

Spanish fishers are grouped locally and regionally in associations and are represented nationally by fishing federations or at large fisheries associations. Fisheries federations and associations are proactively involved in fora and sector meetings to suggest solutions to issues along with regional, national or European governments.

Table 7.4.4. Tropical Tuna Fishing Management Plan from Spain (source: Doc. No. PA1-501 / 2018 from ICCAT).

ICCAT requirements (per 16-01)	Justification of the actions taken by the CPC for the purposes of implementation	Relevant internal laws or regulations (if applicable)
Catch reporting (para 5)	All the directed catching fleets have a fully incorporated an onboard electronic catch reporting system (DEA-3)	Order ARM/3145/2009, of 19 November, which regulates implementation of electronic registration and transmission of the data on Spanish fishing vessel activity.
Implementation of the area/time closure (para 38), including control and inspection measures	The closure has been fully implemented in accordance with paragraph 38. The mandatory embarking of observers has been monitored as well as transits in the area via the VMS system, for freezer tuna seiners as well as support vessels	Specific instructions for the issuance of Special Fishing Permits for freezer tuna seiners and support vessels in the Atlantic Ocean for the 2018 campaign
Use and limitation of FADs (para 16)	The limitations on deployment of FADs has been fully applied in accordance with paragraph 16. Verification of the number of active FADs is carried out in collaboration with the scientific institute AZTI-TECNALIA.	Specific instructions for issuance of Special Fishing Permits for freezer tuna seiners and support vessels in the Atlantic Ocean for the 2018 campaign
CPC Scientific Observer (para 39 and Annex 5)	There is 100% coverage by onboard scientific observers of the freezer tuna fleet. This requirement is checked prior to issuing the provisional fishing permits. Observer coverage of the baitboat tuna fleet and the surface longline is provided by the National Basic Data Programme and is managed by the Spanish Institute of Oceanography (IEO). In 2018 the surface longline fleet embarked observers who are complementary to this programme.	Specific instructions for the issuance of Special Fishing Permits for freezer tuna seiners and support vessels in the Atlantic Ocean, tuna baitboats and surface longline for the 2018 campaign. Council Regulation (EU) 199/2008 of 25 February establishing a community framework for the collection, management and use of data in the fisheries sector and support for scientific advice, in line with the objectives of the Common Fisheries Policy
Quota transfers (para 8)	There have not been any quota transfers.	
Capacity management (para 12)	The limits applicable to tuna purse seine vessels and surface longliners established for Spain in the corresponding regulation have been complied with.	Council Regulation (EU) No 2018/120 of 23 January 2018 establishing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in EU waters and, for EU fishing vessels, in certain non-EU waters and amending Council Regulation (EU) No. 2017/127.
Maximum by-catch limit established for non-authorized vessels (para 27)	A limit has been established of 5% of the total catches for retaining onboard of non-target species.	Council Regulation (EC) No. 1224/2009 of 20 November 2009 establishing a community control system for ensuring compliance with the rules of the Common Fisheries Policy.

7.4.1.3 Entities and institutions involved in the management of the assessed fishery

Below are listed the main entities and institutions involved in the management of the assessed fishery, detailing their roles and responsibilities:

International institutions for fisheries management and / or research

The International Commission for the Conservation of Atlantic Tuna (ICCAT) is responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and adjacent seas. **Figure 7.4.1** shows ICCAT's structure. However, the Commission may convene other Working Groups as required, as it was the case of the standing WG on dialogue between fisheries scientists and managers, or the ad hoc WG on FADs. The following bodies are highlighted in relation to the assessed fishery:

- **Panel 1: Tropical tunas (yellowfin, bigeye and skipjack)**. Responsible for keeping under review the three species of tropical tunas (yellowfin, bigeye and skipjack) and for collecting scientific and other information relating thereto. Based on investigations from the SCRS, Panels may propose to the Commission recommendations for joint action by the Contracting Parties. Currently chaired by Côte d'Ivoire.

- **Standing Committee on Research and Statistics (SCRS)**. Develops and recommends to the Commission policies and procedures in the collection, compilation, analysis and dissemination of fishery statistics as may be necessary to ensure that the Commission has available at all times complete, current and equivalent statistics on fishery activities in the Convention area. The SCRS is composed of other subsidiary bodies: two Sub-Committees (Statistics and Ecosystems), eight Species Groups (there is one assigned to tropical tunas) and other Working Groups.

- **Conservation and Management Measures Compliance Committee (COC)**. Reviews all aspects of compliance with ICCAT conservation and management measures in the ICCAT Convention Area, with particular reference to compliance with such measures by ICCAT Contracting Parties.

- **Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG)**. Obtains, compiles and reviews all available information on the fishing activities of non-Contracting Parties, for species under the purview of ICCAT, including details on the type, flag and name of vessels and reported or estimated catches by species and area.

- **Standing Working Group on Dialogue between Fisheries Scientists and Managers (SWGSM)**. It aims to enhance communication and foster mutual understanding between fisheries managers and scientists, by establishing a forum to exchange views and to support the development and effective implementation of management strategies.

ICCAT reviews the elements of CPCs biannually and provides advice to the Commission on whether it has been successful and whether it needs to be changed (see e.g. ICCAT compliance reports, 2019f). The COC reviews all aspects of compliance with ICCAT conservation and management measures in the ICCAT Convention Area, with particular reference to compliance with such measures by ICCAT Contracting Parties. The SCRS has regularly reviewed and conducted stock assessments, re-estimated (re-calculated) and re-evaluated the appropriateness of the reference points, and whether the objectives of the Convention are being met. The Commission takes the advice of the SCRS under consideration and agrees binding Resolutions.

International Seafood Sustainability Foundation (ISSF) was created in 2009 as a global, non-profit partnership among the tuna industry, scientists and WWF. The group states that its mission is to undertake science-based initiatives for the long-term conservation and sustainable use of tuna stocks, reducing bycatch and promoting ecosystem health. ISSF also maintains a Pro-active Vessel Register (PVR list) which implies that the vessels are audited by MRAG (the UoA vessels are included in that list - see **section 7.4.1.5** for more details). ISSF has developed a comprehensive Guide on good practices and they provide regular trainings to skippers, captains and crew.

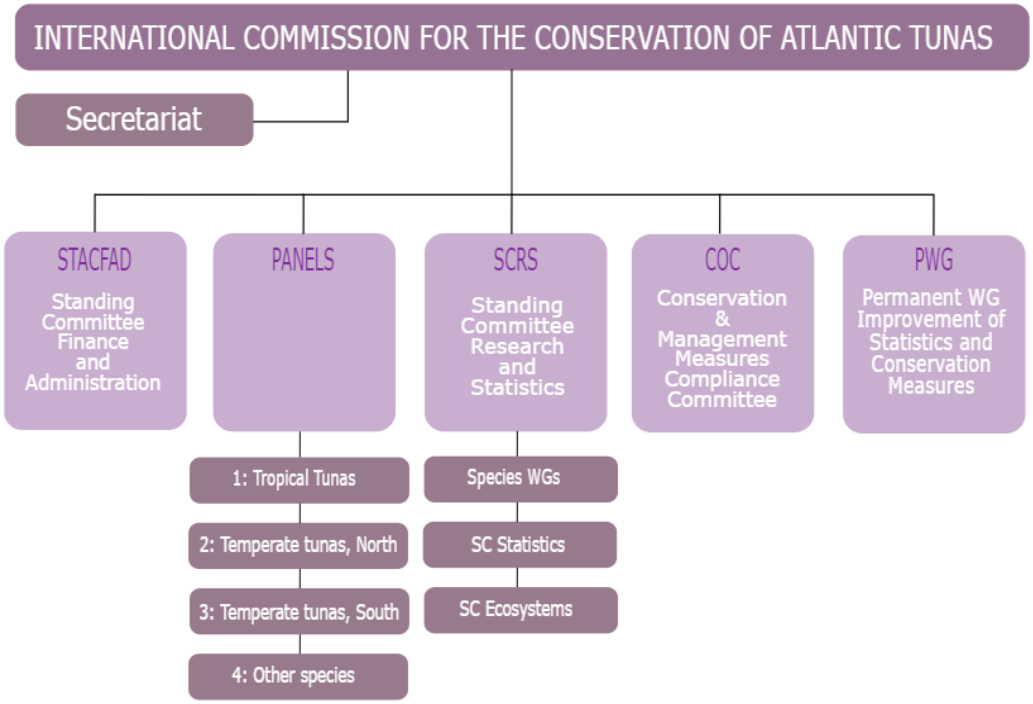


Figure 7.4.1 ICCAT's Structure. Source: https://www.iccat.int/en/organization.html

National institutions for fisheries management and / or research

- **Belize High Seas Fisheries Unit (BHSFU)**. The BHSFU is the competent authority in fisheries management in accordance with the High Seas Fishing Act that monitors if the assessed fleet complies with ICCAT and National regulations. After every fishing trip they receive logbook and landing declarations, so they can cross check them before issuing the catches certificate (this document is compulsory for importing the product into the European Union). Further they also receive the port inspections provided by the competent authority of the port. Based on all these documents BHSFU prepares an annual report of tuna catches from Belize to ICCAT.

- Cape Verde **National Fisheries Development Institute** (Instituto Nacional do Desenvolvimento das Pescas - **INDP**). The INDP is a scientific public body in charge of assessing stocks, monitoring and developing fisheries at the country level. It has the responsibility for research and development inputs for fisheries management with core activities in stock assessment, elaboration of management measures, compilation of statistics in the fisheries sector, promotion and development (co-management and support to fishing communities).
  The INDP is based in Mindelo and has an office in Praia. The collection of biological and statistical data on the main species is carried out in the ports and markets, by INDP scientists, followed by digitization, processing and analysis. The compiled data, including Task I and Task II data, as well as the number of fishing vessels, have been regularly submitted to the ICCAT Secretariat, thereby contributing to the updating of the ICCAT statistics and stock assessments.

- **IPD, Investigación, Planificación y Desarrollo, SA**. Consultancy Company specializing in fisheries and observer programs in particular. ANABAC in 2018 signed a contract with this consultancy to monthly maintain the collection of information on fishing activity in the port of Abidjan, including logbooks, well plans, port sampling and data on the landings of ANABAC's Cape Verdean flag associated tuna purse seiners operating in the Atlantic Ocean.

- **Spanish Institute of Oceanography (IEO)**. It is an autonomous body, classified as a Public Research Organization, under the Ministry of Science, Innovation and Universities. The IEO is member of the SCRS and is the official representative of the Spanish Government both at this Committee and at the ICCAT Working Groups, contributing with information, knowledge and resources. Among other functions, the IEO maintains programs of fishery observers in different Spanish fleets under the EU Data Collection Framework (DCF) (Commission Regulation (EC) No 665/2008).

- **AZTI-Tecnalia**. Technological Centre based in the Basque Country (Spain) that provides various services in marine and food innovation. AZTI carries out fisheries research and consultancy, and among other services they compile the fishery statistics of the Basque tuna fleet and carry out scientific monitoring of these fisheries, including the coordination of observer programs and the installation and validation of Electronic Monitoring Systems (SMEs). They advise the Basque Government on fisheries matters, for which representatives of AZTI participate in meetings of the SCRS and different Working Groups. AZTI is also responsible for supervising on annual basis the implementation of the ANABAC Code of good practices on the member's vessels. This includes the compilation and review of observer data collected by observers which come from independent scientific institutions and organisations from Spain, Gabon, Ivory Coast and Liberia.

- **Sea Eye**. Consultancy Company based in Côte d'Ivoire specializing in fisheries and observer programs in particular. Atunsa and Pevasa groups signed a contract with this consultancy to maintain the full coverage of observers. Sea Eye observers have been trained by AZTI and CRO (Centre de Recherches Océanographiques of Abidjan) according to the National Observer Data Collection Programme established by ICCAT, in accordance with the qualifications required in Rec 16-14.

Institutions of the fishing industry

- **Atunsa Group**. The Atunsa Group of companies based in Bermeo (Spain) integrates various companies related to fishing and canning. Atunsa N.V., Atunsa C.V and Frigoatun are part of the Atunsa Group.
- **Pevasa Group**. The Pevasa Group of Companies based in Bermeo (Spain) integrates various companies related to fishing and canning. Sea Breeza Ventures is part of the Pevasa group.
- **ANABAC**. Atunsa and Pevasa are members of the National Assosciation of Purse Seine Vessel Owners (ANABAC). In relation to the assessed fishery, the main powers of ANABAC are: i) to sign bilateral fishing agreements with the West Africa coastal countries in whose EEZs the UoA operates; ii) to sign agreements to enable the implementation of observer programs or port inspections; (iii) to develop and implement a Code of Conduct on good practices on board (together with OPAGAC/AGAC) which is being verified by AZTI and monitored by a Steering Committee.

7.4.1.4 Rights of access

Resolution 15-13 establishes a series of criteria on the part of ICCAT for the allocation of fishing possibilities. The qualifying criteria for receiving quota allocations within the framework of ICCAT are the following: (1) to be a Contracting or Cooperating non-Contracting Party, Entity or Fishing Entity (CPC); (2) to have the ability to apply the conservation and management measures of ICCAT, to collect and to provide accurate data for the relevant resources and, taking into account their respective capacities, to conduct scientific research on those resources. Subsequently, a series of allocation criteria are established accounting for both biological and socio-economic aspects. Finally, conditions for applying allocation criteria are also established.

Rec 16-01 also establishes that "CPCs shall issue specific authorizations to vessels 20 meters LOA or greater flying their flag allowed to fish bigeye and/or yellowfin and/or skipjack tunas in the Convention area, and to vessels flying their flag used for any kind of support of this fishing activity".

The Commission shall establish and maintain an ICCAT record of authorized tropical tuna vessels, including support vessels. Fishing vessels 20 meters LOA or greater not entered into this record are deemed not to be authorized to fish, retain on board, tranship, transport, transfer, process or land bigeye and/or yellowfin and/or skipjack tunas from the Convention area or to carry out any kind of support to those activities, including deploying and retrieving FADs and/or buoys. Finally, each CPC shall, by 31 July each year, notify to the ICCAT Executive Secretary the list of authorized vessels flying their flag which have fished tropical tunas in the Convention area or have offered any kind of support to the fishing activity in the previous calendar year. In the case of the bigeye tuna, Rec 18-01 also includes some capacity limitation measures, but any of them is applicable to Belize, Cape Verde or Spain.

ANABAC fishing area covers both international waters (high seas) as well as the EEZs (exclusive economic zones) of the coastal West African states listed in **Table 7.4.5**. Access to EEZ are either through direct agreements or through

public agreements with the coastal States, such as the EU sustainable fisheries partnership agreements for EU vessels (SFPAs).

On behalf of its members, ANABAC signs direct agreements with the governments of those countries to guarantee access (i.e. Mauritania, Cape Verde, Senegal, Guinea Bissau, Guinea Conakry, Sierra Leone, Liberia, Ivory Coast, Ghana, Sao Tome & Principe, Equatorial Guinea, Gabon and Angola; see Annex 2 of the Client Checklist for examples of the Fishing Licenses) and establish fishing conditions for EU and non-EU vessels (as in the case of the assessed fleet). The licenses obtained are validated by each of the Governments of the vessels flag (i.e., Cape Verde, Belize and Spain) and notified to ICCAT.

Table 7.4.5. Summary of the reporting requirements detailed in direct agreements signed with West African coastal countries where ANABAC's fleet operates and their periods of validity for 2019. Source: Client Checklist.

EEZ	Validity	Requirements
Angola	1-year	As no specific requirements the client is following its standard procedures: - Entrance and exit at the EEZ shall be notified 3 hours in advance - Daily notification of catches at species level - It is compulsory to have the original licence on board
Cape Verde	1-year	- Entrance and exit from the EEZ shall be notified 6h in advance, reporting date, hour, access point and catches per species (using FAO codes). - Daily catch report through DEA. - VMS transmitting at least every 4 hours.
Equatorial Guinea	1-year	- Operative VMS at entering the EEZ As no other specific requirements, the client is following its standard procedures: - Entrance and exit at the EEZ shall be notified 3 hours in advance - Daily notification of catches at species level
Gabon	1-year	- Entrance and exit from the EEZ shall be notified 3h in advance, reporting date, hour, access point and catches per species (using FAO codes). - Operative VMS while at the EEZ - Daily catch report shall be sent before midnight, detailing type of sets (FSC or FOB) and catches per species in kg. - In 30 days after exiting the EEZ a copy of the FAD logbook within the EEZ shall be sent. - Info on FADs to be sent to seismic exploration companies (prohibition to enter in petrol exploratory and exploitation areas). - It is compulsory to have the original licence on board.
Ghana	1-year	- Entrance and exit at the EEZ shall be notified 3 hours in advance. - Logbooks and VMS positions sent to Ghanian authorities during the time spent in EEZ. - Ghana may request the boarding of observers in ANABAC vessels that have been granted a license under this Agreement.
Guinea Bissau	1-year	- Entrance and exit at the EEZ shall be notified 4 hours in advance, reporting date, hour, access point and catches per species (using FAO codes). - Catches within the EEZ shall be communicated at the end of the fishing trip.
Guinea Conakry	1 year	- VMS always transmitting - Area/Time closure between 01/07 and 31/08 in the first 60NM (from coastal based line) - Entrance and exit at the EEZ shall be notified 3 hours in advance and notify all catches per species on board - Daily catch report shall be sent, detailing catches per species in kg.
Ivory Coast	1 year	-Entrance at the EEZ shall be notified 3 hours in advance. - VMS transmitting at entering the EEZ. - Exit from the EEZ shall be notified, together with volume of catches per species within the EEZ. - Daily report shall report all fishing activities (area, catches, sets…) and catch declaration for the fishing trip shall be sent to "Centre de recherches océanologiques de Côte d'Ivoire (CRO)". - Entrance at port shall be notified 2 days in advance - At the end of the year all reports.

Liberia	1 year	-Entrance at the EEZ shall be notified 6h in advance. Existing catches on board at that moment shall also be reported - VMS transmitting at entering the EEZ - 2 daily reports on catches while at the EEZ - Exiting the EEZ shall also be reported, and within the next 72h a report detailing all fishing activities shall be reported - It is compulsory to have the original licence on board
Mauritania	1 year	-Operative VMS at entering the EEZ As no other specific requirements, the client is following its standard procedures: - Entrance and exit at the EEZ shall be notified 6 hours in advance and notify all catches per species on board - Daily notification of catches at species level. - The catch declaration for the fishing trip shall be sent within a maximum of 20 days after leaving Mauritania's EEZ
Sao Tome and Principe	3 months	-Entrance and exit at the EEZ shall be notified 3 hours in advance and notify all catches per species on board - Operative VMS while at the EEZ - It is compulsory to have the original licence on board
Senegal	1 year	-Entrance and exit at the EEZ shall be notified 3 hours in advance and notify all catches per species on board (using FAO codes). - Exit from the EEZ shall be notified, together with all fishing activities (area, catches, date, sets…) - Requests for transhipment shall be made at least 72 hours before the operation
Sierra Leone	1-year	-Entrance and exit at the EEZ shall be notified 3 hours in advance and notify all catches per species on board (using FAO codes). - Daily catch report while at the EEZ, detailing type of sets (FSC or FOB) and catches per species in kg. - Operative VMS while at the EEZ - It is compulsory to have the original licence on board

EU Sustainable Fisheries Partnership Agreements (SFPAs):

Sustainable fisheries partnership agreements (SFPAs) are recognized by the EU legislation in the Base Regulation Reform of the Common Fisheries Policy (EU 1380/2013) as the legal instrument in third countries to ensure transparency and sustainability of the activity of the European fleet in coastal countries.

SFPAs of the EU are the only ones in the world that are available to the general public, ensuring full transparency of the activity of the European fleet in the EEZs of coastal countries. In this respect, apart from the mandatory licences of the third country, all Spanish vessels must obtain a temporary fishing permit issued by the General Secretariat for Fisheries, which includes the requirement to apply all the relevant regulations of both the EU and the Regional Fisheries Organisations, as well as the relevant national regulations.

In order to ensure that vessels obtaining direct licences in third countries operate with absolute legal certainty and to avoid possible problems of false licences, intervention by unauthorised agents, etc, the Spanish administration has been implementing a system of licence verification since the end of 2012 through the network of Spanish embassies and EU delegations in third countries. Thus, any direct agreement between a Spanish vessel and a third country could be reflected on the Temporary Fishing Permits (PTPs – two examples are included in Annex 2 of the Client Checklist).

7.4.1.5 Verification of good practices implemented

ANABAC Code of Good Practices

To decrease potential impacts by purse seiners fishing on drifting FADs and improve the long-term sustainability of the tropical tuna fishery, the two Spanish tuna purse seiner associations, ANABAC and OPAGAC, established in 2012 a voluntary agreement known as the “Code of Good Practices” for responsible tuna fishing activities. The aim of this agreement is to use best fishing practices by **reducing incidental mortality of sensitive species** (sharks, rays, mantas, whale sharks, and sea turtles) and the **obligatory use of non-entangling FADs**. The good practices defined in this agreement also comprise: best **releasing practices for vulnerable fauna**, **100% observer coverage in purse**

seines, continued **training of fishing crew and scientific observers**, and the implementation of a **FAD logbook** (Lopez et al., 2017).

Since 2015 monitoring is carried out by 100 % observer coverage and the verification is carried out by AZTI. Nowadays, all ANABAC vessels, including Spanish and other flags, operating globally in 2 tuna RFMOs areas (ICCAT and IOTC) are being monitored and evaluated for these practices. Monitoring is based on specifically designed forms for detailed data collection recorded by trained scientific observers, and more recently, also by electronic monitoring systems. Standard of fishing practices are assessed individually per vessel and results used to provide scientific advice and identify correction mechanisms if necessary. Specific data-collection forms recording details of design and construction materials for the raft and the underwater part of each FAD have been developed and applied since 2015 by the program in the Atlantic and Indian Oceans. In order to better characterize the level of compliance of vessels with entanglement-minimizing designs, 6 categories are established for analysis, from lower to greater entangling potential based on ISSF guidelines.

This voluntarily adopted mitigation measure came before the ICCAT guidelines for FAD designs (Rec. 14-01) and has allowed replacing the traditional FADs by non-entangling dFADs. To date, more than 900 PS and supply vessel fishing trips have been evaluated in the Indian and Atlantic Ocean. Since the implementation of the Code of Good Practices significant improvements have been observed in the compliance of best available bycatch mitigation practices. The degree of accidental entanglements has been significantly reduced and the majority of dFADs today are totally non-entangling, reaching the 90% (Lopez et al., 2017).

Since 2012, the code was reviewed in 2015, 2017 and 2019 (current version). The agreement deals with the following topics:

1) The design and use of **non-entangling FADs** (fish aggregating devices) to **minimize direct impacts on sensitive non-target species** (mainly turtles, sharks and cetaceans).

2) The **development, training and adoption of good practices on board** to ensure the application of releasing techniques that minimize risk to associated species and optimize their survival. This includes materials and equipment provided specifically for releasing associated species.

3) The implementation of **a FAD management system** through the implementation of a **FAD logbook**.

4) **100% observer coverage**.

5) **Training** of skippers, crew and scientific observers.

6) **Scientific verification** of activities related with good practices and **continuous revision by a Steering Committee**.

The scientific body responsible for verifying the implementation of the Code of Conduct is AZTI.

Those FADs that were left in the water or FADs at water classified as having entangling material could partially correspond to re-used FADs deployed by the fleet which had lost the non-entangling character due to the deterioration of the raft cover or break of the submerged structure. Could be also the case of FADs not deployed by the target fleet, which were not replaced by non-entangling material after a visit. However, in order to further reduce the entangling character of FADs in the water, whenever possible, the entangling material should be replaced by the non-entangling material or FADs should be repaired if the material is deteriorated.

Results show that the voluntarily adopted commitment by the ANABAC fleet and the effort made since the implementation of Good Practices is gradually replacing the traditional FADs in the water by non-entangling FADs. Entanglement events on FADs started to be recorded in 2016. In 4,128 evaluations made on FADs at arrival, 20 cases of FADs with entangled fauna have been registered, i.e. 0.48% of FADs with entangled fauna have been observed.

ISSF PVR register

Among the ISSF practices, in 2012 ISSF created a ProActive Vessel Register (PVR) available on-line (https://iss-foundation.org/knowledge-tools/databases/proactive-vessel-register/). The ISSF ProActive Vessel Register (PVR) is an effective, credible and verifiable way for vessel owners to highlight meaningful sustainability efforts taken in order to improve responsible practices in tuna fishing. The PVR can assist processors, traders, importers, transporters and others involved in the seafood industry to identify those vessels that are taking meaningful sustainability efforts, including support of ISSF's conservation measures. The measures contained here do not replace the requirements for purse seine vessels to comply with the commitments listed in any other ISSF conservation measures (https://iss-foundation.org/what-we-do/verification/conservation-measures-commitments/).

This PVR list is designed to provide third-party validated information on the positive steps fishing vessels take to improve responsible fishing practices. The PVR identifies which of more than 25 ISSF Commitments each vessel has adopted, including implementing strategies to increase supply chain transparency, providing complete catch data to management bodies and continuing education in best practices that reduce fishing's impact on the greater marine environment. Comprehensive information on the PVR list is available at the ISSF website, including the application process, the audit system (conducted by MRAG America), and several related documents (https://iss-foundation.org/knowledge-tools/databases/proactive-vessel-register/). ANABAC assessed vessels are listed in the ISSF PVR and are implementing all the PVR measures (https://iss-foundation.org/pvr/public-pvr.php?what=fullscreen).

FIP

In January 2018, a FIP for the tuna fishery was formally established (Eastern Atlantic tuna purse seine - EASTI). This FIP shares stock-related activities with the Eastern Ghana pole and line FIP and has shared objectives and stakeholders. EASTI remains a complex and large-scale FIP, with fleets from Ghana, and the EU (France and Spain) operating in multiple EEZs in the Atlantic Ocean. Industry partners also include tuna canning companies based in Europe, Ivory Coast and Ghana. It focuses in key areas such as the development of robust harvest strategies for tuna, management measures to maintain primary and secondary species above biological limits and providing a framework to manage ecosystem effects associated with purse seine fishing. Moreover, this FIP emphasises the support to the recovery plan of the yellowfin stock in the Atlantic Ocean and is willing to work closely with ICCAT to improve fisheries governance in the region. The plan covers catches of skipjack, yellowfin and bigeye tuna from industrial purse seine fishing vessels owned by Spanish, French, Italian and Ghanaian flagged companies (https://fisheryprogress.org/fip-profile/eastern-atlantic-tuna-purse-seine).

The FIP fleet participants have also publicly signed the WWF-letter to ICCAT in November 2019 which sought to encourage CPCs to adopt precautionary and ecosystem-based management measures including biological reference points, harvest control rules and increased observer coverage for target species. With regard to the wider ecosystem, the FIP encourages the reduction in environmental impact by providing FAD data that improves the scientific monitoring and management of fisheries with FAD usage, maximising the release survival of sharks, mobulid rays and sea turtles and adopt measures to prohibit the setting by purse seine vessels around whale sharks. It further asks for the implementation of effective management measures by ICCAT to respond to repeated and significant instance of on-going non-compliance of TACs set for bigeye and yellowfin and alternative measures to reduce juvenile mortality of bigeye and yellowfin tuna.

7.4.1.6 Observer reports and video monitoring

ICCAT (ICCAT Rec. 16-14) establishes a 5 % coverage as the minimum standard for their scientific observer programs. Additionally, ICCAT Recommendations 16-01 and 18-01 (to be replaced by Rec. 19-02) require 100% observer coverage for all purse seine vessels (PS) targeting tropical tunas and supply vessels, during the two months of FAD area/time closure in the Atlantic Ocean.

In addition, 10% coverage is required by the European Union (EU) that is ensured via EU-funded data collection programs. However, as recognized by the SCRS some fleets are currently implementing voluntary observer programmes that cover 100% of the fishing trips, as it is the case of the assessed fleet. In addition, from 2020, Recommendation [19-02] will oblige 100% coverage of the purse seine fishing trips. ANABAC committed to the goal of 100% coverage with effect from the 2015 fishing season.

The ANABAC Code of Good Practices establishes 100% observer coverage for purse seine from 2015 and for supply vessels since 2017 onwards. This monitoring can be either done by human observers or by electronic monitoring systems (EMS). If the latter case is chosen by a vessel, EMS should follow minimum standards described by Ruiz Gondra et al (2017b). In this case, in order to reach the 100% coverage, it is mostly managed by private contracts between industry and human observer or EM service providers. In the Atlantic Ocean, most human observers are managed by Sea Eye or Ocean Eye (Côte d'Ivoire), while some trips are observed by the Spanish Institute of Oceanography (IEO – Instituto Español de Oceanografía) and AZTI under the EU Data Collection Framework (DCF) (Commission Regulation (EC) Nº 665/2008) and coastal countries due to other direct agreements (e.g., Gabon, Liberia, Curaçao). Since 2016, a significant number of trips are being covered through EMS by DOS (Digital Observer Service) and AZTI. Data in the Atlantic Ocean have been collected in the specific observer forms designed for the evaluation of the Code of Good Practices. Recently, these forms have been integrated in the ObServe 7 (v7) in which information on Best Practices is collected by observers in a standardized way.

These observers follow appropriate training courses including data validation training. The information collected concerns all target and not-target species and, following the code of good practices, the collection of data is extended to cover turtles, seabirds and marine mammals among others (see **Table 7.3.2.7**). The type of data collected refer to catch, discards, by-catch, vessels and fishing set characteristics as well as biological parameters such as mean length, weight. Observers also collect specific information on FAD structures and components including the mesh size on the floating and underwater structure, if meshed material is present, and its configuration (i.e. open net or wrapped in coils). All FADs are evaluated, the ones deployed by the fleet and any other FAD encountered at sea, either when arriving to the FAD or when leaving it at sea, to evaluate modifications on FAD material and design in each interaction if occurring. The non-entangling classification follows the definitions of the Code of Good Practices for non-entangling FADs: lower entanglement risk FADs that are constructed with non-entangling mesh (i.e. mesh size ≤ 7 cm) if the open net is present or tied-up in sausages, and non-entangling FADs constructed with no meshed material as referred in the ISSF classification criteria (ISSF, 2015). Thus, any open net above 7 cm mesh size was considered as entangling.

For sensitive fauna release, the Code of Good Practices developed species-specific handling procedures that always prioritize crew safety while discouraging other practices that are less desirable, and specific material has been developed to inform observers and the crew about the best handling practices. These release procedures are based on the outputs of the EU project MADE (Poisson et al., 2012, 2014a), which have been used as standard best practice for safe bycatch release operations in RFMOs. AZTI, in charge of coordinating, collecting, processing and analysing bycatch release data developed specific forms in English, French and Spanish to collect detailed information on bycatch release operations through scientific observers. In each interaction the releasing mode is recorded as described in the Code of Good Practices: (i) using the brailer, (ii) using light equipment such as stretcher, fabric, sarria or cargo net, (iii) using specific equipment such as a hopper or lateral doors, (iv) manually from deck, (v) after disentangling; if in each release the practices applied were in line with the ones defined in the Code of Good Practices, and since 2016, the cause of the non-application of the best releasing practices (i.e. residual mortality: RI; lack of specific material for the manipulation; application of incorrect practices), as well as the time used to release animals are registered for each species and species group (i.e. sharks other than hammerhead sharks and whale sharks, hammerheads sharks, whale sharks, mantas, rays and turtles). Also, the state of the animal when it is released at sea is registered based in the states proposed by Heuter and Manire (1994), (i) excellent (very active and energetic, strong signs of life on deck and when returned to water); (ii) good (active and energetic, moderated signs of life on deck and when returned to water); (iii) correct (tired and sluggish, limited signs of life, moderate revival time required when returned to water, slow or atypical swimming away); (iv) poor (exhausted, no signs of life, bleeding from gills, jaw or cloaca, long revival time required when returned to water, limited or no swimming observed upon release); (v) very poor or moribund: moribund, no signs of life, excess bleeding from gills, jaw or cloaca, unable to revive upon return to water, no swimming movement, sinks.

In the evaluation, the whale sharks and hammerheads sharks are classified in an independent group apart from sharks due to their size, morphology and sensibility which require specific handling. Information on biological parameters such as the size and sex of the specimens is also recorded whenever possible.

Entangling events on FADs were included in observer forms since 2016, when specific guidelines were included in the observer manuals for the registration of fauna entanglements on FADs. When a FAD is found by a purse seiner or a supply vessel at sea, observers record the presence or absence of specimens entangled in the FAD. The number of specimens or species is not generally recorded.

For the observers, in-person training sessions are conducted by the different organizations which take part in the program. These training sessions comprise:

(1) a general overview on the use of FADs in tuna purse-seine fisheries,

(2) the related impact on non-targeted fauna and the mitigation measures,

(3) instructions on fauna release operations and FAD identification and description in the forms,

(4) practical exercises to train observers in form filling tasks. Specific support material, such as manuals and guides are developed and provided to observers.

Since 2015, 100% of the fishing trips on purse seiners are covered by observers (human or EMS). Different organizations and flag states have been gradually introduced in the collection on best practices data, and sometimes in order to assure the collection of official data, official data collection programs have been prioritized, as the information to be collected by observers in each set is significant. In this sense, between 2015 and 2018 information on 282 fishing trips (i.e. 264 and 18 in supply vessels) on 8 purse seine and 3 support vessels in the Atlantic Ocean has been gathered and analysed under the Code of Good Practices Program in ANABAC. These trips have been monitored by 55 observers trained on Good Practices from different organizations, for which a specific observer guide was created as supporting material. ANABAC data on Best Practices were mainly collected by Sea Eye.

7.4.1.7 Vessel Monitoring System (VMS) or Automatic Identification System (AIS) maps or reports

With regard to monitoring, control and surveillance (MCS) activities, ICCAT's strategies to improve compliance are based on keeping an updated list of IUU vessels (coordinated with other RFMOs), the obligation to record and report data (including VMS), monitoring of catches and fishing activities by observers, diplomatic pressure and other pressures applied to CPCs as well as noncontracting ones.

In the case of the tropical tuna fisheries, Rec. 16-01 establishes some measures to control the access to the fishery (see **section 7.4.1.2**).

At the regional level, ICCAT has adopted and continues to adopt measures to encourage countries to become CPCs, as well as for non-Contracting Parties to cooperate with the conservation measures of the organization. The success is reflected in the increase of the membership in the last decades and in the high level of participation.

As well as in situ inspections, both in port and at sea, all ANABAC purse seiners use VMS and fleet operations are monitored by the respective CPC fisheries monitoring centres. In addition, for commercial purposes, in order to import the tuna to EU, to improve the transparency and to facilitate the monitoring and tracking of all ANABAC vessels; VMS, available fishing licenses by the flag State and copies of logbooks and declaration of offloading and transhipment are provided to the General Secretariat of Fisheries in Madrid. The VMS and comprehensive observer coverage effectively and independently track ANABAC vessels and fishing activity and provide reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. VMS data for all ANABAC fishing vessels is available from AZTI. **Figure 5.1.3** shows the fishing activity of ANABAC vessels in the Atlantic Ocean, separated by the type of set (FSC or FOB sets).

7.4.1.8 Scientific monitoring of the fishery

ICCAT is the fishing organization responsible for coordinating the work required for the study and regulation of tuna and tuna like species in the Atlantic. According to Article IV of the Basic Texts of the Convention: “Such study shall include research on the abundance, biometry and ecology of the fishes; the oceanography of their environment; and the effects of natural and human factors upon their abundance. The Commission, in carrying out these responsibilities shall, insofar as feasible, utilise the technical and scientific services of, and information from, official agencies of the Contracting Parties and their political sub-divisions and may, when desirable, utilise the available services and information of any public or private institution, organization or individual, and may undertake within the limits of its budget independent research to supplement the research work being done by governments, national institutions or other international organizations”. Representatives of the research centres of the different CPCs are members of the SCRS, which plans and coordinates these tasks.

In addition, there are multiple Recommendations that oblige CPCs to report their fishing activities according to ICCAT standards, as well as having on-board observer programs. Rec 03-13 states that each CPC shall ensure that all fishing vessels flying its flag and authorized to fish species managed by ICCAT in the Convention area be subject to a data recording system. All commercial fishing vessels over 24 m length overall shall keep a bound or electronic logbook recording the information required in the ICCAT Field Manual for Statistics and Sampling. Further, Rec 16-01 stablishes that each CPC shall ensure that its vessels 20 m LOA or greater fishing tropical tunas record their catch in accordance to specific requirements, and in the case of FOB sets a specific FAD logbook is required.

In the case of the evaluated fishery, observer coverage during the time-space closure between January 1 and February 28 must be of 100%, as established in Rec 16-01. However, as recognized in Rec 19-02 some fleets should implement observer programmes that cover 100% of the fishing trips, as it is the case of the assessed fleet.

The SCRS has been running since 2012 a sampling program in port with the objective of collecting small data on yellowfin, skipjack and bigeye caught in the area of the closure. The purpose of the SCRS is for the Commission to have the most complete and up-to-date statistics on the fishing activities carried out in the Convention area, as well as biological data on the fished populations. Therefore, it is ensured that the Commission takes decisions based on the fishery dependant data which are reflecting current trends and conditions of the fishery resources in the area.

Most research activities on Atlantic tuna and tuna-like species are carried out by scientists from national research institutes or universities of Contracting Parties. Special Research Programs are used by ICCAT as a mechanism to help focus, coordinate and complement those national research activities. The programs usually centre on improving biological knowledge and fishery data for a particular species, and usually last a few years. In some cases, they are funded by the Commission as part of the regular budget and in some cases, they are funded by contributions from

individual Contracting Parties and other agencies. The following is a list of ICCAT Research Projects conducted to-date which are related to the assessed fishery:

- **Atlantic Ocean Tropical Tuna Tagging Programme (AOTTP)**: The AOTTP is a five-year programme funded by the European Union (DCI-FOOD/2015/361-161), ICCAT CPCs and Contributors. The project began in July 2016. The overall objective of the AOTTP Programme is to contribute to food security and economic growth of the Atlantic coastal states by ensuring sustainable management of tropical tuna resources in the Atlantic Ocean. Specifically, it will provide evidence-based scientific advice to developing Atlantic coastal states, and other ICCAT Contracting Parties, for them to adopt appropriate Conservation and Management Measures within the Framework of the International Commission for the Conservation of Atlantic Tunas (ICCAT). These objectives will be achieved by improving the estimation – derived from tag-recapture data - of key parameters for stock assessment (i.e. growth, natural mortality, migrations and stock-structure).

  ANABAC, following a request from AOTTP (January 2020), has provided access to the associated vessel's logbook data operating in the Atlantic Ocean in order to support better estimations of fish recaptures and improving estimates of key stock assessment metrics.

- **Enhanced Program for Billfish Research (EPBR)**. Duration: 1987-present with funding from the Commission and other donors. Objective: To obtain more complete detailed catch and effort statistics for billfishes, to carry out an expanded tagging program, and to carry out studies on age and growth.

- **Small Tunas Year Program (SMTYP)**. Duration: 2016-2017 with funding from the Commission. Objectives: To recover small tuna's historical data (statistical and biological data) from the main ICCAT fishing areas.

- **Shark Research and Data Collection Programme (SRDCP)**. The SRDCP is contained within the 2015-2020 SCRS Strategic Plan. Although efforts are being made in recent years to improve shark data collection and research, the current knowledge on many fisheries and basic biology is still limited. These gaps in knowledge are responsible for much of the uncertainty in stock assessments and have caused constraints to the provision of scientific advice. Therefore, the present proposal for a Shark Research and Data Collection Program (SRDCP) represents a further step to align with ICCAT Res. 11-17 on Best Available Science, to fill knowledge gaps on fisheries and biology issues by improving data collection, cooperation and capacity building. In order to achieve these goals, the SRDCP aims to provide guidance to SCRS researchers, by prioritizing those issues related to data collection and research lines on species biology/ecology, fisheries and mitigation measures. Finally, by promoting coordination between SCRS researchers, the SRDCP aims to improve the quality and reduce the uncertainty of the scientific advice on sharks provided to the Commission, and to better assess the impact of management measures on these species.

- **Progress related to work developed on MSE**. Rec. 15-07 and Rec. 17-04 engage ICCAT in a number of MSE processes for a subset of priority stocks. These processes are in different stages of development, have different structural challenges and have progressed with the support of different sources of funding. The roadmap for MSE, developed by the ICCAT Commission, reflects a desire to match the delivery of MSE products to the needs for advice on MSE. Trying to implement this roadmap has been very challenging, for both the SCRS and the Commission. Progress on the MSE process has been hampered by the lack of experience on MSE in ICCAT, by technical challenges in the development of stock specific simulation frameworks and by the limited resources to participate in both the MSE process and in the current stock assessment and management process. In 2018 the Commission decided that it would slowdown and not to have four MSE processes running in parallel and that it would be preferable to focus on one or two of the ongoing species. However, no clear guidance was given to which of the MSE processes should the SCRS give priority. Accordingly, during 2019 the ICCAT MSE process focused mostly on bluefin tuna and northern Atlantic swordfish, and at a low level on northern Atlantic albacore. Little work was conducted on the tropical tuna MSE. Nevertheless, some major accomplishments were made, which are detailed below:

  - The MSE for the Atlantic tropical tuna stocks work started in 2018 through an ICCAT contract awarded to a consortium of researchers. In 2019, the Tropical Tuna Species Group was provided the final report (SCRS/2019/033) for phase 1 and had some limited discussions on MSE during the yellowfin data preparatory and yellowfin stock assessment meetings. Phase 2, which was planned for 2019, was not carried out, following the indication from the Commission to revise the schedules for the different ICCAT species MSE process, lowering the priority of Tropical tunas MSE. The Tropical Tuna Species Group expressed a concern that it is important to reactivate the MSE process, if MSE is going to be used to provide advice on tropical tunas in 2022. It was recommended that funds be secured to enable continuing the development and evaluation of MSE operating models and candidate management procedures. The Committee clarified that Stock Synthesis model for eastern skipjack will be newly developed to condition OMs for three species in the proposed Phase 2, while the Stock Synthesis models were applied in the stock assessments for bigeye tuna in 2018 and yellowfin tuna in 2019. It

was also reiterated that the Committee needs further guidance from the Commission in management objectives, performance indicator etc., for tropical tunas. In 2020, there is already an intersessional SCRS meeting, that will be held in February, in which the MSE roadmap will be discussed.

7.4.1.9 Inspection reports and details of infractions

As explained in section 7.4.1.8, ICCAT's COC reviews all aspects of compliance with ICCAT conservation and management measures in the ICCAT Convention Area, with particular reference to compliance with such measures by ICCAT Contracting Parties.

The COC annual report is included in Volume I of the ICCAT Biennial Report and includes:

i. the degree of compliance of each CPC regarding catch data reporting (Task I and II) to the SCRS, and (if needed) the response/explanation and actions taken by the CPC;

ii. quota overages and balance;

iii. adjusted quotas and their temporary terms.

Also, the ICCAT Secretariat prepares an annual report for the COC (included in Volume 4 of the ICCAT Biennial Reports) which provides guidance on how to report on implementation of measures in the future, to obtain a more complete picture.

According to the client, no major infractions have been reported by the assessed fishery.

7.4.2 Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: - Is capable of delivering sustainability in the UoA(s); - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Sections 7.4.1.2 and **7.4.1.3**0 describe in detail the regulatory framework applicable to the assessed fishery as well as the entities and institutions involved.

At an international level, UNFSA, in its Article 5 notes that coastal States and States fishing in the high seas shall adopt objectives that are also fully consistent with MSC Principles 1 and 2. Both, the UNFSA and other FAO guidelines (e.g. the Code of Conduct for Responsible Fisheries, although it is non-binding) require cooperation between States through international institutions where appropriate and, in the case of Atlantic tunas, ICCAT is the organization that has this role.

ICCAT is responsible for coordinating scientific research and formulating recommendations aimed at maintaining tuna stocks at levels consistent with MSY. The Standing Committee on Research and Statistics (SCRS) is the body in charge of developing and recommending to the Commission policies and procedures for the collection, compilation, analysis and dissemination of fishery statistics to ensure that the Commission has available at all times complete, current and equivalent statistics on fishery activities in the Convention area. The SCRS also performs stock assessments of the target stocks within the Convention area, provides advice and promotes and implements specific sampling programmes (e.g. AOTTP, SMTYP, SRDCP, …). According to the scientific based advice provided by the SCRS, the Commission sets minimum allowed weight limits for the capture and retention of tuna, TACs of various species, temporary closures, as well as regulations of gear and regimes of international and port inspection. The management objectives of ICCAT, expressed both in the Basic Texts of the Convention (Article VIII) and in subsequent Recommendations (in particular Recommendation [11-13]) are consistent with the P1 of MSC, while the Resolution [15-11] determines that ICCAT should apply both the ecosystem approach when formulating Recommendations, therefore, consistent with the P2 of MSC).

The assessed vessels are flying Spanish, Cape Verdean and Belizean flags:

Belize
The main legislation governing the High Seas fishing by Belize flagged vessels is the High Seas Fishing Act (HSFA), 2013, and the regulations, rules, notices and directions promulgated in accordance with that Act (https://www.bhsfu.gov.bz/legislation/). This Act, last revised in 2013, makes provisions for the adoption of and compliance with all conservation and management measures adopted by the relevant RFMOs for the protection of the High Seas resources. The main objectives of the Act, among others, are to ensure full compliance with its international and regional obligations with regards to responsible fisheries management and operations of vessels flying its flag. The current legal framework makes use of many of the tools for combating IUU fishing pursuant to the instruments which Belize subscribes.

Cape Verde
In Cape Verde, the fisheries sector is mainly regulated by the Decree-Law No. 53/2005 of 8 August, amended and republished by the Legislative Decree No. 2/2015 of 9 October on the Policy on Sustainable Exploitation of Fisheries Resources, and is hereinafter referred to as the Fisheries Law. Under the Fisheries Law, foreign fishing vessels are only allowed to operate in the maritime waters of Cabo Verde under international agreements with the flag state of the vessel, or with the organisations representing them, or exceptionally, when duly authorized by the member of the Government responsible for Fisheries.

Spain
The legislative framework for fisheries in Spain is the State Maritime Fishing Law from 2001 (LEY 3/2001, de 26 de marzo, de Pesca Marítima del Estado), which covers the directives of the EU CFP, adapts them to the specific circumstances of the Spanish fishing sector, and applies them through a range of Royal Decrees and Ministerial Orders in order to regulate the different fleets and fisheries (Table 7.4.4).

The EU and Belize have ratified the UNFSA, and even though Cape Verde has not signed nor ratified it (**https://www.un.org/Depts/los/reference_files/status2019.pdf**), they are all Contracting Parties of ICCAT since 1997, 2005, and 1979, respectively, and have all ratified the UNCLOS (Table 7.4.2).

All the countries where the assessed fleet is operating or landing are ICCAT CPCs and have ratified the UNCLOS, although only a few have ratified the UNFSA (Table 7.4.2).

Therefore, **SG60 and SG80 are met**.

ICCAT's basic texts of the Convention are binding procedures for all CPCs. Article VII of the Basic Texts of the Convention notes that: "The Commission may, on the basis of scientific evidence, make recommendations designed to maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area at levels which will permit the maximum sustainable catch". As explained in section 7.4.1.2, 6 months after being communicated by the Commission, ICCAT Recommendations enter into force and are applicable to the CPCs, and therefore they are also binding procedures. Recommendation 11-13 describes ICCAT's decision-making principles to ensure Article VIII is accomplished. Therefore, within ICCAT there are binding procedures governing cooperation with other parties which deliver management outcomes consistent with MSC Principle 1. However, in relation to the assessed fishery this Recommendation applies to, both, P1 (yellowfin tuna) and P2 primary species (skipjack, bigeye, swordfish, marlins, sailfish, blue shark, ...). Therefore, it could be considered as a binding procedure which delivers management outcomes consistent with MSC Principle 2. Furthermore, Rec 15-07 established a work plan to examine ways to further define the management framework building on Rec 11-13, in particular to evaluate precautionary management reference points and robust HCRs through MSE. According to the plan established, the process started with the North Atlantic Albacore, and recently Rec 17-04 has finally determined precautionary biological reference points and HCRs which will guide the decision-making process for this stock. Progress made on MSE for this and other stocks is reported in ICCAT (2019c).

However, there is no explicit mentioning about delivering outcomes consistent with P2 in the Basic Text of the Convention. In its preamble, Resolution 15-11 reflects the discussions that are taking place within the Convention Amendment Working Group to modify the Basic Text of the Convention so as to incorporate the ecosystem approach in the text, since Resolutions are not binding. Therefore, this Resolution can be understood as interim until the modification of the Basic Text occurs. In any case, this Resolution is determining principles that ICCAT shall apply when formulating the Recommendations. This situation could raise doubts about whether there are already binding procedures for the CPCs in place that seek to achieve management outcomes consistent with MSC P2. However, the assessment team considers that there is evidence that the principles established in Resolution 15-11 have already been applied to fisheries managed by ICCAT. For instance, there are Recommendations on reducing incidental bycatch of seabirds in longline fisheries (Rec 07-07 and 11-09), on the bycatch of sea turtles in ICCAT fisheries (Rec 10-09 amended by Rec 13-11), many recommendations on sharks caught in association with ICCAT fisheries (e.g. Recs 95-02, 04-10, 07-06, 09-07, 10-06, 10-07, 10-08, 11-08, 12-05, 13-10, 14-06, 15-06, 16-12, 16-13, 17-08, 18-06), and also Recommendations on information collection and harmonization of data on bycatch and discards in ICCAT fisheries (Rec 11-10). Since 2014 the Commission established an *ad hoc* Working Group on FADs composed of scientists, fishery managers, fishing industry administrators and other stakeholders (Recs 14-03, 15-02, and 16-02). This WG is working towards improving data collection for fisheries carried out in association with FOBs, reducing juvenile catches of bigeye and yellowfin tuna caught in FADs fishing, assessing the effects of the different types of FOBs on managed species and on pelagic ecosystems based on scientific advice and the precautionary approach, and identifying management options and common standards for FAD management (including assessing on the consequences of technological developments of FADs). Lastly, ICCAT has also formed a permanent Sub-Committee on Ecosystems that is part of the SCRS.

Based on all the above, **SG100 is met**.

	Resolution of disputes			
b	Guide post	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Although ICCAT does not have a formal dispute resolution procedure within the Convention, annual meetings provide the opportunity to resolve disputes between CPCs informally through consultations and conciliation. There is also the possibility that technical disputes are resolved through an expert or a technical panel appointed for the occasion. A new Standing Working Group to Enhance Dialogue between Fisheries Scientists and Managers (SWGSM) was created in 2014. The importance of the work of this group was highlighted at the latest Regular Meeting of the Commission in 2019, and the Commission agreed that its work should continue.

Moreover, it is also possible that unresolved disputes can be settled in the International Court of Justice (ICJ) or in the International Tribunal for the Law of the Sea.

This system is considered to be transparent since allows all members to be fully informed of the issues under consideration and also ensures their participation in well-informed discussions in specific fora. Final decisions and the adoption of management recommendations can only be made in the Plenary Session at the Annual Meeting of the Commission, ensuring that everybody is informed of the decisions taken. Although the way agreements are reached may not be fully disclosed, there are independent observers (such as NGOs) attending at the annual meetings, so the process can be witnessed. For instance, proceedings of the latest special meeting of the Commission held in Dubrovnik, Croatia, 12-19 November 2018, stated that a total of 45 CPCs, 2 Cooperating non-CPCs and 23 observers attended the meeting (2 intergovernmental organizations – FAO and COMHAFAT/ATLAFCO -, one non-contracting party – Fiji - , and 20 observers – including ISSF, IPNLF, PEW, The Shark Trust, or WWF, among others-).

ICCAT is capable of exercising sanctions, as evidenced by the sanctions imposed on Saint Vincent and the Grenadines, although there is no evidence that other CPCs have circumvented the law (Medley et al., 2020), with the notable exception of certain fishing companies and fishing vessels, which are included in the IUU fishing list.

In addition, on behalf of its members, ANABAC signs direct agreements with the governments of those West African coastal countries where the assessed vessels are fishing to guarantee access (i.e. Mauritania, Cape Verde, Senegal, Guinea Bissau, Guinea Conakry, Sierra Leone, Liberia, Ivory Coast, Ghana, Sao Tome & Principe, Equatorial Guinea, Gabon and Angola) and establish fishing conditions for EU and non-EU vessels (as in the case of the assessed fleet). The team was provided with the direct agreements of Angola, Sierra Leone, and Guinea Conakry.

In addition, to the aforementioned three direct agreements, the (indirect) sustainable fisheries agreements with non-EU countries that are negotiated and concluded by the Commission on behalf of the EU (https://ec.europa.eu/fisheries/cfp/international/agreements_en), were also revised and, excluding the agreements from Ghana (which does not exist) and from Equatorial Guinea and Gabon (which are expired), all the others include a reference on how to proceed in the case of unresolved disputes. Some agreements consider that national jurisdiction will be applicable (e.g. Guinea Conakry), while others refer to an arbitration process to be agreed among both parties (eg. Cape Verde), while others include all the necessary details about the arbitration process (e.g. Angola).

Thus, **SG60** and **SG80 are met**.

Although unresolved disputes can be settled in the ICJ or in the International Tribunal for the Law of the Sea, this has never happened among ICCAT members. Furthermore, the effectiveness of this option would be compromised if it was developed under the jurisdiction of a country that has not ratified the UNFSA, since it is within the framework of this Agreement that such provision is established. This is the case of Cape Verde, one of the flag countries of the assessed vessels.

ICCAT also has a process established for the submission and resolution of objections by the CPCs to the adopted Recommendations. This process is detailed in Article 8.3 (a-g) – 8.5 of the Basic Texts and allows CPCs not to adopt a Recommendation with which they do not agree. This mechanism, coupled with the fact that there is a lack of an effective arbitration procedure, has led to the use of objections to prevent recommendations being fully implemented (Medley et al., 2020). Within the context of an international system, the dispute cannot override a nation's sovereign rights, nevertheless a better dispute mechanism could be provided through providing formal arbitration and conciliation procedures to remove the necessity for objections over conservation issues (Medley et al., 2020).

Hence, **SG100 is not met**.

	Respect for rights			
c	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				

ICCAT Rec 16-01 establishes that "CPCs shall issue specific authorizations to vessels 20 meters LOA or greater flying their flag allowed to fish bigeye and/or yellowfin and/or skipjack tunas in the Convention area, and to vessels flying their flag used for any kind of support of this fishing activity". And it also states that "The Commission shall establish and maintain an ICCAT record of authorized tropical tuna vessels, including support vessels. Fishing vessels 20 meters LOA or greater not entered into this record are deemed not to be authorized to fish, retain on board, tranship, transport, transfer, process or land bigeye and/or yellowfin and/or skipjack tunas from the Convention area or to carry out any kind of support to those activities, including deploying and retrieving FADs and/or buoys". And that "Each CPC shall, by 31 July each year, notify to the ICCAT Executive Secretary the list of authorized vessels flying their flag which have fished tropical tunas in the Convention area or have offered any kind of support to the fishing activity in the previous calendar year".

Therefore, ICCAT only deals with granting fishing rights to CPCs, while the way in which these rights are distributed internally within each State depends on national legislation.

Belize:

<u>Quota allocation</u>

One of the important factors that are considered when allocating quotas is the total available catch that has been allocated to Belize for each species. Belize's quota allocation is quite simple as the primary focus is to ensure that they remain within the limits set by the relevant ICCAT recommendations.

The allocation system summarized below is for all quota allocations regardless of gear type but are allocated per individual vessel.

a) Once the total allowable catch for each species has been determined based on the relevant ICCAT recommendation for each species, a total allowable commercial catch is set for each vessel in accordance with individual applications made by a vessel owner.
b) Quotas are only allocated to those vessel owners that hold a high seas fishing license. Each vessel owner has the right to catch and sell their quota.
c) Quotas are allocated in metric tons and are allocated from the time of approval of application to the end of the current fiscal year in which it is approved.
d) Any unused quotas allocated to a vessel owner cannot be transferred; therefore, operators must ensure full utilization. Any unused quotas shall be considered lost; however, a percentage of the unused quota may be considered for transfer only after careful consideration of the circumstances.
e) Overharvest of allocated quotas is discouraged and will be subject to a payback scheme by a reduced quota allocation of similar amount the following year or any other measures our Administration considers appropriate.

f) Annual quota renewal requests are considered upon submission of a new application and will be approved based on the activities of the vessel, its previous utilization and the availability of a catch allocation for such specie.
g) Where there is no capacity/quota limitation by ICCAT for a species, the same process is still utilized, except for internal catch limits which the Administration establishes for these species. It should be noted that Belize makes exceptions for any overharvest or by-catches by their vessels by ensuring that 10% of its total allowable catch remains in reserve.

Quotas administration and monitoring

In Belize, the Administration has established procedures to administer and monitor quotas based on an arrangement that assesses the flow of catches from the sea to port and then to reconcile these catches with quotas allocated.

During each calendar year, catches by quota holders are progressively counted against their quota allocation. To ensure compliance, a very strict and comprehensive reporting process is followed. Detailed reporting of catches at sea by vessel operators and any landings made at port ensure a robust documentation of catches and how they are distributed. The Administration ensures compliance with these reporting obligations by auditing and analysing these paper trails in addition to other surveillance measures.

Non-compliance by vessel owners and operators with these reporting measures could result in disciplinary actions, including forfeiture of their quotas, suspension of fishing license or the imposition of a fine, inter alia.

In cases where quotas are over harvested, the vessel owner/operator may purchase further quotas, if available. Conversely, a vessel owner/operator may take catches up to 10% more than their allocation. The additional amount of catch will be deducted from their subsequent year's catch entitlement.

Cape Verde:

The Fisheries Policy Charter (Carta da Política das Pescas - CPP) was adopted in 2014 by Resolution 17/2014 and establishes the Government's strategic options for the fisheries sector over the period 2013-2018. It aligns with wider economic and social development plans and its objective is for integrated and sustained development of the sector, thus contributing to improved living conditions of the various directly or indirectly related actors.

The Fishery Resource Management Plan (Plano de Gestão dos Recursos da Pesca - PGRP) was adopted in 2004 under the National Environment Plan 2004-2014 (Plano de Acção Nacional para o Ambiente - PANA II) with the objective to ensure that the fisheries of Cabo Verde contribute to increase national production, food safety, quality of fishery products, employment, and to decrease the balance of payments deficit. The Plan covers different segments of the fisheries activities, with sections relating to industrial fisheries, artisanal fisheries, foreign fishing, sport and amateur fishing. In each case, it sets out the problems to be resolved, the sub-sectoral objectives, the results to be achieved and the proposed activities. A review of the plan is pending, and in the meantime, the plan is implemented by means of Biannual Executive Plans, published in the Boletim Oficial da República de Cabo Verde, detailing the regulations and management measures. The current execution of the plan concerns the period 2018-2019. The plan sets out a number of policy restrictions on foreign fishing in general, as well as specific measures in relation to specific fisheries, including foreign fishing. In respect of tuna fishing, the Plan estimates the potential available in the EEZ, allows a gradual development of the fishery, and proposes a cautious expansion of the fishing effort, subject to control of the number of fishing licenses issued. Fishing for live bait by foreign vessels is prohibited within the 12 nautical miles. Live bait is usually caught within 3 nautical miles, an area reserved exclusively for artisanal fishing; support vessels are however allowed to operate in bays and in non-inhabited areas within 3 nautical miles, exclusively to catch live bait; bait caught under such circumstances shall under no circumstances be marketed for consumption.

Spain-EU:

Spain's tropical tunas management plan has been implemented on the basis of Law 3/2001 and implements the mandatory provisions of **ICCAT Recommendation 16-01** as well as Spain's fishing opportunities for bigeye tuna stock which are contained in **Council Regulation (EU) No 2018/120** of 23 January 2018 fixing for 2018 the fishing opportunities for certain stocks and groups of fish stocks, applicable in EU waters, and, for EU fishing vessels, in certain non-EU waters and amending Council Regulation (EU) No 2017/127.

Sustainable fisheries partnership agreements (SFPAs) are recognized by the EU legislation in the Base Regulation Reform of the Common Fisheries Policy (EU 1380/2013) as the legal instrument in third countries to ensure transparency and sustainability of the activity of the European fleet in coastal countries. SFPAs of the EU are the only ones in the world that are available to the general public, ensuring full transparency of the activity of the European fleet in the EEZs

of coastal countries. In this respect, apart from the mandatory licences of the third country, all Spanish vessels must obtain a temporary fishing permit issued by the General Secretariat for Fisheries, which includes the requirement to apply all the relevant regulations of both the EU and the Regional Fisheries Organisations, as well as the relevant national regulations.

In order to ensure that vessels obtaining direct licences in third countries operate with absolute legal certainty and to avoid possible problems of false licences, intervention by unauthorised agents, etc, the Spanish administration has been implementing a system of licence verification since the end of 2012 through the network of Spanish embassies and EU delegations in third countries. Thus, any direct agreement between a Spanish vessel and a third country is reflected on the Temporary Fishing Permits (Annex 2 of the Client Checklist).

Concerning ICCAT, Resolution 15-13 establishes a series of criteria for the allocation of fishing possibilities. As well as taking into account the historical catches and interests of the CPCs, the criteria regarding the state of the stocks and on the level of compliance, data submission and scientific research accomplished by the CPCs, this Resolution also takes into consideration the following criteria:

- The interests of artisanal, subsistence and small-scale coastal fishers
- The needs of the coastal fishing communities which are dependent mainly on fishing for the stocks.
- The needs of the coastal States of the region whose economies are overwhelmingly dependent on the exploitation of living marine resources, including those regulated by ICCAT.
- The socio-economic contribution of the fisheries for stocks regulated by ICCAT to the developing States, especially small island developing States and developing territories from the region.
- The respective dependence on the stock(s) of the coastal States, and of the other States that fish species regulated by ICCAT
- The economic and/or social importance of the fishery for qualifying participants whose fishing vessels have habitually participated in the fishery in the Convention area
- The contribution of the fisheries for the stocks regulated by ICCAT to the national food security/needs, domestic consumption, income resulting from exports, and employment of qualifying participants
- The contribution of the fisheries of the stocks regulated by ICCAT to the national food security / needs, domestic consumption, income from exports and employment of the candidates for qualification
- The right of qualified participants to engage in fishing on the high seas for the stocks to be allocated

Moreover, Resolution 15-13 also establishes the conditions / mechanisms for applying the aforementioned established criteria.

In the case of the yellowfin tuna, ICCAT does not allocate quotas nor does it establish catch limits to the different CPCs (Rec 16-01). ICCAT management is based on establishing a scientific-based TAC which aims to ensure the sustainability of the stock. Therefore, when the West African Countries are granting access to foreign vessels by means of bilateral agreements, it does not mean that they are doing so at the expense of the access rights of local fishermen. Furthermore, unlike in joint ventures, catches from foreign vessels operating under fishing agreements (as is the case of the assessed fleet) are counted against the flag State, in this case Belize, Cape Verde and Spain.

However, this is not the case for the bigeye tuna, since catch limits have been established by ICCAT (Rec 16-01) for the main fishing CPCs (the only African country included in the list is Ghana), while ICCAT encourages all the remaining CPCs to limit their catches to 1,575t. In application of the criteria established in Resolution 15-13, Rec 16-01 determines that developing coastal countries are not subject to the 1,575t catch limit. For these countries catch limits will only be considered necessary when catch exceeds 3,500t in any given year. This means that the fishery-specific management system allows a greater margin of catches to coastal developing countries, thus taking into account the legal rights established by custom of the communities dependent on fishing. We have to bear in mind that Rec 16-01 (as any ICCAT Rec) is binding for all CPCs.

Thus, **SG60 and SG80 are met.**

Rec 16-01 also states that, in those cases where catch of bigeye tuna of any developing coastal CPC exceeds 3,500t in any given year: *"the relevant CPC shall endeavor to adjust its fishing effort so as to be commensurate with their available fishing possibilities"*. Is in these cases, and for CPCs having a joint venture fleet targeting tropical tunas (or, for instance, a national large industrial fleet), when there is a need of mechanisms that formally commit to respect the legal rights established by custom of communities dependent on fishing. This mechanism is not detailed in Rec 16-01 (as seen above) and it would be for the CPCs to establish it. The assessment team has not investigated this issue at the level of every West African coastal country, and it is unlikely it is actually met.

Mechanisms established in Resolution 15-13 are only suggestions to the CPCs since, while the Basic Text and the Recommendations are effectively binding procedures for all CPCs, the Resolutions are only guidelines. Thus, criteria

established by ICCAT on this issue are less binding than in other RFMOs (e.g., WCPFO) and it is not clear exactly how conflicting interests among these criteria can be resolved (Medley et al., 2020). Although ICCAT has demonstrated the intention to develop and implement methods to allow a fair distribution and mechanisms to achieve this objective, such mechanisms are not formal commitments, just statements of what arguments might be admissible in determining fishing rights allocation (Medley et al., 2020).

Hence, **SG100 is not met**.

References

List any references here, including hyperlinks to publicly-available documents.

Draft scoring range	**≥80**
Information gap indicator	**More information sought (on Ghana, Gabon and Equatorial Guinea SFPAs)**

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

Overall Performance Indicator score	
Condition number (if relevant)	

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**
Rationale				

The organizations and individuals involved in the management process have been identified and their functions, roles and responsibilities are described in **section 7.4.1.3**. Therefore, SG60 is met.

The Commission carries out the objectives set forth by ICCAT with the assistance of the Secretariat. The Commission is composed of Contracting Party Delegations, and its structure covers all areas of responsibility and interaction as seen in **Figure 7.4.1**.

Therefore, the functions, roles and responsibilities of the CPCs, as well as the collaborating non-contracting parties, are defined explicitly for all areas of responsibility and interaction, and it is the responsibility of ICCAT Secretariat that the CPCs understand their roles. Although the ability to perform its functions varies greatly among CPCs, it can be considered that the objectives are achieved in all areas (e.g. data reporting, the implementation of research programs, performing stock assessments and the scientific advice, MCS system). ICCAT prepares biannual reports (the latest being the one for 2018-2019 - **https://www.iccat.int/en/pubs_biennial.html**) published in four volumes which include the proceedings of the Commission Meetings, the reports of the associated meetings including the SCRS, the reports prepared by the Secretariat (on several issues, such as Coordination of research, financial issues, Compliance, …) and also the annual reports prepared by the CPCs detailing the actions taken. These reports show that CPCs are well aware of their functions, roles and responsibilities and in general terms compliance is high (including data reporting and the economic contribution for the different activities). In particular, Belize, Cape Verde and the EU (including Spain), with more or less difficulties to implement and comply with ICCAT conservation and management measures, fulfill their obligations to ICCAT. The three CPCs present to ICCAT an annual report of the activities implemented, and effort made to improve compliance with data submission deadlines. These reports are included in Volume 3 of the biennial reports.

At a fishery-specific level:

- **Belize High Seas Fisheries Unit (BHSFU)**. The BHSFU is the competent authority in fisheries management in accordance with the High Seas Fishing Act that monitors if the assessed fleet is in compliance with ICCAT and National regulations. After every fishing trip they receive logbook and landing declarations, so they can cross check them before issuing the catches certificate (this document is compulsory for importing the product into the European Union). Further they also receive the port inspections provided by the competent authority of the port. Based on all these documents BHSFU prepares an annual report of tuna catches from Belize to ICCAT.

- Cape Verde **National Fisheries Development Institute** (Instituto Nacional do Desenvolvimento das Pescas - **INDP**). The INDP is a scientific public body in charge of assessing stocks, monitoring and developing fisheries at the country level. It has the responsibility for research and development inputs for fisheries management with core activities in stock assessment, elaboration of management measures, compilation of statistics in the fisheries sector, promotion and development (co-management and support to fishing communities).
  The INDP is based in Mindelo and has an office in Praia. The collection of biological and statistical data on the main species is carried out in the ports and markets, by INDP scientists, followed by digitization, processing and analysis. The compiled data, including Task I and Task II data, as well as the number of fishing vessels,

have been regularly submitted to the ICCAT Secretariat, thereby contributing to the updating of the ICCAT statistics and stock assessments.

- **IPD, Investigación, Planificación y Desarrollo, SA**. Consultancy Company specializing in fisheries and observer programs in particular. ANABAC in 2018 signed a contract with this consultancy to monthly maintain the collection of information on fishing activity in the port of Abidjan, including logbooks, well plans, port sampling and data on the landings of ANABAC's Cape Verdean flag associated tuna purse seiners operating in the Atlantic Ocean.

- **Spanish Institute of Oceanography (IEO)**. It is an autonomous body, classified as a Public Research Organization, under the Ministry of Science, Innovation and Universities. The IEO is member of the SCRS and is the official representative of the Spanish Government both at this Committee and at the ICCAT Working Groups, contributing with information, knowledge and resources. Among other functions, the IEO maintains programs of fishery observers in different Spanish fleets.

- **AZTI-Tecnalia**. Technological Centre based in the Basque Country (Spain) that provides various services in marine and food innovation. AZTI carries out fisheries research and consultancy, and among other services they compile the fishery statistics of the Basque tuna fleet and carry out scientific monitoring of these fisheries, including the coordination of observer programs and the installation and validation of Electronic Monitoring Systems (SMEs). They advise the Basque Government on fisheries matters, for which representatives of AZTI participate in meetings of the SCRS and different Working Groups. AZTI is also responsible of supervising on an annual basis the implementation of the ANABAC Code of good practices on the member's vessels. This includes the compilation and review of the data collected by observers which come from independent scientific institutions and organisations from Spain, Gabon, Ivory Coast and Liberia, including the data collected by Sea Eye. In addition, AZTI is also in charge of filling the observer data forms required by ICCAT recommendations and sending them to each CPC..

- **Sea Eye**. Consultancy Company based in Côte d'Ivoire specializing in fisheries and observer programs in particular. Atunsa and Pevasa groups signed a contract with this consultancy to deploy and maintain the full coverage of observers, and to gather and review observer's data collected on board. Sea Eye observers have been trained by AZTI and CRO (Centre de Recherches Océanographiques of Abidjan) according to the National Observer Data Collection Programme established by ICCAT, in accordance with the qualifications required in Rec 16-14.

On behalf of its members, ANABAC signs direct agreements with the governments of those West African coastal countries where the assessed vessels are fishing (i.e. Mauritania, Cape Verde, Senegal, Guinea Bissau, Guinea Conakry, Sierra Leone, Liberia, Ivory Coast, Ghana, Sao Tome & Principe, Equatorial Guinea, Gabon and Angola) and establish fishing conditions for EU and non-EU vessels (as in the case of the assessed fleet). The licenses obtained are validated by each of the Governments of the vessels flag (i.e., Cape Verde, Belize and Spain) and notified to ICCAT. A summary of the main obligations in relation to data reporting can be found in Table 7.4.5.

Three of the direct agreements were handed to the assessment team by the client (those from Angola, Côte d'Ivoire and Guinea Conakry); the other indirect agreements – SPFAs – (apart from Ghana's, which does not exist, and the ones from Equatorial Guinea and Gabon, which are expired) were downloaded from the web on Bilateral agreements with countries outside the EU (https://ec.europa.eu/fisheries/cfp/international/agreements_en) and it could be assessed that in the available agreements functions, roles and responsibilities are explicitly defined for key areas of responsibility and interaction.

As explained in **section 7.4.1.5**, to decrease potential impacts by purse seiners fishing on dFADs and improve the long-term sustainability of the tropical tuna fishery, the two Spanish tuna purse seiner associations, ANABAC and OPAGAC, established in 2012 a voluntary agreement known as the "Code of Good Practices" for responsible tuna fishing activities. The aim of this Code is to use best fishing practices by reducing incidental mortality of sensitive species (sharks, rays, mantas, whale sharks, and sea turtles) and the obligatory use of non-entangling FADs. Since 2012, the code has been reviewed in 2015, 2017 and 2019 (current version). The Code deals with the following topics:

1) The design and use of **non-entangling FADs** (fish aggregating devices) to **minimize direct impacts on sensitive non-target species** (mainly turtles, sharks and cetaceans).

2) The **development, training and adoption of good practices on board** to ensure the application of **releasing techniques that minimize risk to associated species and optimize their survival**. This includes materials and equipment provided specifically for releasing associated species.

3) The implementation of **a FAD management system** through the implementation of a **FAD logbook**.

4) **100% observer coverage**.

5) **Training** of skippers, crew and scientific observers.

6) **Scientific verification** of activities related with good practices and **continuous revision by a Steering Committee**.

Since 2015, monitoring is carried out by 100 % observer coverage and the scientific body responsible for verifying the implementation of the Code of Conduct is AZTI.

As explained above, Atunsa and Pevasa groups signed a contract with Sea Eye consultancy to maintain the full coverage of observers and to gather and review observer's data collected on board.

Furthermore, AZTI carries out fisheries research and consultancy, and among other services they compile the fishery statistics of the Basque tuna fleet and carry out scientific monitoring of these fisheries, including the coordination of observer programs and the installation and validation of Electronic Monitoring Systems (SMEs). AZTI is also responsible of supervising on an annual basis the implementation of the ANABAC Code of good practices on the member's vessels. This includes the compilation and review of the data collected by observers which come from independent scientific institutions and organizations from Spain, Gabon, Ivory Coast and Liberia, including the data collected by Sea Eye. In addition, AZTI is also in charge of filling the observer data forms required by ICCAT recommendations and sending them to each CPC.

Therefore, for all the abovementioned, **SG80 is met.**

However, the assessment team could also check that the level of detail for certain topics (e.g. catches and / or VMS reporting, observers, resolution of disputes…) varies greatly among the different agreements signed. The establishing of a capacity building fund (ICCAT Rec 13-19), a meeting participation fund (ICCAT Rec 14-14) and other programs could help, as pointed out by Medley et al. (2020).

Moreover, three SPFAs (from Ghana – missing – and from Equatorial Guinea and Gabon – expired) could not be checked at the time of writing this ACDR, although these are direct agreements and will be assessed during the site visit.

Therefore, **SG100 is not met**.

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

ICCAT makes an important effort to gather information from all the CPCs. This information is analyzed in intersessional meetings of Working Groups and Panels and it is used to develop management recommendations. In the case of international management settings, such as ICCAT fisheries, 'local knowledge' can be interpreted as the information, research and management experience from the different CPCs (as proposed by Medley et al., 2020). ICCAT structure and functioning (described in section 7.4.1.3) ensures that local knowledge is being recorded, compiled, analyzed and integrated into fisheries advice and management. Volume 3 of ICCAT's Biennial Report includes the CPC's reports detailing information provided and activities undertaken (**https://www.iccat.int/en/pubs_biennial.html**).

All nation states in whose EEZs the fishery takes place are Contracting Parties (CPCs) to ICCAT (see **Table 7.4.2**). Besides, all of them (Angola, Cabo Verde, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea (Conakry), Guinea

Bissau, Liberia, Mauritania, Sao Tome & Principe, Senegal, Sierra Leone) are members of Panel 1 (on tropical tunas) (ICCAT, 2019c). Furthermore, Mauritania is also a member of Panel 2 (on temperate tunas, North), and Senegal of Panel 3 (on temperate tunas, South). In addition, all the aforementioned countries but Ghana and Sierra Leone are also members of Panel 4 (on other species). And Belize and the European Union are members of the four Panels. Panels are responsible for keeping under review the species, group of species, or geographical area under its purview, and for collecting scientific and other information relating thereto. Based on investigations from the SCRS, Panels may propose to the Commission recommendations for joint action by the CPCs.

The meeting of the Standing Committee on Research & Statistics (SCRS) (ICCAT, 2019d) held in Madrid between 30 September and 4 October 2019 details that 30 CPCs attended the 2019 meeting, including: Cabo Verde (1 representative), Côte d'Ivoire (3 representatives), Gabon (1 representative), Ghana (1 representative), Liberia (2 representatives), Mauritania (2 representatives), and Senegal (3 representatives). The aim of the SCRS is to develop and recommend to the Commission policies and procedures in the collection, compilation, analysis and dissemination of fishery statistics to ensure that the Commission has available at all times complete, current and equivalent statistics on fishery activities in the Convention area.

Scientific reports from the SCRS indicate exactly what information is being used, how it is used, and justification is provided for all information that is rejected.

Therefore, **SG60 and SG80 are met.**

However, it is not always clear how different sources of information are used (e.g. socio-economic data, or compliance information) when making management decisions by the Commission. Medley et al (2020) argue that the successive changes that occurred in the determination of the seasonal area closures in the use of FADs is an example of insufficiently explained decision-making.

Furthermore, it can also be considered that for most African countries the 'local knowledge' is effectively an underrepresented entity at ICCAT as inferred from a poor catch reporting from African countries, the underrepresentation of African authors in the reports, the missing African stock assessment modelers, and the difficulties to take into account the points of view from local communities of fishers.

Therefore, **SG100 is not met**.

	Participation			
c	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**	**Yes**
Rationale				

All the CPCs have representation in the different Panels, Committees, Subcommittees and Working Groups and meet on different occasions throughout the year to evaluate, discuss and reach agreements on all relevant issues. On the other hand, the ICCAT Commission holds a general meeting every 2 years and an extraordinary meeting in alternate years. It is on these occasions (usually at the end of the year) when the Recommendations and Resolutions drafted by the Panels are presented for adoption by the Commission, so they can enter into force the following year. In the case of the assessed fishery, the competent Panel is that of Tropical Tunas. However, as detailed in Article 8.1 (b) of the Basic Text of ICCAT, the Recommendations can also be adopted by the Commission if they are proposed to the Commission by other subsidiary bodies and approved by a qualified majority of two thirds of the votes.

All nation states in whose EEZs the fishery takes place are Contracting Parties (CPCs) to ICCAT (see **Table 7.4.2**). Besides, all of them (Angola, Cabo Verde, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Guinea (Conakry), Guinea Bissau, Liberia, Mauritania, Sao Tome & Principe, Senegal, Sierra Leone) are members of Panel 1 (on tropical tunas) (ICCAT, 2019c). It is worth noting that this Panel is currently being chaired by Côte d'Ivoire. Furthermore, Mauritania is also a member of Panel 2 (on temperate tunas, North), and Senegal of Panel 3 (on temperate tunas, South). In addition, all the aforementioned countries but Ghana and Sierra Leone are also members of Panel 4 (on other species: swordfish, billfishes, small tunas).

Apart from Cape Verde (which is member of Panel 1), the other two flags that the assessed vessels are flying are Belize and Spain. In fact, both countries, Belize and Spain (as part of the European Union) are members of the four Panels.

The proceedings of the (latest) 21st Special Meeting of the Commission held in Dubrovnik, Croatia, 12-19 November 2018, stated that a total of 45 CPCs attended the meeting, including Belize, Cabo Verde, Côte d'Ivoire, European Union, Gabon, Ghana, Guinea Bissau, Liberia, Mauritania, São Tomé and Príncipe, and Senegal.

Therefore, SG80 is met.

As explained in section 7.4.1.2, ICCAT is an organization open to any Government member of the United Nations. ICCAT has adopted and continues to take measures to encourage countries to be CPCs and for non-Contracting Parties to cooperate with the conservation measures adopted by the Commission. The success is reflected in the increase of membership in the last decades (currently 52 Contracting Parties), as well as in the high level of participation of the CPCs. Six out of the 15 countries where the UoA operates (see Table 7.4.2) have been incorporated since the year 2000. The provision of information is an important part of the decision to grant this status. The SCRS is responsible for reviewing Cooperation requests and recommending to the Commission whether an applicant should or should not receive the Cooperating Status.

ICCAT has facilitated the participation of interested parties and also offers training and support to countries that lack data management and scientific research capacities, which helps them participate fully and effectively in their activities.

The recently re-structured ICCAT website includes an interactive and user-friendly timeline showing all past, current and scheduled meetings. Registration forms, information on the meeting venue, access to consultation documents and data, and final reports are easily accessible.

SG100 is met.

References

List any references here, including hyperlinks to publicly-available documents.

Draft scoring range	**≥80**
Information gap indicator	**More information sought**

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	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 MSC Fisheries Standard and the precautionary approach are **explicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The assessed vessels are flying Belizean, Cape Verdean or Spanish flags.

Belize:
The main legislation governing the High Seas fishing by Belize flagged vessels is the High Seas Fishing Act (HSFA), 2013, and the regulations, rules, notices and directions promulgated in accordance with that Act (https://www.bhsfu.gov.bz/legislation/). The fundamental objectives of this Act are: "(a) to *promote long term conservation and management, and sustainable use of marine resources on the high seas*; (b) to implement the FAO Agreement to Promote Compliance with International Conservation and Management Measures by fishing vessels on the high seas adopted by the Conference of the Food and Agriculture Organization of the United Nations on 24 November 1993 whose parties commit themselves to the *conservation and sustainable use of marine living resources on the high seas*; (c) to implement the United Nations Agreement for the Implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982, relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, adopted at New York on 4th August 1995, whose parties *determined to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks*."
In addition, in Belize's Fisheries Act (Chapter 210 – Fisheries Regulations) in Part III (Licensing) - 29 (General conditions applicable to foreign fishing vessels), section 2(d) states: "*that the master and crew members of the foreign fishing vessel shall, while in the waters of Belize, comply fully with all the environmental and other laws of Belize, and take reasonable measures and precautions to avoid causing any damage to or endangering the marine environment, barrier reef or the viability of the local fishing industry*."

Cape Verde:
The Fishery Resources Management Plan (Plano de Gestão dos Recursos da Pesca - PGRP) was adopted in 2004 under the National Environment Plan 2004-2014 (Plano de Acção Nacional para o Ambiente - PANA II) with the objective to ensure that the fisheries of Cabo Verde contribute to increase national production, food safety, quality of fishery products, employment, and to decrease the balance of payments deficit. The PGRP describes the key principles based on *sustainable exploitation, preservation and protection of the marine environment* (**http://spcsrp.org/en/cabo-verde**).
In addition, Cape Verde (https://ec.europa.eu/fisheries/cfp/international/agreements/cape_verde) is one of the only two EU Sustainable Fisheries Partnership Agreements (SFPAs) (the other one is Greenland) that has references to the precautionary principle (https://www.wwf.org.uk/sites/default/files/2017-06/Is%20Europe%20Ready%20To%20Lead%20On%20International%20Fisheries%20Governance.pdf).

Spain:
The legislative framework for fisheries in Spain is the State Maritime Fishing Law from 2001 (LEY 3/2001, de 26 de marzo, de Pesca Marítima del Estado), which covers the directives of the Regulation (EU) No 1380/2013 on the Common Fisheries Policy (CFP), adapts them to the specific circumstances of the Spanish fishing sector, and applies them through a range of Royal Decrees and Ministerial Orders in order to regulate the different fleets and fisheries. According to Article 3, the purposes of this Law are: "(a) *To ensure the balanced and responsible exploitation of fishery resources, by promoting their sustainable development and taking the necessary measures to protect, conserve and regenerate these resources and their ecosystems*". Furthermore, Article 84 states: "*Fisheries and oceanographic research shall be promoted, both in waters under national sovereignty or jurisdiction and in any other waters where the*

Spanish fleets operate, in order to make the sustainable exploitation of resources compatible with the respect for the marine environment, including the conservation of biodiversity, within the framework of the code of conduct for responsible fishing".

According to the EU CFP, the EU (and, therefore, Spain too) is legally required to take a precautionary approach to fisheries, as in its Article 2(2) it states: "*The CFP shall apply the precautionary approach to fisheries management, and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield*."

The Basic Text of the Convention, in Article VIII, states that the long-term objective of ICCAT fisheries is to maintain populations of tuna and tuna-like species within limits consistent with the MSY.

In addition, recent ICCAT Resolutions note the application of both the ecosystem approach (Resolution [15-11]) and the precautionary principle (Resolution [15-12]) when formulating Recommendations. The formulation of these Resolutions is consistent with UNFSA and the FAO Code of Conduct for Responsible Fisheries.

Therefore, **SG60** and **SG80 are met.**

Recommendation 11-13 reinforces the objective expressed in Article VIII of ICCAT's Basic texts on the establishment of a set of principles to make decisions based on the status of the stocks to be managed (see PI 1.2.2 for a detailed explanation of the established principles). In relation to the assessed fishery this Recommendation applies both to P1 (yellowfin tuna) and P2 primary species (skipjack, bigeye, swordfish, marlins, sailfish, blue shark).

However, while the Basic Text and the Recommendations are effectively binding procedures for all CPCs, the Resolutions are only internal guidelines for the Commission. As already mentioned in PI3.1.1, the preambles of Resolutions [15-11] and [15-12] include the discussions that are taking place within the Working Group on Amendments to modify the Basic Text of the Convention, so as to incorporate the ecosystem approach and the precautionary principle in the Text. Therefore, these Resolutions can be understood as interim until the modification of the Basic Text occurs. On the other hand, these Resolutions determine the principles to be applied when formulating the Recommendations (which are binding). This situation could raise doubts about whether clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are required by management policy.

There are several ICCAT bodies and Recommendations aimed at ensuring MSC P1 and also P2-related objectives are achieved (e.g. WG on FADs, the Sub-Committee on Ecosystems and bycatch, and different Recommendations on reducing incidental bycatch of seabirds, sea turtles and sharks - see PI3.1.1 SI(a) for a complete list). Therefore, it can be considered that long-term objectives that guide decision-making, consistent with MSC fisheries standard are explicit within and required by the ICCAT management policy.

In the case of the precautionary approach, the 2016 External Review Report on the ICCAT management system (ICCAT, 2016h) found that the precautionary approach was not applied in a consistent manner on all ICCAT managed stocks, and recommended that the content of Res 15-12 be transformed into an ICCAT recommendation and that the new Convention contains an explicit commitment to apply the precautionary approach. The recent Rec 15-07 has represented an important first step in agreeing long term strategies based on precautionary approach. This Recommendation has established a work plan to examine ways to further define the management framework building on Rec 11-13, in particular to evaluate precautionary management reference points and robust Harvest Control Rules (HCRs) through Management Strategy Evaluation (MSE). Rec 15-07 mandated the SCRS to: (i) identify different management inputs on a stock-by-stock basis for, inter alia, northern albacore, Bluefin tuna, North Atlantic swordfish and tropical tunas; (ii) advise the Commission on options for limit, target and threshold reference points and associated HCRs. Then, in light of SCRS advice the Commission shall then determine pre-agreed management actions that will be triggered to halt or reduce fishing mortality when limit or threshold reference points are breached. The SCRS will be requested to continue developing appropriate MSE methods to test the robustness of reference points and associated HCRs. This process started with the North Atlantic Albacore, and recent Rec 17-04 has finally determined precautionary biological reference points and HCRs which will guide the decision-making process for this stock. Work on the other stocks (including Tropical Tunas) is still in progress (latest updates on Vol.2 of ICCAT, 2019e). Based on Rec 15-07 and the evidence provided by Rec 17-04 the assessment team also considers that long-term objectives that guide decision-making, consistent with precautionary approach are explicit within and required by the management policy.

Based on all the above, the assessment team considers that **SG100 is met**.

References

List any references here, including hyperlinks to publicly-available documents.

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 3.2.1 – Fishery-specific objectives

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

As seen in PIs 3.1.1 and 3.1.3 management objectives of ICCAT fisheries, as formulated in Article VIII of the Basic Text, Resolutions 15-11 and 15-12, and Recommendations 11-13 and 15-07 are consistent with MSC Principles 1 and 2 and the precautionary approach. All these regulations are applicable to the assessed fishery.

Therefore, **SG60 is met**.

The specific-management system for the assessed fishery (unassociated purse seine fishery targeting yellowfin tuna) is comprised mainly by the multi-annual conservation and management program for tropical tunas (Rec 16-01 and Rec 18-01 – which supplements and amends Rec 16-01) and also by the recent prohibition of discards of tropical tunas caught by purse seiners (Rec 17-01).

Rec 16-01 (and its amendment in Rec 18-01) establishes TACs for Yellowfin and Bigeye tunas based on scientific advice and precautionary approach and aimed to recover the stocks at MSY levels in a certain period (see PIs 1.1.1, 1.1.2, 1.2.1, 2.1.1 and 2.1.2 for more details). Furthermore, bigeye tuna catch limits for the period 2016-2018 (which continued to be applied through 2019, following Rec 18-01) and capacity limitations are established for some CPCs. In accordance with Rec 15-07 it was established that at its 2017 meeting the SCRS shall provide performance indicators for skipjack, bigeye and yellowfin tuna with the perspective to develop MSE for tropical tunas. The challenge of running so many MSE for different stocks has been identified by the SCRS, the tRFMO MSE Working Group and SWGSM. In its 2018 meeting (ICCAT, 2018e), the SCRS recommended slowing down the existing roadmap for MSE processes and proposed the MSE processes within ICCAT to be made more consistent among the different species. The SCRS also recommended the MSE processes to adopt a standard set of principles that should guide and facilitate the coordination process. The Committee did agree to a new road map and requested feedback from the Commission on the relative priority of each MSE. In the 2019 SCRS meeting, an update of the roadmap for ICCAT's MSE processes, based on the 2018 Commission comments and the workplans for bluefin tuna, albacore, swordfish and tropical tunas Species Groups was presented (ICCAT, 2019d). The new road map details the necessary steps (different meetings, stock assessments and external reviews) which culminate with the adoption by the Commission of an interim management procedure for tropical tunas in 2022 and a stock assessment for bigeye tuna in 2023 (ICCAT, 2019d). Therefore, this is still an ongoing objective which is being developed.

Lastly, recent Rec 17-01 aims to achieve a substantial reduction in discards of tropical tunas by 2020. In order to do so, CPSs whose purse seiners are authorized to fish for bigeye and/or yellowfin and/or skipjack tuna in the Convention area must require these vessels to retain on board then land or transship to port all bigeye, skipjack and yellowfin tunas, except for some cases fully described within the Recommendation. In 2020 the SCRS has the mandate to assess the effectiveness of this Recommendation and submit recommendations to the Commission regarding potential improvements. Furthermore, the SCRS shall also undertake work to examine the benefits according to the objectives defined above of retaining non-targeted species catches and present its recommendations to the Commission. The work should take into account all species that are usually discarded on all major gears (i.e., purse-seines, longlines and gillnets), and should look at fisheries that take place both on the high seas and in waters under national jurisdiction and the feasibility of both retaining on-board and processing the associated landings.

Based on the information presented above the assessment team considers that there are evidences that short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system. Therefore, **SG80 is met**.

The difference between scoring 80 and 100 for this PI lays on whether the short- and long-term objectives are well defined and demonstrably consistent with achieving the outcomes expressed by MCS Principles 1 and 2 (thus, SG100 is met) or not (thus, SG100 is not met).

Objectives related to yellowfin tuna stock status can be considered as 'well defined' and 'demonstrably consistent with MSC Principle 1, since they are based on MSY. However, the SCRS and the Commission are still struggling to develop a feasible work program for the MSE to be implemented, and at this point it is a work in progress. Until this work is not completed it cannot be claimed that the objectives are 'demonstrably' consistent with MSC P1. Moreover, Regarding Rec 17-01, its implementation is still very recent and the SCRS will be assessing the first results in 2020.

Based on the above, the team acknowledges that some of those management objectives still cannot be considered as **'well defined'** and **'demonstrably'** consistent with MSC Principles 1 and 2, so **SG100 is not met**.

References

List any references here, including hyperlinks to publicly-available documents.

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 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				

Panels are responsible for keeping under review the species, group of species, or geographic area under its view, and for collecting scientific and other information relating thereto. As explained in PI 3.1.1, based on investigations from the SCRS, Panels may propose to the Commission (during its Annual Meeting) recommendations for joint action by the Contracting Parties. In order to do so, Panels meet at least once prior to the Annual Meeting of the Commission. In the case of the assessed fishery the competent Panel is Panel 1 (on tropical tunas). In addition, other supporting bodies (such as the Working Group on FADs) may also submit Recommendations for its approval to the Commission.

Subsequently, all subsidiary bodies of the Commission (STACFAD, SCRS, COC, PWG, SWGSM), Sub-Committees (e.g. on Ecosystems) and Working Groups (e.g. on FADs) meet several times during the year according to pre-agreed work plans which are designed consistent with the needs. For instance, the annual SCRS report (included in the Vol 2. of the ICCAT Biennial Reports) details the work plans of the species groups. The Tropical Tunas work plan for 2019 (included in Appendix 12 of ICCAT, 2019c) is quoted below and serves as an example of how a strategy is being designed in order to fill in gaps between available information and management needs:

“The Committee recommends that the planned skipjack assessment be postponed for one year, and instead, a yellowfin tuna assessment be conducted during 2019. The reasons for this recommendation include:

Skipjack: 1. Stock status estimated to be healthy. 2. Tropical Tunas Species Group recommended that the skipjack assessment not be conducted until sufficient AOTTP data were available.

Yellowfin: 1. Stock status estimated to be overfished in 2016 (0.95 BMSY). 2. Overall catches of yellowfin tuna have exceeded TAC in every year but one since 2012. In the most recent years overall catches have exceeded TAC by 17-37%. 3. The Tropical Tunas Species Group is concerned that the yellowfin may currently be overfished and undergoing overfishing. 4. To address this concern, the Committee recommends a stock assessment of yellowfin tuna be conducted in 2019.

To accomplish a stock assessment of yellowfin tuna in 2019, and to further the development of the MSE for Tropical Tunas and the AOTTP programme, the following activities are planned:

- Yellowfin Data Preparatory meeting (Quarter 2): The Group requests that all data inputs be prepared through 2018. If the data meeting occurs before July 2018, the Group recognizes that some data inputs may be available only up to 2017 (which should be updated to 2018 before the stock assessment); (…)

- Yellowfin stock assessment meeting (Quarter 3): 1. Update T1 and T2 data and produce the final Catch at Size matrix to be used in the stock assessment (…), 2. Review diagnostics of stock assessment models and select final stock assessment models to be used for management advice, 3. Review and agree the input parameters for projections of the stock assessment models to provide the management advice, 4. Prepare the detailed report of the stock assessment meeting, 5. Discuss and develop draft executive summary of yellowfin.

- MSE: 1. Continue to communicate with the Commission to determine appropriate performance metrics for the Tropical Tuna MSE (…), 2. The Group recommends that funds be secured to enable the continued development and evaluation of MSE operating models and candidate management procedures.

- Ongoing review of AOTTP data and programme: 1. Review data collected and give feedback, 2. Evaluate new scientific information to be used for estimation mortality, growth rate, spatial structure, movement, etc. (…)"

An example of how the ICCAT decision-making process is able to design a strategy to achieve fishery-specific objectives is provided by Rec 15-07 on MSE, which has already been indicated in PI 3.1.1 SI (a). This Rec details a strategy which includes mandates to the SCRS and the Commission. This process started with the North Atlantic Albacore, and recent Rec 17-04 has finally determined precautionary biological reference points and HCRs which will guide the decision-making process for this stock. The Commission requests related to MSE on tropical tunas are already explicit in Rec 16-01. These include to provide performance indicators for yellowfin, skipjack and bigeye tuna with the perspective to develop management strategy evaluations for tropical tunas. The challenge of running so many MSE for different stocks has been identified by the SCRS, the tRFMO MSE Working Group and SWGSM. In its 2018 meeting (ICCAT, 2018e), the SCRS recommended slowing down the existing roadmap for MSE processes and proposed that the MSE processes within ICCAT be made more consistent among the different species. The SCRS also recommended the MSE processes to adopt a standard set of principles that should guide and facilitate the coordination process. The Committee did agree to a new road map and requested feedback from the Commission on the relative priority of each MSE. In the 2019 SCRS meeting, an update of the roadmap for ICCAT's MSE processes, based on the 2018 Commission comments and the workplans for bluefin tuna, albacore, swordfish and tropical tunas Species Groups was presented (ICCAT, 2019d). The new road map (2015-2023) for the development of MSE and HCRs details the necessary steps (different meetings, stock assessments and external reviews) which culminate with the adoption by the Commission of an interim management procedure for tropical tunas in 2022 and a stock assessment for bigeye tuna in 2023 (ICCAT, 2019d).

Therefore, for all the abovementioned, **SG60 and SG80 are met**.

	Responsiveness of decision-making processes			
b	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				

As explained in previous PIs, decision-making process at ICCAT integrates scientific knowledge gathered through specific research programs (e.g. AOTTP, EPBR, SMTYP, SRDCP), comprehensive fishery data provided by the CPCs (Task I and II, VMS, logbooks, observers data, and sometimes other indicators such as price…) and the results of the stock assessments performed by the SCRS. The multi-stakeholder nature of the decision-making bodies (Panels, Annual Meetings of the Committee) ensures that stakeholders' opinion is taken into consideration when making decisions. Further, according to Rec 14-13 the objective of the SWGSM is to enhance communication and foster mutual understanding between fisheries managers and scientists, by establishing a forum to exchange views and to support the development and effective implementation of management strategies.

The tight schedule of intersessional and WGs meetings throughout the year and prior to the Panels meetings and the Annual Meeting of the Commission allows improvements to be regularly incorporated. Some examples are listed below:

- Stock assessments are constantly being reviewed and improved (benchmark assessments are regularly performed),
- An ambitious tuna tagging project (Atlantic Ocean Tropical Tuna Tagging Programme - AOTTP) was launched in 2015,
- Increasing and more detailed obligations in relation to FAD management and observer programs have been developed and included in the Tropical Tuna fisheries management.

Therefore, **SG60** and **SG80 are met**.

However, as already explained in PI1.2.3, there are limitations both due to the biological characteristics of the species and the fishing activity itself that have not yet been fully integrated into the stock assessment and therefore into the decision-making process. Also, as explained in previous SIs some decisions may not have been sufficiently explained (e.g. the determination of the seasonal area closures in the use of FADs). Lastly, the external review of ICCAT's

performance (ICCAT, 2016h) noted that ICCAT Panels and Committees have a tendency to defer decision-making on measures in the interests of achieving consensus, rather than opting for a voting process, thereby unnecessarily delaying the adoption of necessary conservation measures. The Panel in charge of the external review recommended that *"Chairs of the Commission, Panels, COC and PWG should be prepared, once there has been sufficient discussion, to put draft Recommendations to a vote"*.

Based on the above, **SG 100 is not 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				

Current ICCAT decision-making processes use the best available information and advice provided by the subsidiary bodies of the Commission (STACFAD, SCRS, COC, PWG and SWGSM).

Furthermore, Resolution 15-12 states that:

1. When making recommendations pursuant to Article VIII of the Convention, the Commission should apply a precautionary approach, in accordance with relevant international standards.

2. In applying a precautionary approach, the Commission should inter alia:

a) use the best available scientific advice;

b) exercise caution when scientific information is uncertain, unreliable or inadequate;

c) determine, on the basis of the best scientific information available, stock specific reference points, in particular limit reference points, and the action to be taken if exceeded; and

d) not use the absence of adequate scientific information as a reason to postpone or not to take conservation and management action in relation to the species under its mandate.

3. In applying a precautionary approach, the Commission should take measures to ensure that when limit reference points are approached, they will not be exceeded. In the event that they are exceeded, the Commission should without delay take action to restore the stocks to levels above the identified reference points.

The Commission requests to the SCRS related to MSE on tropical tunas are already explicit in Rec 16-01. This includes to provide performance indicators for yellowfin, skipjack and bigeye tuna with the perspective to develop management strategy evaluations for tropical tunas, in accordance with Rec 15-07.

Despite the fact that Resolution 15-12 is not binding, and the finding of the 2016 ICCAT's performance external review stating that the Commission has not applied the precautionary approach in a consistent manner (e.g. the management of the bigeye tuna was not addressed in an effective manner), the fact that precautionary reference points and robust HCRs for tropical tuna fisheries are still being developed by the SCRS makes the assessment team consider that in the case of the Yellowfin tuna the precautionary approach is being applied in accordance with Resolution 15-12 (point 2).

SG 80 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	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and**

			any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	**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**	**Yes**
Rationale				

All information provided by the CPCs (including their compliance in data reporting), together with the decisions taken and their justifications are publicly available on ICCAT's website. This website has recently been modified in order to improve its user-friendliness, as pointed out by the external reviewer in the latest external review (ICCAT, 2016h).

The ICCAT Biennial Report is published in four volumes. Volume 1 includes the Proceedings of the Commission Meetings and the reports of all the associated meetings (with the exception of the Report of the Standing Committee on Research and Statistics-SCRS). Volume 2 contains the Report of the Standing Committee on Research and Statistics (SCRS) and its appendices. Volume 3 includes the Annual Reports of the Contracting Parties of the Commission. Volume 4 includes the Secretariat's Report on Statistics and Coordination of Research, the Secretariat's Administrative and Financial Reports, and the Secretariat's Reports to the ICCAT Conservation and Management Measures Compliance Committee (COC), and to the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG). Volumes 3 and 4 of the Biennial Report are only published in electronic format. This Report is prepared, approved and distributed in accordance with Article III, paragraph 9, and Article IV, paragraph 2-d, of the Convention, and Rule 15 of the Rules of Procedures of the Commission. The Report is available in the three official languages of the Commission: English, French and Spanish.

In addition, on ICCAT's website there are also other publications available (Guidelines, Collective Volumes of Scientific Papers, Statistical Bulletin, Special Publications –including the Report of the Independent Performance Review of ICCAT, Meeting Reports and the ICCAT Manual), all stock assessments performed by the SCRS, information on the Special Research Programs, the SCRS Science Strategic Plan for 2015-2020, MCS information (e.g. Records of vessels, ICCAT IUU vessels list, observer and inspection programs, …). Lastly, an interactive timeline informs about all past, current and scheduled meetings, and provides access to all consultation documents and data (in the case of future meetings) and final reports (in the case of past meetings).

However, it is not always clear how different sources of information are used (e.g. socio-economic data, compliance information, …) when making management decisions by the Commission, as stated in PI 3.1.2 SI(b). For instance, Medley et al (2020) argue that the successive changes that occurred in the determination of the seasonal area closures in the use of FADs is an example of insufficiently explained decision-making.

As a result of the latest Independent performance review of ICCAT (2016h), an *ad hoc* WG to follow up on the recommendations contained in the review report was created through Rec 16-20. Reports of this WG are available at the Biennial Report vol 1.

Despite the way in which agreements are reached may not always be fully disclosed, based on the information presented above the assessment team considers that **SG60, SG80** and **SG100 are met.**

	Approach to disputes			
e	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 for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**Yes**	**No**
Rationale				

On behalf of its members, ANABAC signs direct agreements with the governments of those West African coastal countries where the assessed vessels are fishing to guarantee access (i.e. Mauritania, Cape Verde, Senegal, Guinea Bissau, Guinea Conakry, Sierra Leone, Liberia, Ivory Coast, Ghana, Sao Tome & Principe, Equatorial Guinea, Gabon and Angola) and establish fishing conditions for EU and non-EU vessels (as in the case of the assessed fleet). The team was provided with the direct agreements of Angola, Sierra Leone, and Guinea Conakry.

In addition to the aforementioned three direct agreements, the (indirect) sustainable fisheries agreements with non-EU countries that are negotiated and concluded by the Commission on behalf of the EU (https://ec.europa.eu/fisheries/cfp/international/agreements_en), were also revised and, excluding the agreements from Ghana (which does not exist) and from Equatorial Guinea and Gabon (which are expired), all the others include a reference on how to proceed in the case of unresolved disputes. Some agreements consider that national jurisdiction will be applicable (e.g. Guinea Conakry), while others refer to an arbitration process to be agreed among both parties (eg. Cape Verde), while others include all the necessary details about the arbitration process (e.g. Angola).

So far, even though the COC has warned CPCs for failing to submit data on their fishing activities (e.g. in the latest 2018 COC annual report Brazil requested the Committee a derogation of the application of the retention ban under Rec 11-15 to enable Brazil to submit its Task I data to ICCAT, justifying the delay due to the economic and institutional instability experienced by this CPC in the past year), there have been no cases of repeated violations of the ICCAT Recommendations by the CPCs (see PI3.1.1).

SG60 is met.

There are also no pending legal disputes, since until now CPCs have not used international law to resolve disputes. It can therefore be considered that by implementing the existing mechanisms (multi-stakeholder Panels and Committees, and the recent Standing Working Group to Enhance Dialogue between Fisheries Scientists and Managers - SWGSM) ICCAT has been proactive in avoiding disputes.

Recently, the management system has demonstrated its ability to comply in a timely manner with decisions adopted by the Commission (even before any judicial decision had been taken): Brazil managed to report to ICCAT's Secretariat the reviewed and updated Task I catch data in time (by April 2018) to avoid the application of the retention ban as established in rec 11-15. These data have already been assessed and accepted by ICCAT's Secretariat and they were presented to the SCRS meeting held in Madrid between 1-5 October 2018.

SG80 is met.

However, it would be useful to have better mechanisms for the resolution of legal disputes to avoid the possibility of a CPC using the objection process to not comply with a certain Recommendation with which it does not agree (see PI3.1.1 for more details). In 2006, for example, two ICCAT CPCs – Turkey and Libya – objected to its allocated quotas by ICCAT and unilaterally decided to increase their own allocations, arguing that the allocation of quotas was unfair. And again in 2014 Turkey lodged a formal objection to the recovery plan for the Bluefin tuna in the Eastern Atlantic and Mediterranean [Rec 14-04] on fishing quotas for 2015, 2016 and 2017, and unilaterally assigned an additional quota of 600 tonnes for that year and future years.

UNFSA has recommended that RFMOs should ensure that post opt-out behaviour is constrained by rules to prevent opting-out CPCs from undermining conservation. To do so, they recommend clear processes for dispute resolution, and a description of alternative measures that will be implemented in the interim (Medley et al., 2020, and references therein). This is aligned with the recommendation made by the external reviewers to ICCAT during the latest external review of the ICCAT performance (ICCAT, 2016h): *"The Panel recommends that ICCAT urges its CPCs to reach agreement on the inclusion of compulsory dispute settlement procedures entailing binding decisions in the Amended ICCAT Convention, which also devote attention to provisional arrangements of a practical nature pending the establishment of a dispute"*.

Based on all the above, **SG100 is not met.**

References

List any references here, including hyperlinks to publicly-available documents.

Draft scoring range	**≥80**
Information gap indicator	**More information sought**

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	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**	**No**	**No**
Rationale				

With regard to monitoring, control and surveillance (MCS) activities, ICCAT's strategies to improve compliance are based on keeping an updated list of IUU vessels (coordinated with other RFMOs), the obligation to record and report data (including VMS), monitoring of catches and fishing activities by observers, diplomatic pressure and other pressures applied to CPCs as well as noncontracting ones.

Most of the RFMOs managing tuna and tuna-like species use their vessel registers to establish 'positive lists' (Medley et al., 2020). ICCAT was the first RFMO to adopt such a measure, by establishing a record of large-scale fishing vessels authorized to operate within its area of competence. This record is based on information submitted by CPCs. Importantly, vessels not entered into the record are deemed to be unauthorized to fish for, retain on board, transship or land tuna and tuna-like species. Parties to ICCAT are required to take a number of measures, among them prohibiting the transshipment and landing of tuna and tuna-like species by large-scale fishing vessels that are not entered into its record.

As established by Recommendation 11-18 and Resolution 14-11, ICCAT's Secretariat ensures publicity of the IUU vessels list adopted by ICCAT at its annual meeting by placing it on the ICCAT website. This list is updated and coordinated with other IUU vessel lists from other RFMOs. At the time of preparing this report a total of 115 vessels are included in that IUU list (including all RFMOs) (**https://www.iccat.int/en/IUUlist.html**).

In the case of the tropical tuna fisheries, Rec. 16-01 establishes some measures to control the access to the fishery (**section 7.4.1.4**) by determining that CPCs shall issue specific authorizations to vessels 20 meters LOA or greater flying their flag allowing them to fish for bigeye and/or yellowfin and/or skipjack tunas in the Convention area, and to vessels flying their flag used for any kind of support of this fishing activity. The list of authorized vessels for tropical tunas is communicated to the Executive Secretary before July 1 of each year. This list is updated and available on ICCAT's website (https://www.iccat.int/en/vesselsrecord.asp).

Moreover, Recommendation 16-01 determines that each CPC shall take appropriate action to ensure that all vessels flying its flag, including support vessels, when engaged in fishing activities during the FADs area/time closure, have an observer on board in accordance with Annex 5 and report the information collected by the observers each year by 31 July to the ICCAT Secretariat and to the SCRS. CPCs shall have the observer coverage stipulated in Recommendation 16-14 (a minimum of 5% in number of sets or fishing trips for purse seiners), although purse-seiners are encouraged to increase it in accordance to 2016 SCRS recommendations (minimum level of 20%).

However, in the case of the assessed vessels, they have implemented an observer program on board purse seiners since 2015 with a 100% coverage in number of fishing trips that are covered by observers (human or electronic monitoring systems - EMS). Different organizations and flag states have been gradually introduced in the collection on best practices data, and sometimes in order to assure the collection of official data, official data collection programs have been prioritized, as the information to be collected by observers is significant (i.e., fishing operations, catch - volume and size composition of tuna species - and bycatch species composition - number of individuals and estimated weights). In this sense, between 2015 and 2018 information on 192 fishing trips on 8 purse seiners in the Atlantic Ocean has been gathered and analysed under the Code of Good Practices Program in ANABAC. These trips have

been monitored by 55 observers trained on Good Practices from different organizations, for which a specific observer manual (which was provided to the assessment team by the client) was developed as supporting material. ANABAC data on Best Practices were mainly collected by Sea Eye, and AZTI on an annual basis supervises the implementation of the ANABAC Code of good practices by the member's vessels.

ICCAT Recommendation 12-07 urges CPCs to establish a port inspection system and establishes the minimum standards that guide inspectors as they monitor landings and transshipments, compliance with ICCAT management measures, including fees, and collect data and other information. Subsequently, Recommendation 14-08 endorses the previous Recommendation establishing a special fund to finance the implementation of the system.

Recommendation 14-09 establishes that vessels exceeding 24m length overall shall get a VMS installed on board, and also that each CPC shall ensure that its vessels 20 meters LOA or greater record their catch in accordance with the requirements in Recommendation 03-13.

Regarding the assessed vessels, as well as in situ inspections, both in port and at sea, all ANABAC purse seiners use VMS and fleet operations are monitored by the respective CPC fisheries monitoring centres. In addition, for commercial purposes, in order to import the tuna to EU, to improve the transparency and to facilitate the monitoring and tracking of all ANABAC vessels; VMS, available fishing licenses by the flag State and copies of logbooks and declaration of offloading and transhipment are provided to the General Secretariat of Fisheries in Madrid. The VMS and comprehensive observer coverage effectively and independently track ANABAC vessels and fishing activity and provide reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. VMS data for all ANABAC fishing vessels is available from AZTI. **Figure 5.1.3** shows the fishing activity of ANABAC vessels in the Atlantic Ocean, separated by the type of set (FSC or FOB sets).

The ICCAT Conservation and Management Measures Compliance Committee (COC) reviews all aspects of compliance with regards ICCAT conservation and management measures in the ICCAT Convention Area, with particular reference to compliance with such measures by ICCAT Contracting Parties. The COC annual report is included in Volume I of the ICCAT Biennial Report, and includes: i) the degree of compliance of each CPC regarding catch data reporting (Task I and II) to the SCRS, and (if needed) the response/explanation and actions taken by the CPC; ii) quota overages and balance; iii) adjusted quotas and their temporary terms. Also, the ICCAT Secretariat prepares an annual report for the COC (included in Volume 4 of the ICCAT Biennial Reports) which provides guidance on how to report on implementation of measures in the future, to obtain a more complete picture.

Furthermore, the client provided the assessment team with the certifications of PEVASA and ATUNSA audits as part of the verification of compliance with the standard UNE195006:2016. In addition, ANABAC's assessed vessels are listed in the ISSF PVR and as such MRAG Americas regularly audits a sample of PVR vessels as a means of verifying that vessels have and continue to meet the ISSF Commitments. From the PVR purse seiners list it can be observed that all ANABAC's vessels are implementing all the PVR measures (https://iss-foundation.org/pvr/public-pvr.php?what=fullscreen). Many of these requirements are related to the RFMOs requirements in terms of IUU, vessel registration, catch reporting, etc.

Therefore, **SG60 is met**.

Both at an ICCAT and client's level, the implemented MCS system detailed above has demonstrated an ability to enforce relevant management measures and strategies (e.g. access to the fishery - IUU list, specific authorization for targeting tropical tunas -, VMS, catch data collection and reporting, or observer programs).

However, the data presented in the latest meeting of the SCRS (held from 30 September to 4 October 2019) show a different picture with the review of historical catch trends of the tropical tuna fisheries. According to ICCAT (2020), during 2012 and 2014, overall catches of yellowfin tuna exceeded the TAC by 3-5%. Since then, overages have increased substantially, to 17% (128,298 t) in 2015, 35% (148,874 t) in 2016, 24% (135,865 t) in 2017 and 23% (135,689 t) in 2018.

Taking this information into consideration, and since it cannot be argued that the MCS system has demonstrated an ability to enforce the TAC issued by the Commission, the team considers that **SG80 is not met**.

	Sanctions			
b	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.

	Met?	**Yes**	**No**	**No**
Rationale				

In **Belize**, the Sanction Regulations (S.I. 32 of 2014) detail the sanctioning system for IUU fishing operations. Section 10 states "(1) The actual amount of fine imposed shall be determined by the Director after taking into account, inter alia, the nature, circumstances, extent and gravity of the minor or serious violation, economic benefit derived from the minor or serious violation, and the impact on the environment. (2) Where a minor or a serious violation is of a continuous nature, a separate minor or serious violation accrues each day after the initial act and an additional fine shall be imposed for every day the minor or serious violation continues." While section 5 details the fine amount and procedure (i.e., "5 (1) Each minor or serious violation shall be fined separately and the total fine for the series of violations may exceed the maximum of three million dollars prescribed for a serious violation and one million dollars prescribed for a minor violation."), and section 9 specifies those accompanying sanctions or measures (i.e., "(a) suspension or withdrawal of the license; (b) the sequestration of the vessel involved in the minor or serious violation; (c) temporary prohibition from sailing; (d) confiscation of gears, equipment, and/or fishery products as appropriate; (e) reduction or withdrawal of fishing rights; (f) recommendation to IMMARBE for the deregistration of the vessel; (g) suspending or revoking the authorization of any and/or all crew members working onboard a Belize flagged vessel; and (h) any other sanctions that the Director may deem appropriate.").

For **Cape Verde**, the National Directorate of Maritime Economy (Direcção Nacional de Economia Marítima - DNEM) is in charge of ensuring the control of the fishing activities in the country involving technical measures, fishing activity and other conditions that ensure safety and catch standardization; coordinating the execution of the inspection functions and ensuring the inspection and control of the fishing activities; instructing processes resulting from violations of laws and regulations and proposing the correspondent sanction scheme.
The fisheries sector is mainly regulated by Decree-Law No. 53/2005 of 8 August, amended and republished by the Legislative Decree No. 2/2015 of 9 October on the Policy on Sustainable Exploitation of Fisheries Resources, and is hereinafter referred to as the Fisheries Law. The Cape Verdean Fisheries Law establishes, as consecrating evidence, information from the continuous monitoring system of satellite vessels (VMS - Vessel Monitoring System), as well as witness statements, expert reports and photographs, and increasing offences and penalties for related illegal activities. Specifically, Chapter V of the Fisheries Law describes in detail the Inspection and sanction regime.

The **European Union** (EU) has adopted a series of Regulations to effect compliance with the measures recommended by ICCAT. **Spain**, as a Member State of the EU, has the obligation to adopt and enforce these. Most Recommendations of ICCAT and EU Regulations have been transferred into Spanish legislation, with linked enforcement sanctions. The Spanish Government, through the Fisheries General Secretariat (Secretaría General de Pesca, SGP), belonging to the Ministry of Agriculture, Food and Environment (Ministerio de Agricultura, Alimentación y Medio Ambiente, MAGRAMA) is responsible for applying the management measures to the national fisheries sector. Within the State Maritime Fishing Law from 2001 (LEY 3/2001, de 26 de marzo, de Pesca Marítima del Estado), Title V on infringements and sanctions details the following: Chapter I - Aim and general principles; Chapter II - Administrative infringements for maritime fisheries in external waters; Chapter III - Infringements in the area of fisheries management and trade of fisheries products; and Chapter IV – On the sanctions.

In practice, the most important sanctions that RFMOs can apply are the inclusion in the IUU vessel list, the adjustment of fishing quotas, the application of trade restrictive measures and the retention prohibition. ICCAT has adopted recommendations enabling these types of sanctions to be taken against individual States if necessary.

Mechanisms for adjusting quotas in case of overage (or underage) of an annual catch limit are defined in several fishery-specific Recommendations. In the case of Rec 16-01, there are mechanisms specified for bigeye tuna. Rec 01-12 determines that any temporary quota adjustments shall be done only under authorization by the Commission.

Rec 06-13 determines the procedures to impose trade restrictive measures by the Commission. This Recommendation also notes that this type of measures should be implemented only as a last resort, where other measures have proven unsuccessful. It also notes they should be adopted and implemented in accordance with international law, including principles, rights and obligations established in the World Trade Organization Agreements, and be implemented in a fair, transparent and non-discriminatory manner.

Recently, Rec 16-17 has addressed the need to provide detailed guidelines for an ICCAT schedule of actions to be applied when determining non-compliance and appropriate actions to address non-compliance with ICCAT conservation and management measures. The guidelines are structured in 3 successive steps to be followed:

- Step 1: Determination of category of non-compliance(s)
- Step 2: Determination of the severity of non-compliance(s)
- Step 3: Application of actions to address compliance failures, where warranted

Recommendation 11-15 notes that CPCs that do not report Task I data, including zero catches, for one or more species for a given year, in accordance with SCRS data reporting requirements, shall be prohibited from retaining such species as of the year following the lack or incomplete reporting until such data have been received by the ICCAT Secretariat.

Regarding this Rec (11-15), according to the report prepared by ICCAT's Secretariat to the COC (ICCAT, 2019f), following the 2017 Commission meeting, prohibition was imposed on Angola, Cabo Verde and Guinea Bissau, and the prohibition was maintained for Sierra Leone, Philippines and Vanuatu (although confirmation of zero catch was later received from Vanuatu, after 12 October, and the prohibition was lifted on 22 October 2018), as no response from these parties had been received for the years for which Task I was missing.

In 2018, the Secretariat was pleased to report that the prohibition had been lifted from Angola, Cabo Verde and Sierra Leone. It should be noted that this latter had admitted the possibility of minor artisanal catches of tuna and tuna-like species and had requested assistance from the Secretariat/ICCAT to develop a more effective data collection programme (ICCAT, 2019f).

Currently, only Philippines remains with prohibition in force, but Task I data for 2017 is missing for several CPCs, including Grenada, Guinea Bissau, Guinea Equatorial, Republic of Guinea, Mauritania, Philippines. Neither catch data nor confirmation of zero catch in 2017 has been received for these CPCs, although Republic of Guinea has reported zero catches for commercial species on compliance tables (ICCAT, 2019f).

During the Tropical Tuna Species Group intersessional meeting held in September 2017 in Madrid (ICCAT, 2018e), the Committee was informed that in the latest years (2014-2016) catches from a major fishery for tropical tunas (Brazil) in the western Atlantic had not been provided. As a result, Recommendation 11-15 should have been triggered. However, Brazil requested the Committee to delay the application of the retention ban under Rec. 11-15 to enable Brazil to submit its Task I data to ICCAT, justifying the delay due to the economic and institutional instability experienced in the past year in this CPC. In its intervention, Brazil specifically committed to submit a comprehensive revision of its Task I data covering the last five years by March 31, 2018, after which point the retention prohibition would be activated if Brazil had not submitted its Task I data. The justification and commitment presented by Brazil were enough to receive the endorsement from the COC for this derogation (ICCAT, 2018i). This led Brazil to make a special effort collecting data on the new fishery and reviewing its historical catch trend in order to fulfil the commitment acquired with ICCAT. Finally, the comprehensive review was presented in time and accepted by the SCRS.

There are also examples of temporary adjustments of quotas which have been successfully applied, as is the case of cutting the 2006 quota of bigeye tuna for China-Taipei (a non-CPC), or the reduction in the catch limit of the EU for exceeding its catch limit for two consecutive management periods (Medley et al., 2020). Moreover, ICCAT has also recently implemented a ban on imports from Bolivia and Georgia (neither of which is a CPC). This means that ICCAT is the only RFMO to have used trade-restrictive measures against an individual State (Medley et al., 2020).

Therefore, **SG60 is met.**

In the case of **Cape Verde**, within its previous Fisheries Law (Legislative Decree No. 2/2015), it was stated: "Indeed, the fines currently in force in Cape Verde for fishing infringements committed by domestic and foreign vessels are not discouraging such practices and therefore need to be updated." The new and updated Fisheries las was just published in March 2020 (Legislative Decree No. 2/2020) and aims (among other things) to combat illegal fishing in national maritime waters. However, as this is a very recent law, more time is needed to verify whether it achieves the discouragement of illegal practices / infringements.

Moreover, there are cases showing that ICCAT sanctions do not provide effective deterrence, as is the case of several infractions related to Mediterranean Bluefin tuna (Medley et al., 2020). Furthermore, these authors also consider that sanctions applied to CPCs have generally been weak compared to those applied to countries and fishing entities which are not members of ICCAT. However, there are several examples of recent sanctions applied to CPCs, such as quota reduction applied to the UE or the retention prohibitions applied to Angola, Cabo Verde, Guinea Bissau, Sierra Leone, Philippines and Vanuatu (although currently, only Philippines remains with the prohibition in force).

Medley et al (2020) also consider that the application of the blacklisting of non-member vessels (IUU list) by ICCAT has not been effective, in contrast to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

The historical catch trends of the tropical tuna fisheries have been recently reviewed and show a different picture from previous existing data. According to ICCAT (2020) during 2012 and 2014, overall catches of yellowfin tuna exceeded the TAC by 3-5%. Since then, overages have increased substantially, to 17% in 2015, 35% in 2016, 24% in 2017 and 23% in 2018; while previous data indicated that overage was restricted to 2016.

Therefore, sanctions dealing with non-compliance at ICCAT level exist, but at the time of writing this ACDR the team has still not had the chance to check with the stakeholders if specific sanctions to the assessed fleet exist and if they are consistently applied and provide effective deterrence, hence, **SG80 is not met.**

	Compliance			
C	Guide post	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.	**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.	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.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The MCS system described in SI(a) and the results shown in the annual COC report provide evidence that fishers comply with the management system under assessment, including, when required, providing information of importance for the effective management of the fishery. Following Resolution 11-14 on the standardized presentation of scientific information, the SCRS developed the Standard Catalogues on data availability for a period of years (i.e., millions of records over the las 30 years), for all the 13 major ICCAT species (10 tuna & tuna like species and 3 shark species) and stocks. The Standard SCRS catalogues on Statistics (Task I and Task II) included in Volume 4 of the 2018 ICCAT Biennial Report (ICCAT, 2019f) confirm that the level of reporting on Task I and Task II for tropical tunas is high for those CPCs that contribute the most to total catches.

Regarding Belize, Cape Verde and EU-Spain (the three flag States of the assessed fleets), they have all been fully reporting Task I and Task II (catch-effort and catch-at-size) for the 3 tropical tunas species since at least 2009, 2005 and since the beginning, respectively. This is consistent with the fact that the assessed vessels have a 100% observer coverage since 2015. These observers are using ICCAT forms and sampling protocols, and all information recorded is reported to the ICCAT Secretariat so it can be used by the SCRS.

At the client's level, the results of the audits performed by a third party to ensure compliance with the standard UNE195006:2016 and with the PVR register provide evidence that the assessed vessels are complying with the management system and also providing information of importance to the effective management of the fishery (e.g., detailed logbooks and observer data from the vessels).

Among the ISSF practices, in 2012 ISSF created a ProActive Vessel Register (PVR) available on-line (https://iss-foundation.org/knowledge-tools/databases/proactive-vessel-register/). This PVR list is designed to provide third-party validated information on the positive steps fishing vessels take to improve responsible fishing practices. The PVR identifies which of more than 25 ISSF Commitments each vessel has adopted, including implementing strategies to increase supply chain transparency, providing complete catch data to management bodies and continuing education in best practices that reduce fishing's impact on the greater marine environment. Comprehensive information on the PVR list is available at the ISSF website, including the application process, the audit system (conducted by MRAG America), and several related documents (https://iss-foundation.org/knowledge-tools/databases/proactive-vessel-register/). ANABAC assessed vessels are listed in the ISSF PVR, as such, they are subject to regular random compliance audits and are implementing all the PVR measures (https://iss-foundation.org/pvr/public-pvr.php?what=fullscreen).

Therefore, **SG60** and **SG80 are met**.

The 2017 Secretariat's report to the COC expressed concerns about the lack of reporting and sufficiency of reporting (ICCAT, 2018X). In addition, one CPC also raised concerns about fishing activities taking place in certain areas of the Convention (particularly the Caribbean Sea) by non-CPCs who do not recognize the rules of ICCAT.

As explained in PI 2.1.3, IUU fishing affecting tropical tunas has been estimated by the SCRS by comparing monitored landings in West African ports and cannery data against catches reported to ICCAT. Estimates of undeclared catches of these purse seiners have increased since 2006 and could have exceeded 20,000 t for the three main species of tropical tuna. The Committee expressed the need for the CPCs and the canning industry in the region to collaborate to estimate and communicate these catches to ICCAT.

Also, as pointed out by the external reviewers (ICCAT, 2016h) the COC has constraints in its capacity to assess to which degree the measures in the individual fisheries contained in the ICCAT recommendations are being respected by the vessels of the Parties.

Based on the above, **SG100 is not met**.

	Systematic non-compliance			
d	Guide post		There is no evidence of systematic non-compliance.	
	Met?		**Yes**	
Rationale				

Despite the undeclared catches in the Region and the constraints of the COC in relation to following-up infringements, no evidence of systematic compliance has been identified. Therefore, SG80 is met.

References

List any references here, including hyperlinks to publicly-available documents.

Draft scoring range	**60-79**
Information gap indicator	**More information sought on sanctions to the assessed fleet**

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

Overall Performance Indicator score	
Condition number (if relevant)	

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		**There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives** **There is effective and timely review of the fishery-specific management system**		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	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**	**Yes**
Rationale				

ICCAT has mechanisms to evaluate all parts of the management system. This is demonstrated by the various Panels, Committees, Subcommittees and Working Groups that meet regularly and communicate their findings (including non-compliances and opportunities for improvement) to the Commission. The exhaustive biennial report published in 4 volumes compiles all proceedings and reports prepared annually by the different bodies. The evaluation of data collected from the monitoring, control and surveillance of the fishery, as well as specific scientific studies, together with the information collected in the consultation processes, constitute the basis of ICCAT management process. This process allows to respond to both wider management issues of stock wide and specific CPCs concerns (and even concerns raised by observers such as non-CPCs and NGOs since they are allowed to participate in the annual meetings of the Commission).

The Conservation and Management Measures Compliance Committee (COC) reviews all aspects of compliance with ICCAT conservation and management measures in the ICCAT Convention Area, with particular reference to compliance with such measures by ICCAT Contracting Parties. While the Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG) obtains, compiles and reviews all available information on the fishing activities of non-Contracting Parties, for species under the purview of ICCAT, including details on the type, flag and name of vessels and reported or estimated catches by species and area.

Lastly, the Commission may decide to carry out an external review of its performance and entrust this task to external expert reviewers, as it was the case in 2007 and 2015 (https://www.iccat.int/en/pubs_spec.html) (see SI (b)). The 2016 External Performance Review was based on the terms of reference that had been developed after several discussion sessions in the United Nations, FAO and in other meetings of RFMOs. The 2016 TOR permitted the Performance Review Panel to undertake an extensive review of ICCAT's performance against its objectives in the period 2008 to 2016; a particularly active period for ICCAT. The Panel Report notably reviews ICCAT's Basic Texts as well as the most recent version of the draft Amended ICCAT Convention; the status of the stocks and the scientific process; the development and implementation of conservation and management measures; compliance with those measures; and flag State and port State duties. The Report also reviews whether, and to what extent, the recommendations of the 2008 Panel were addressed by ICCAT. The chapters of the report are entitled: (1) Intro; (2) Conservation and Management (stock by stock); (3) Monitoring, Control and Surveillance; (4) Compliance and Enforcement; (5) Governance; (6) Science; (7) Comparison with other RFMOs; (8) Financial and Administrative issues. As can be noted in reading this report, ICCAT is congratulated for making significant progress since the first performance review, particularly as it had adopted appropriate measures to strengthen and improve management of the species under its competency. The independent panel also recognized that ICCAT is a leading RFMO. Last, but not least, the report highlights what still remains to be done. Accordingly, ICCAT recently agreed to evaluate and address the recommendations made in the Second Performance Review, and adopted a Resolution [16-20] which establishes an *Ad Hoc* Working Group to follow up on the recommendations contained in the review report. On the negative side, the 2016 external review report noted that ICCAT has not addressed in an effective manner the management of the tropical tuna (bigeye).

For all the aforementioned, **SG60, SG80** and **SG100 are met**.

b	Internal and/or external review			
	Guide post	The fishery-specific management system is	The fishery-specific management system is	The fishery-specific management system is

		subject to **occasional internal** review.	subject to **regular internal** and **occasional external** review.	subject to **regular internal and external** review.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The multi-annual program for the conservation and management of Tropical Tunas has been subject to regular internal reviews since its inception in 2011 (at that time skipjack tuna was not included). A review of successive Recommendations 13-01, 14-01 (this was the first one including skipjack tuna), 15-01, 16-01 and 18-01 provide an insight on how different elements of the harvest strategy have been incorporated or refined (detailed data collection for FOB sets, FAD management plans, requirements for the observer program, mandates for the SCRS, see **sections 7.2.1.9** and **7.4.1.2** for more details). This reviewing process is an ongoing process, for instance the SCRS has a mandate to develop an MSE for this fishery in accordance to Rec 15-07. Also, in the final provisions of Rec 16-01 it is noted that the SCRS shall address to the extent possible the Recommendations made by the FAD Working Group in 2016 and for the remaining ones develop a work plan to be presented to the Commission at its 2017 Annual Meeting. Recommendation 17-01 on prohibition on discards of tropical tunas caught by purse seiners is also the result of a regular process of revision of the management system for tropical tunas.

Therefore, **SG60 is met**.

In previous sections it has already been explained that the fishery-specific management system is subject to regular reviews. The multi-annual programme for tropical tunas has been reviewed four times since its inception in 2011 and significant improvements have been included in the management of the ICCAT fisheries targeting tropical tunas in general, and to purse-seiners in particular. These reviews are the result of many different bodies and stakeholders (e.g., Tropical Tuna Species Group of the SCRS, ad hoc WG on FADs, SWGSM, PWG, COC, Sub-Committee on Ecosystems and By-catch, or PWG), however they cannot be considered external since they are all within ICCAT.

Resolution 11-17 on best available science states that CPCs undertake to take all measures which would be appropriate "to strengthen peer review mechanisms within the SCRS by participation of outside experts (e.g., from other RFMOs or from academia) in the SCRS activities, particularly for stock assessments". And also stated that "The next independent performance review of ICCAT should include an assessment of the functioning of the SCRS and its working groups through a total quality management process, including an evaluation of the potential role of external reviews".

In recent years there have been several initiatives in accordance with Rec 11-17:

- At the 2011 Third Joint Tuna RFMOs meeting (the 'Kobe process') it was recognized that Management Strategy Evaluation (MSE) needs to be widely applied in order to implement the Precautionary Approach for tuna fisheries management. Therefore, a Joint MSE Technical Working Group (TWG) was created to work electronically initially. The TWG had its first official meeting in Madrid from 1-3 November 2016 (**http://www.tuna-org.org/mse.htm**). The TWG had previously reviewed the Kobe Advice Framework, and the objectives of the meeting were to: (i) review current MSE practice; (ii) discuss progress on MSE; (iii) identify future actions focusing on areas of collaboration.
- A Joint Meeting of tuna RFMOs on the Implementation of the Ecosystem Approach to Fisheries Management, initiated by ICCAT and supported by the Common Oceans/ABNJ Tuna Project was held in 2016 (**http://www.fao.org/fileadmin/user_upload/common_oceans/docs/JointTunaRFMO_EBFM_Meeting.pdf**). It brought together scientists from the five t-RFMOs and national experts. The goals of the meeting were to (1) establish a sustained dialogue across t-RFMOs on the issues of EAF and its implementation, (2) understand common challenges in its implementation and (3) identify case specific solutions. A number of recommendations to the Commission were made as regards different issues covered during the meeting.
- A First Joint Tuna-RFMO FAD Working Group meeting was held in 2017 (**http://www.tuna-org.org/fad.htm**). The following are included within their tasks: the development of a work plan to address research, data collection and analysis of FAD fisheries information, and review and adoption of FAD related technical and legal definitions. To facilitate and accelerate the progress toward meeting SCRS and Commission objectives concerning the recommendations of the joint t-RFMO FAD meeting and the ICCAT FAD Working Group, the Coordinator of the Tropical Species suggested forming a "study group" to review and prioritize the recommendations, and prepare a work plan which would be presented to the Tropical Tuna Species Group and the SCRS in 2018. The study group would be open to interested stakeholders. It was also noted the importance of integrating not only the Tropical Tunas Species Group, but also the rapporteur of the Sharks Species Group, and the Conveners of the Sub-Committee on Ecosystems as important research and a new information have been presented from non-target species that interact with FAD fisheries. The study group would meet intersessional via remote communications (e.g. webinars, video conferencing). As mentioned above, in the final provisions of Rec 16-01 it is noted that the SCRS shall address to the extent possible the Recommendations

made by the FAD Working Group. A Second Joint Tuna-RFMO FAD WG meeting was held in 2019. The meeting focused on research of FAD impacts, definitions and FAD monitoring. Current Tuna-RFMOs' FAD management strategies were also reviewed as well as the progress in key areas of action, as defined during the First meeting.

- At the 2007 annual meeting, the Commission decided to proceed with the first external review of its performance, published in 2009 (ICCAT, 2009). At the 2015 annual meeting in Malta, ICCAT decided to address a new external review which was published in 2016 (ICCAT, 2016h). The team was coordinated by Mr. John Spencer (former head of delegation of the European Union in tuna RFMOs and other species) as an expert in fisheries management, and also included Mr. Jean-Jacques Maguire (an independent scientist with considerable experience in providing scientific advice and member of the 2008 Panel as a scientific expert) and Dr. Erik J. Molenaar (NILOS, University of Utrecht & JCLOS, UiT University of the Arctic of Norway) as a legal expert.

Based on the above the assessment team considers that the fishery-specific management system is subject to regular internal and occasional external review. Therefore, SG80 is met.

However, despite recent efforts, it cannot be argued that external reviews of the fishery-specific management system are regular. Therefore, **SG100 is not met.**

References

List any references here, including hyperlinks to publicly-available documents.

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

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

Overall Performance Indicator score	
Condition number (if relevant)	

8 References

Principle 1 references:

Caveriviere, A., Conand, F., Suisse de Sainte-Claire, E. 1976. Distribution et abundance des larves de thonides dans l´Atlantique tropic-oriental. Etude des donnes de 1963 a 1974. Doc scient. C.R.O Abidjan, 7(2): 49-70.Diaha, N.C., Zudaire, I., Chassot, E., Barrigah, D.B., Irie, Y.D., Gbeazere, D.A., Kouadio, D., Pecoraro, C., Romeo, M.U., Murua, H., Amande, M.J., Dewals, P., and Bodin, N. 2016. Annual monitoring of reproductive traits of female yellowfin tuna (Thunnus albacares) in the eastern Atlantic Ocean. Collect. Vol. Sci. Pap. ICCAT, 72(2):534-548.

Francis R.I.C.C. 2011. Data weighting in statistical fisheries stock assessment models. Can. J. Fish. Aqu. Sci. 68: 1124-1138.

Gascuel, D., Fonteneau, A. and Capisano, C. 1992. Modélisation d'une croissance en deux stances chez l'albacore (Thunnus albacares) de l'Atlantique est. Aquatic Living Resources, 5(3), 155-172

Hoyle S.D., Lauretta M., Lee M.K., Matsumoto T., Sant'Ana R., and Yokoi H. 2019. Collaborative study of yellowfin tuna CPUE from multiple Atlantic Ocean longline fleets in 2019. SCRS/2019/081

ICCAT, 2011b. Executive summary. Retrieved from: https://www.iccat.int/Documents/SCRS/ExecSum/YFT_ENG.pdf

ICCAT, 2011c. Rec 11-13. Recommendation by ICCAT on the principles of decision making for ICCAT conservation and management measures. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2011-13-e.pdf

ICCAT, (2012). Panel 1. Tropical tunas. Retrieved from: https://www.iccat.int/Documents/SCRS/Presentation/2012/Panel1-2012.pdf

ICCAT, 2014a, Rec 14-01. Recommendation by ICCAT on a multi-annual conservation and management program for tropical tunas. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2014-01-e.pdf

ICCAT, 2015a. Rec 15-01. Recommendation by ICCAT on a multi-annual conservation and management program for tropical tunas. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2015-01-e.pdf

ICCAT, 2016a. Rec 16-01. Recommendation by ICCAT on a multi-annual conservation and management programme for tropical tunas. Retrieved from: http://iccat.int/Documents/Recs/compendiopdf-e/2016-01-e.pdf

ICCAT, 2016b. Report of the 2016 ICCAT yellowfin tuna data preparatory meeting (San Sebastián, Spain - March 7 to 11, 2016) Retrieved from: https://www.iccat.int/Documents/Meetings/Docs/2016_YFT_DATA_PREP_REPORT_ENG.pdf

ICCAT, 2016c. Report of the 2016 ICCAT yellowfin tuna stock assessment meeting (San Sebastian, Spain – 27 June to 1 July 2016). Retrieved from: https://www.iccat.int/Documents/Meetings/Docs/2016_YFT_ASSESSMENT_ENG.pdf

ICCAT, 2017a. Rec 17-01. Recommendation by ICCAT on prohibition on discards of tropical tunas caught by purse seiners. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2017-01-e.pdf

ICCAT, 2018a*. Report of the standing committee on research and statistics. (Madrid, Spain, 1 to 5 October 2018. Retrieved from https://www.iccat.int/Documents/Meetings/Docs/2018/REPORTS/2018_SCRS_REP_ENG.pdf*

ICCAT, 2018b. Compendium management recommendations and resolutions adopted by ICCAT for the conservation of Atlantic tunas and tuna-like species, International Commission for the Conservation of Atlantic Tunas. Available at: https://www.iccat.int/com2017/DocENG/PLE_102_ENG.pdf.

ICCAT, 2019a. Report for Biennial Period, 2018-19, Part I, Vol. 1, 781 pp.; Retrieved from: https://www.iccat.int/Documents/BienRep/REP_EN_18-19_I-1.pdf

ICCAT, 2019b. Report for biennial period, 2018-19 PART I (2018) – Vol. 4: Retrieved from: https://iccat.int/Documents/BienRep/REP_TRILINGUAL_18-19_I_4.pdf

ICCAT 2019c. Report of the 2019 ICCAT yellowfin tuna assessment meeting. (Grand-Bassam, Cote d'Ivoire, 8-16 July 2019). Retrieved from https://www.iccat.int/Documents/SCRS/DetRep/YFT_SA_ENG.pdf

Kell L., Kimoto A., Kitakado T. 2016. Evaluation of the prediction skill of stock assessment using hindcasting. Fisheries Research 183: 119-127.

Lorenzen (2005)

Merino, G, Murua, H, Urtizberea, A, Santiago, J, Andonegi, E and H. Winker. Stock assessment for Atlantic yellowfin using a biomass production model. SCRS/2019/115.

Methot Jr, R.D. and Wetzel, C.R., 2013. Stock synthesis: a biological and statistical framework for fish stock assessment and fishery management. Fisheries Research, 142, pp.86-99.

Method Jr. R.D. and Taylor, I.G. 2011. Adjusting for bias due to variability of estimated recruitments in fishery assessment models. Can. J. Fish. Aqua. Sci. 68(10): 1744-1760.

Sant' Ana, R, Mourato, B. Kimoto, A, Walter, J and H. Winker. (2019). Atlantic yellowfin tuna stock assessment: An implementation of Bayesian state-space surplus production model using JABBA. Collect. Vol. Sci. Pap. ICCAT, 76(6): 699-724 (2020)

Then et al (2017)

Walter, J, Urtizberea I, Hiroki, Y. Satoh, K, Ortiz, M, Kimoto, A, Ailloud, L and T. Matsumoto. (2019). Stock synthesis model for Atlantic Yellowfin tuna. Collect. Vol. Sci. Pap. ICCAT, 76(6): 558-639 (2020).

Winker, H.; Kerwath, S.; Bruyn, P. 2018. Developing surplus production model priors from a multivariate life history prediction model for IOTC for IOTC billfish assessments with limited biological information. IOTC-2018-WPB16-14_Rev1.

Principle 2/3 references:

Andersen, K. H. and Pedersenm M. 2009. Damped trophic casdades driven by fishing in model marine ecosystems. Proc. R. Soc. B. vol. 27 (1682): 795-802. Available at: http://rspb.royalsocietypublishing.org/content/277/1682/795.full

Amandè, J.M., Ariz, J., Chassot, E., Chavance, P., Delgado de Molina, A., Gaertner, D., Murua, H., Pianet, R., Ruiz, J. 2010. By-catch and discards of the European purse seine tuna fishery in the Atlantic Ocean. Estimation and characteristics for the 2003-2007 period. Aquatic Living Resources, 23(04):353-362

Amandè, J.M., Ariz, J., Chassot, E., Chavance, P., Delgado de Molina, A., Gaertner, D., Murua, H., Pianet, R., Ruiz, J. 2011. By-catch and discards of the European purse seine tuna fishery in the Atlantic Ocean: estimation and Characteristics for 2008 and 2009. Collect. Vol. Sci. Pap. ICCAT, 66(5): 2113-2120 (2011)

Arrizabalaga, H, P de Bruyn, G.A Diaz, H Murua, y P Chavance. 2011. «Productivity and susceptibility analysis for species caught in Atlantic tuna fisheries.» Aquat. Living Resour. 24, 1–12 (Aquat. Living Resour. 24, 1–12), 2011.

Baum, JK, and B. Worm. 2009. Cascading top-down effects of changing oceanic predator abundances. Journal of Animal Ecology 78, 699-714. doi: 10.1111 /j.1365-2656.2009.01531.x.

Branch T, R. Watson, E. Fulton, S. Jennings, C. McGilliard, G. Pablico, S. Tracey. 2010. The trophic fingerprint of marine fisheries. Nature 468: 431-435. Abstract available at http://www.nature.com/nature/journal/v468/n7322/full/nature09528.html

Bertignac, P, P Lehodey, and J. Hampton. 1998. A spatial population dynamics simulation model of tropical tunas using a habitat index based on environmental parameters. Fisheries Oceanography. 7: 3/4, 326-334 .

Eddy, C., Brill, R., Bernal, D. 2016. Rates of at-vessel mortality and post-release survival of pelagic sharks captured with tuna purse seines around drifting fish aggregating devices (FADs) in the equatorial eastern Pacific Ocean. Fisheries Research 174 (2016) 109–117

Escalle, I., A. Capietto, P. Chavance, L. Dubroca, A. Delgado De Molina, , H. Murua, D. Gaertner, E. Romanov, J. Spitz, J. J. Kiszka, L. Floch, A. Damiano, B. Merigot.. 2016. Cetaceans and tuna purse seine fisheries in the Atlantic and Indian Oceans: interactions but few mortalities. Mar. Ecol. Prog. Ser Vol. 522: 255–268, 2015 doi: 10.3354/meps11149

Gondra, J.R., J. Lopez, F.J. Abascal, P.J. Pascual Alayon, M.J. Amandè, P. Bach, P. Cauquil, H. Murua, M.L. Ramos Alonso, P.S. Sabarros (2017) Bycatch of the european purse-seine tuna fishery in the Atlantic ocean for the period 2010-2016. SCRS/2017/197. Collect. Vol. Sci. Pap. ICCAT, 74(5): 2038-2048

Hutchinson, M.R, D. Itano, J.A. Muir, and K.N. Holland. 2015. Post-release survival of juvenile silky sharks in the tropical tuna purse seine fishery. Marine Ecology Progress Series, Vol. 521, pp. 143-154

ICCAT, 2006. Report of the standing committee on research and statistics (SCRS) (Madrid, Spain, October 2 to 6, 2006) Retrieved from: https://stecf.jrc.ec.europa.eu/c/document_library/get_file?uuid=3459de27-7169-46f7-a05c-5044c7d96955&groupId=43805

ICCAT, 2009. Report of the Independent Performance Review of ICCAT. Retrieved from: https://www.iccat.int/en/pubs_spec.html

ICCAT, 2011a. Executive summary. Retrieved from: https://www.iccat.int/Documents/SCRS/ExecSum/YFT_ENG.pdf

ICCAT, 2011b. Recommendation by ICCAT on the principles of decision making for ICCAT conservation and management measures. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2011-13-e.pdf

ICCAT, 2011c. Recommendation by ICCAT on a multi-annual conservation and management program for bigeye and yellowfin tunas. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2011-01-e.pdf

ICCAT, 2011d. Recommendation by ICCAT on information collection and harmonization of data on bycatch and discards in ICCAT fisheries. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2011-10-e.pdf

ICCAT 2011e. Report of the 2011 blue marlin stock assessment and white marlin data preparatory meeting. Madrid, Spain –April 20 to 29, 2011

ICCAT, 2012a. Panel 1. Tropical tunas. Retrieved from: https://www.iccat.int/Documents/SCRS/Presentation/2012/Panel1-2012.pdf

ICCAT, 2012b. Report of the 2012 white marlin stock assessment meeting. Madrid, Spain – May 21-25, 2012

ICCAT, 2014. Recommendation by ICCAT on a multi-annual conservation and management program for tropical tunas. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2014-01-e.pdf

ICCAT 2014b. Report of the 2014 ICCAT East and West Atlantic skipjack stock assessment meeting. Dakar, Senegal – June 23 to July 1. ICCAT, 2017. Report of the standing committee on research and statistics (SCRS). Madrid, Spain, 2 to 6 October 2017. https://www.iccat.int/Documents/Meetings/Docs/2017_SCRS_REP_ENG.pdf

ICCAT, 2015a. Recommendation by ICCAT on a multi-annual conservation and management program for tropical tunas. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2015-01-e.pdf

ICCAT, 2015b. Recommendations by ICCAT on the development of harvest control rules and of management strategy evaluation. Retrieved from: https://www.iccat.int/Documents/Recs/compendiopdf-e/2015-07-e.pdf

ICCAT, 2015c. report of the 2015 ICCAT blue shark stock assessment session. Oceanario de Lisboa, Lisbon, Portugal – July 27 to 31, 2015.

ICCAT, 2016a. Report of the 2016 ICCAT yellowfin tuna data preparatory meeting (San Sebastián, Spain - March 7 to 11, 2016) Retrieved from: https://www.iccat.int/Documents/Meetings/Docs/2016_YFT_DATA_PREP_REPORT_ENG.pdf

ICCAT, 2016b. Report of the 2016 ICCAT yellowfin tuna stock assessment meeting (San Sebastian, Spain – 27 June to 1 July 2016). Retrieved from: https://www.iccat.int/Documents/Meetings/Docs/2016_YFT_ASSESSMENT_ENG.pdf

ICCAT, 2016c. Report of the 2016 ICCAT yellowfin tuna data preparatory meeting. (San Sebastian, Spain –March 7 to 11, 2016. Retrieved from: https://www.iccat.int/Documents/Meetings/Docs/2016_YFT_DATA_PREP_REPORT_ENG.pdf

ICCAT, 2016d. ICCAT SCRS Report Panel 1-Tropical tunas. Retrieved from: https://www.iccat.int/Documents/SCRS/Presentation/2016/Panel1-2016.pdf

ICCAT, 2016e. Recommendation by ICCAT on a multi-annual conservation and management programme for tropical tunas. Retrieved from: http://iccat.int/Documents/Recs/compendiopdf-e/2016-01-e.pdf

ICCAT, 2016f. Report of the 2016 sailfish stock assessment. Miami, USA -30 May to 3 June 2016

ICCAT, 2016g. Report of the 2016 ICCAT North and South Atlantic albacore stock assessment meeting. Madeira, Portugal – April 28 to May 6, 2016

ICCAT 2016h. Report of the Independent Performance Review of ICCAT. Retrieved from: https://www.iccat.int/en/pubs_spec.html

ICCAT, 2017a. Report of the standing committee on research and statistics (SCRS). Madrid, Spain, 2 to 6 October 2017. https://www.iccat.int/Documents/Meetings/Docs/2017_SCRS_REP_ENG.pdf

ICCAT, 2017b. Report of the 2017 ICCAT Atlantic swordfish stock assessment session. Madrid, Spain 3-7 July, 2007

ICCAT, 2017c. Report for biennial period, 2016-2017. PART II (2017) – Vol.3 Annual Reports. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT, 2017d. Report for biennial period, 2016-2017. PART I (2016) – Vol.4 Secretariat Reports. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT, 2017e. Report for biennial period, 2016-2017. PART II (2017) – Vol.2 SCRS. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT, 2017f. Report for biennial period, 2016-2017. PART I (2016) – Vol.1 COM. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT, 2017g. Report for biennial period, 2016-2017. PART I (2016) – Vol.2 SCRS. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT, 2017h. Report for biennial period, 2016-2017. PART I (2016) – Vol.3 Annual Reports. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT, 2017i. Report for biennial period, 2016-2017. PART II (2017) – Vol.1 COM. Retrieved from: https://www.iccat.int/en/pubs_biennial.html

ICCAT 2018b. 6th Meeting of the WG on convention amendment – Funchal 2018. Report of the sixth meeting of the working group on convention amendment (Funchal, Portugal, 24-25 May 2018)

ICCAT. 2018c. Compendium Management Recommendations and Resolutions adopted by ICCAT for the conservation of Atlantic tunas and tuna-like species. Available at: https://www.iccat.int/en/RecRes.asp

ICCAT, 2018d Report of the 2018 ICCAT Small Tuna Species Group Intersessional Meeting. Madrid, Spain 2-6 April 2018

ICCAT, 2018e. Report of the Standing Committee on Research and Statistics (scrs). Retrieved from: https://www.iccat.int/Documents/Meetings/Docs/2018/REPORTS/2018_SCRS_REP_ENG.pdf

Lehodey, P, and others. 1998. Predicting skipjack tuna forage distributions in the equatorial Pacific using a coupled dynamical bio-geochemical model." Fisheries Oceanography 7: 3/4, 317-325.

Loukos, H., P. Monfray, L. Bopp, and P. Lehodey. 2003. Potential changes in skipjack tuna (Katsuwonus pelamis) habitat from a global warming scenario: modeling approach and preliminary results. Fisheries Oceanography. 12: 4/5, 474-482

Medley P.A.H. and J. Gascoigne. 2017. An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria (Version 5). ISSF Technical Report 2017-09. International Seafood Sustainability Foundation, Washington, D.C., USA

Myers, R.A, J.k Baum, T.D Shepherd, S.P. Powers, y C.H Perterson. 2007. «Cascading Effects of the Loss of Apex Predatory Sharks from a Coastal Ocean.» Science 315, 1846. DOI: 10.1126/science.1138657, 2007.

Pershing AJ, Mills KE, Record NR. 2015. Evaluating trophic cascades as drivers of regime shifts in different ocean ecosystems. Philosophical Transactions of the Royal Society B: Biological Sciences. 2015; 370 (1659):20130265. doi:10.1098/rstb.2013.0265.

Powers, J.E, y P.A.H. Medley. An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria (Version 4). ISSF Technical Report 2016-19. International Seafood Sustainability Foundation, Washington, D.C., USA, 2016.

Sherman, K., I. Belkinb, K.D. Friedlanda, J. O'Reillya, 2013. Changing states of North Atlantic large marine ecosystems. Environmental Development Volume 7, July 2013, Pages 46–58. http://www.sciencedirect.com/science/article/pii/S2211464513000626

Ward, P, and RA Myers. 2005. Shifts in open-ocean fish communities coinciding with the communication of commercial fishing. Ecology, 86 4: 835-847.

Worm, B, M Sandow, A Oschlies, HK Lotze, and RA Myers. 2005. Global Patterns of Predator Diversity in the Open Oceans. Science VOL 309.

Worm, B, and others. 2006. Impacts of Biodiversity Loss on Ocean Ecosystem Services. Science 314, 787 (2006); DOI: 10.1126 / science.1132294.

Principle 3

ICCAT, 2019a. INTERNATIONAL COMMISSION for the CONSERVATION of ATLANTIC TUNAS - Basic Texts. 7th Revision, Madrid, 2019. Available at: https://www.iccat.int/Documents/Commission/BasicTexts.pdf

ICCAT, 2019b. COMPENDIUM MANAGEMENT RECOMMENDATIONS AND RESOLUTIONS ADOPTED BY ICCAT FOR THE CONSERVATION OF ATLANTIC TUNAS AND TUNA-LIKE SPECIES. 417 pp. Available at: https://www.iccat.int/Documents/Recs/COMPENDIUM_ACTIVE_ENG.pdf

ICCAT, 2019f. Report for biennial period, 2018-2019. PART I (2018) – Vol.4 Secretariat Reports. Available at: https://www.iccat.int/Documents/BienRep/REP_TRILINGUAL_18-19_I_4.pdf

ICCAT, 2019c. Report for biennial period, 2018-2019. PART I (2019) – Vol.2 SCRS. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_18-19_I-2.pdf

Medley, P.A.H., Gascoigne, J. and J. Akroyd. 2020. An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria (Version 7). ISSF Technical Report 2020-09. International Seafood Sustainability Foundation, Washington, D.C., USA. Available at: https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2020-09-an-evaluation-of-the-sustainability-of-global-tuna-stocks-relative-to-marine-stewardship-council-criteria/

ICCAT, 2019c. Report for biennial period, 2018-2019. PART I (2018) – Vol.1 COM. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_18-19_I-1.pdf

ICCAT, 2019d. Report of the Standing Committee on Research and Statistics (SCRS). Madrid, Spain, 30 September to 4 October 2019. 459 pp. Available at: https://www.iccat.int/Documents/Meetings/Docs/2019/REPORTS/2019_SCRS_ENG.pdf

ICCAT 2016h. Report of the Independent Performance Review of ICCAT. Available at: https://www.iccat.int/en/pubs_spec.html

ICCAT, 2019e. Report for biennial period, 2018-2019. PART I (2018) – Vol.2 SCRS. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_18-19_I-2.pdf

ICCAT, 2018. Report of the Standing Committee on Research and Statistics (SCRS). Madrid, Spain, 1 to 5 October 2018. 469 pp. Available at: https://www.iccat.int/Documents/Meetings/Docs/2018/REPORTS/2018_SCRS_REP_ENG.pdf

ICCAT, 2020. Report for biennial period, 2018-2019. PART II (2019) – Vol.2 SCRS. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_18-19_II-2.pdf

ICCAT, 2019f. Report for biennial period, 2018-2019. PART I (2018) – Vol.4 Secretariat Reports. Available at: https://www.iccat.int/Documents/BienRep/REP_TRILINGUAL_18-19_I_4.pdf

ICCAT, 2018e. Report for biennial period, 2016-2017. PART II (2017) – Vol.2 SCRS. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_16-17_II-2.pdf

ICCAT, 2018i. Report for biennial period, 2016-2017. PART II (2017) – Vol.1 COM. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_16-17_II-1.pdf

ICCAT, 2018X. Report for biennial period, 2016-2017. PART I (2017) – Vol.1 COM. Available at: https://www.iccat.int/Documents/BienRep/REP_EN_16-17_II-1.pdf
ICCAT, 2009. Report of the Independent Performance Review of ICCAT. Retrieved from: https://www.iccat.int/en/pubs_spec.html

9 Appendices

9.1 Assessment information

The fishery has not previously undergone a full assessment.

9.1.1 Small-scale fisheries

To help identify small-scale fisheries in the MSC program, the CAB should complete the table below for each Unit of Assessment (UoA). For situations where it is difficult to determine exact percentages, the CAB may use approximations e.g. to the nearest 10%.

N/A as the assessed fleet consists of industrial purse seine fishing vessels operating in the Eastern Atlantic Ocean and varying in length from around 45 m to 80 m (see **Table 5.1.3**); and the fishing area covers both international waters (high seas) as well as the EEZs (exclusive economic zones) of coastal West African states.

9.2 Evaluation processes and techniques

9.2.1 Site visits

The report shall include:

- An itinerary of site visit activities with dates.
- A description of site visit activities, including any locations that were inspected.
- Names of individuals contacted.

Reference(s): FCP v2.1 Section 7.16

9.2.2 Stakeholder participation

The report shall include:

- Details of people interviewed: local residents, representatives of stakeholder organisations including contacts with any regional MSC representatives.
- A description of stakeholder engagement strategy and opportunities available.

Reference(s): FCP v2.1 Section 7.16

The team will consider the stakeholders list included in the pre-assessment for the future site visit.

9.2.3 Evaluation techniques

The report shall include:

- Justification for how public announcements were developed.
- Methodology used, including sample-based means of acquiring a working knowledge of the management operation and sea base.
- Details of the scoring process e.g. group consensus process.
- The decision rule for reaching the final recommendation e.g. aggregate principle-level scores above 80.

If the RBF was used for this assessment, the report shall include:

- The justification for using the RBF, which can be copied from previous RBF announcements, and stakeholder comments on its use.
- The RBF stakeholder consultation strategy to ensure effective participation from a range of stakeholders including any participatory tools used.
- A summary of the information obtained from the stakeholder meetings including the range of opinions.
- The full list of activities and components that have been discussed or evaluated in the assessment, regardless of the final risk-based outcome.

The stakeholder input should be reported in the stakeholder input appendix and incorporated in the rationales directly in the scoring tables.

Reference(s): FCP v2.1 Section 7.16, FCP v2.1 Annex PF Section PF2.1

9.3 Peer Review reports

To be drafted at Public Comment Draft Report

9.4 Stakeholder input

To be drafted at Client and Peer Review Draft Report
To be completed at Public Certification Report

9.5 Conditions – delete if not applicable

To be drafted from Client and Peer Review Draft Report

9.6 Client Action Plan

To be added from Public Comment Draft Report

9.7 Surveillance

To be drafted from Client and Peer Review Draft Report

9.8 Harmonised fishery assessments – delete if not applicable

To be drafted at Announcement Comment Draft Report stage
To be completed at Public Certification Report stage

Harmonisation is required in cases where assessments overlap, or new assessments overlap with pre-existing fisheries.

If relevant, in accordance with FCP v2.1 Annex PB requirements, the report shall describe processes, activities and specific outcomes of efforts to harmonise fishery assessments. The report shall identify the fisheries and Performance Indicators subject to harmonisation.

Reference(s): FCP v2.1 Annex PB

All fisheries operating in the Atlantic and targeting tunas or tuna-like species (and therefore subject to ICCAT management) which have entered an MSC assessment process are listed in **Table 9.8.1**, regardless of whether they are currently certified, withdrawn or exiting.

Table 9.8.1 Other MSC tuna certified or in assessment fisheries operating in the Atlantic.

Fishery	Fishing Method	Geographical area	P1 species	P2 main species	Certification status
Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery	Purse seine	E AT (FAO 34, 47)	YFT	-	Certified
St Helena pole & line and rod & line yellowfin, bigeye, albacore and skipjack tuna	Handlines and pole-lines	SE AT (FAO 47)	YFT, BET, SKJ, ALB	-	Exiting
North Atlantic Albacore Artisanal Fishery	Pole-lines and trolling	NE AT (FAO 27)	ALB	none	Certified
North West Atlantic Canada harpoon swordfish	Harpoons	NW AT (FAO 21)	SWO	none	Certified
North West Atlantic Canada longline swordfish	Longlines	NW AT (FAO 21)	SWO	BET, BFT, BSH	Certified
SSLLC US North Atlantic swordfish Longline	Longlines	NW AT & WCentral AT (FAO 21 & 31)	SWO	YFT, BET, ALB, BFT, SMA, DOL, BSH, BUM, WHM, FAL	Withdrawn
US North Atlantic swordfish, yellowfin, and albacore tuna fishery	Longlines	W Central AT (FAO 31)	SWO, ALB, YFT	BET, BFT, DOL, SMA, BUM, WHM, BSH, BTH, LMA	Certified
Southeast US North Atlantic swordfish	Longlines	W Central AT (FAO 31)	SWO	BET, YFT, ALB, BFT, DOL, SMA, BUM, WHM, SAI, DUS	Withdrawn
North and South Atlantic swordfish Spanish longline fishery	Longlines	E central AT, NEAT, NW AT, SE AT, SW AT (FAO 34, 27, 21, 47, 41, 31)	SWO	BSH, SMA	Withdrawn
ACTEMSA-LEAL SANTOS pole and line West Atlantic skipjack fishery	Pole-lines	SW AT (FAO Area 41)	SKJ	-	Exiting
Usufuku Honten Northeast Atlantic longline bluefin tuna fishery	Longlines	NE AT (FAO 27)	BFT	-	

At the time of writing this ACDR, there are two other certified fisheries with the Atlantic yellowfin tuna assessed under P1: the Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery (assessed also by Bureau Veritas) and the US North Atlantic swordfish, yellowfin, and albacore tuna fishery (assessed by MRAG Americas). Therefore, in accordance with Annex PB3.1 and PB3.2, BV and MRAG-Americas will have to engage in a harmonisation process (**Table 9.8.2**). The scores of the two fisheries with which the current fishery will have to harmonize are shown in **Table 9.8.3**.

The only two fisheries presenting a geographical overlap with the assessed fishery (the Santa Helena tuna fishery and Spanish swordfish longline fishery) were withdrawn from the MSC process (see **Table 9.8.1**). All the other certified fisheries have been assessed against previous versions of the MSC CR.

However, all fisheries listed in **Table 9.8.1** are managed by ICCAT. Therefore, in accordance with PB3.3 it will be necessary to ensure consistency of outcomes in certain P3 PIs.

Table 9.8.2 – Overlapping fisheries

Supporting information	
The two fisheries with which the current fishery will have to harmonize, i.e., the Sant Yago and the US North Atlantic swordfish fishery had the scores for the yellowfin tuna harmonised. The harmonization activities were accomplished both by BV and MRAG Americas in accordance with Annex PB3.1 and PB3.2 and they are explained in detailed in both PCRs. At the moment of drafting this ACDR, the Sant Yago fishery has already undertaken its first surveillance and the report is under process. Both Sant Yago and ANABAC are using the last stock assessment for the YFT and therefore the P1 has been updated. The other fishery, the US North Atantic swordfish fishery, has postponed its surveillance (due to the Covid-19 6 month derogation) that is now scheduled for later on this year. BV has been in contact with this fishery since May 2020 to coordinate a harmonization meeting for the YFT.	
Was either FCP v2.1 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	**Not covered yet**
Date of harmonisation meeting	**Pending**
If applicable, describe the meeting outcome	
Not covered yet.	

Table 9.8.3 – Scoring differences

Performance Indicators (PIs)	Sant Yago TF Unassociated purse seine Atlantic yellowfin tuna fishery	US North Atlantic swordfish	ANABAC Atlantic Unassociated purse seine yellowfin tuna fishery (under assessment)
1.1.1	70	70	**≥80**
1.1.2	90	90 (PI 1.1.3 v1.3)	**NA**
1.2.1	95	95	**≥80**
1.2.2	65	65	**60-79**
1.2.3	80	80	**≥80**
1.2.4	95	90	**≥80**

Table 9.8.4 – Rationale for scoring differences

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.1 Annex PB1.3.6)
PI 1.1.1 score is different because the current ACDR has used the latest (2019) stock assessment and the certified fisheries scores were assessed against the previous stock assessment. The other two Fisheries will update their P1 indicators when closing the condition.
If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination

9.9 Objection Procedure – delete if not applicable

To be added at Public Certification Report stage