



MSC SUSTAINABLE FISHERIES CERTIFICATION

Client Preparation Assessment Report

Echebatar Indian Ocean Purse Seine Skipjack Tuna Fishery

Prepared For: Pesqueras Echebatar S.A

Prepared By: AZTI

- **Fishery Name:** Echebatar Indian Ocean Purse Seine Skipjack Tuna Fishery.
- **Fishery location:** Indian Ocean
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- **Date:** 22 december 2016

ANABAC	Asociación Nacional de Armadores de Buques Atuneros Congeladores
ASAP	Age structured assessment program
ASPM	Age structured production model
AZTI	Spanish (Basque) fisheries research institute
BET	Bigeye tuna
B_{lim}	Limit biomass reference point, below which recruitment is expected to be impaired.
B_{msy}	Biomass achieving maximum sustainable yield
B_{pa}	Precautionary reference point for spawning stock biomass
CEPESCA	Confederación Española de Pesca (Spanish fishing industry federation)
CITES	Convention on International Trade in Endangered Species of Flora and Fauna
CPUE	Catch per unit effort
dFAD	drifting Fish aggregating device
EC	European Commission
EEZ	Exclusive Economic Zone
ETP	Endangered, threatened and protected species
EU	European Union
F	Fishing Mortality
FAD	Fish aggregating device
FAO	Food and Agriculture Organisation of the UN
F_{lim}	Limit reference point for fishing mortality that is expected to drive the stock to the biomass limit
F_{MSY}	Fishing mortality achieving maximum sustainable yield
F_{pa}	Precautionary reference point of fishing mortality expected to maintain the SSB at the precautionary reference point
FAM	MSC's Fisheries Assessment Methodology

FAO	United Nations Food and Agriculture Organisation
HCR	Harvest Control Rule
IOTC	Indian Ocean Tuna Commission
IUU	Illegal, unreported and unregulated fishing
LL	Longline
LME	large marine ecosystem
MCS	Monitoring, Control and Surveillance
MFCL	Multifan-CI (a statistical length based age structured stock model)
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSY	Maximum Sustainable Yield
NGO	Non-Governmental Organisation
OPAGAC	Organización de Productores Asociados de Grandes Atuneros Congeladores
P1	MSC Principle 1
P2	MSC Principle 2
P3	MSC Principle 3
PI	MSC Performance Indicator
PSA	productivity-susceptibility analysis
RBF	MSC's risk based framework
RFMO	Regional Fisheries Management Organisation
SC	Scientific Committee of the Indian Ocean Tuna Commission
SFA	Seychelles Fishing Authority
SI	Scoring Issue (MSC)
SICA	Scale Intensity Consequence Analysis
SKJ	Skipjack tuna
SONAR	Sound navigation and ranging
SSB	Spawning Stock Biomass
SS3	Stock Synthesis 3. Length based stock assessment modeling technique
SWIOP	Development and Management of Fisheries in the Southwest Indian Ocean

TAC	Total Allowable Catch
UoC	Unit of Certification
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel Monitoring System
WPB	Working Party on Billfish
WPEB	IOTC Working Party on Ecosystems and Bycatch
WPTT	IOTC Working Party on Tropical Tunas
WWF	World Wide Fund For Nature
YFT	Yellowfin tuna

1. Description of the Fishery

[Please copy and use a separate table for each species, gear, and area combination, and be specific as possible]

Unit of Assessment	
Species	Skipjack Tuna (<i>Katsuwonus pelamis</i>)
Stock	Indian Ocean Stock
Geographical area	FAO 51 & 57
Harvest method/gear	Purse Seine
Client group	Member vessels of Echebatar Group
Other eligible fishers	Other EU, Seychelles and Mauritius purse seine fishers, catching in the same geographical area, with the same harvest method and target species

1.2. Scope of the fishery in relation to the MSC program

[Please tick each box to indicate whether the fishery is within the scope criteria]

Scope Criteria	Met
The fishery is not seeking to certify amphibians, birds, reptiles, or mammals.	<input checked="" type="checkbox"/>
The fishery does not use poisons or explosives.	<input checked="" type="checkbox"/>
The fishery is not conducted under a controversial unilateral exemption to an international agreement (Clause).	<input checked="" type="checkbox"/>
The client or client group does not include an entity that has been successfully prosecuted for a forced labour violation in the past 2 years.	<input checked="" type="checkbox"/>

The fishery has a mechanism for resolving disputes, or the fishery is not subject to disputes that overwhelm the fishery.



If an enhanced fishery, the fishery meets scope criteria for enhanced fisheries ([Clause](#)).



[Information and references relating to Scope Criteria should be provided here]

The report may include a *brief* overview of the fishery including the following:

- » A summary of basic information about the management operation (e.g. ownership, history, and organisational structure) and the marine/inland area that was evaluated.
- » Species types, management history, fishing practices, historical fishing levels, other resource attributes and constraints.
- » User rights (both legal and customary), the legal/administrative status of the operation and involvement of other entities including responsible government agencies.

Fishery Ownership

1.3.1. Echebastar group

The client for this certification is Pesqueras Echebastar S.A. The assessment includes the catches of vessels owned and operated by Echebastar fleet (Spanish fleet) and Hartswater Limited (Seychelles fleet). Pesqueras Echebastar S.A. wholly owns both companies and the certification applies to Pesqueras Echebastar.

Pesqueras Echebastar is a family company that has been fishing tuna since 1967. The Echebastar name comprises elements of three Bermeo based Basque founding family names (Echebarria, Astorkiza and Arrien). The company headquarters are in Bermeo, a small village on the Basque coast of the Iberian Peninsula where the major part of the Spanish owned distant water tuna fleet is established.

History of the Fishery

Pesqueras Echebastar is a family company that has been fishing tuna since 1967. Initial operations were in the Atlantic Ocean, however due to increased competition for resources in that ocean, Pesqueras Echebastar first commenced operations in the Indian Ocean in 1981, shortly after the first French vessels arrived in the area. Since that time it has devolved itself from any operations in the Atlantic Ocean and nowadays all of its tuna purse seine activities take place in the Indian Ocean. In present days, Echebastar vessels only fish for tunas using purse seine fishing methods. In the early days, purse seine sets were made on freeschools of moving tunas and schools associated with natural floating objects such as logs, as well as schools associated with whales. These sets yielded catches of mainly yellowfin but also with some skipjack and bigeye bycatch.

During the early 1990's, the first drifting Fish Aggregating Devices (FADs) were introduced in the Indian Ocean industrial tuna fisheries. Since that time, the use of FADs in the purse seine fishery has become extensive and catches of tunas associated with whales, floating objects and FADs now account for in excess of 80% of skipjack catches, as well as the majority of yellowfin and bigeye catches.

Despite the development of the FAD based fishery, Echebastar vessels still catch significant quantities of fish by targeting freeschools of tuna – those not associated with FADs or other floating objects including logs and/or whales. The present assessment report relates to Echebastars all purse seiner activity including freeschool fishery and FAD based operations (including natural logs).

For year 2013, the total registered fish hold capacity of the Echebastar Group vessels (Spanish and Seychellois registered) was 10,200t and this capacity is fixed by governments in both jurisdictions. This represents a reduction in capacity of 25% between 2003-2015. Echebastar has carried out a major fleet renewal programme with three new purpose built tuna purse seine vessels that entered in service between 2012 and 2015. The old vessels were sold off to make way for new vessels and there is not an increase in capacity as a result of fleet renewal, but to a reduction.

Organisational Structure

Pesqueras Echebatar S.A is a family owned business based in the Basque region of northern Spain. Pesqueras Echebatar owns two vessels included in the assessment certification. A second company Hartswater Limited is based in the Seychelles and is wholly owned by Pesqueras Echebatar with three vessels.

Pesqueras Echebatar is managed by a board comprising five people, all of whom are members of one or other of the original founding families. Mr Kepa Etxebarria Elizondo – is the Apoderado (Chief Executive) and has been so since 2002.

Pesqueas Echebatar is a member of ANABAC – the Spanish National Association of Tuna Freezer vessels Ship owners. ANABACS mission is to defend the interests of the Basque tuna freezer purse seine fleet, as well as the sustainability of the species caught. ANABAC is comprised of 5 companies located in Bermeo. Currently, a total of 28 vessels are associated to ANABAC and their activity is carried out in the tropical waters of the Atlantic Ocean (in the area of the Gulf of Guinea) and the Indian Ocean (from the East coast of Africa to the Chagos Islands). ANABAC in turn is a member of CEPESCA – the Spanish fishing industry federation.

As the fleet comprises distant water factory processing vessels that engage in extended fishing trips, Echebatar group maintain shore based support staff who are responsible for various aspects of the companies functioning, including sales and marketing, finance and accounting, negotiation and development of fishing opportunities as well as vessel operations management. Part of routine procedures includes on-going maintenance and updating of operational records and essential documentation that is associated with operating a compliant distant water fleet.

Management normally meet the vessel during the landing events that may take place every four to six weeks in Port Victoria, (Seychelles). During the fishing season on-going commitments with respect to operational procedures, legal obligations, health and safety and product quality are fulfilled. Other management functions such as ensuring that technical support and backup is provided, that any changes to fishing rules are captured and implemented by on-board management systems are also facilitated during regular on-board meetings between managers and vessel masters and skippers. Regular communication is maintained via satellite, email and telephone communications during fishing trips.

On-board vessel management is provided by a vessel master who is responsible for all aspects of compliance and safety and who has overall responsibility - and command - of the ship. A separate fishing skipper normally oversees fishing operations while there is also a processing manager or supervisor who is in charge of fish processing operations on-board.

Area Under Evaluation

The fisheries take place entirely within the Indian Ocean, within FAO areas 51 and 57. Most of the catches emanate from activities carried out in FAO area 51 (western Indian Ocean).

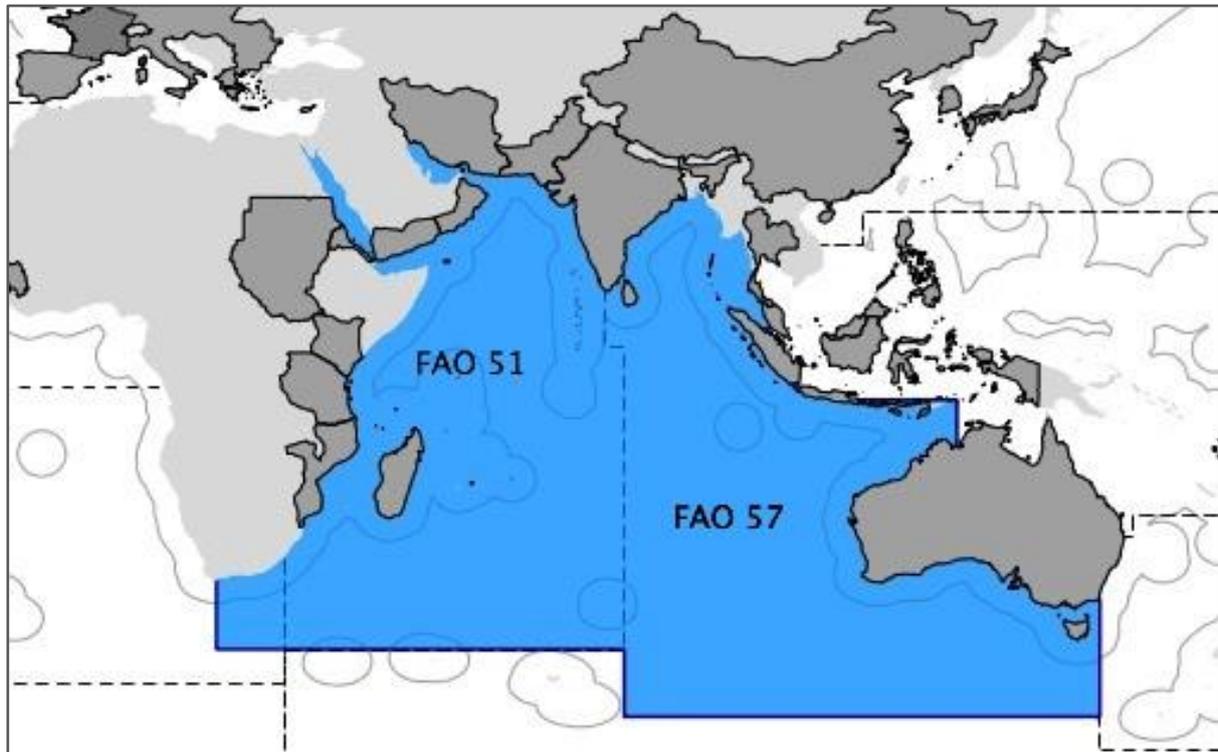


Figure 1. FAO statistical areas of the Indian Ocean

Species and Fishing Practice

Species type/s

The target species for the fishery under certification is skipjack tuna (*Katsuwonus pelamis*). Further information in relation to the biology of this species is given in the section covering Principle 1. As indicated initially, this report does not intend to provide a scientifically comprehensive description of the species. Interested readers should refer to sources that have been useful in compiling the following summary description of the species.

These include:

- www.fishbase.org
- <http://www.fao.org/fishery/species/2494/en>

Management History

Recent management of highly migratory stocks in the Indian Ocean is agreed and implemented through the Regional Fisheries Management Organisation (RFMO) in the area of competence, which in this case is the Indian Ocean Tuna Commission (IOTC). Nearly all tuna fishing nations in the Indian Ocean are contracting parties to the IOTC, including the EU and Seychelles, to which this fishery belongs. The IOTC conducts a scientific assessment of the key tuna stocks every year or every other year (depending on priorities and data availability), and holds an annual plenary meeting where management decisions are taken. Implementation of these decisions is the responsibility of member nations. In this case the EU, and either Spain and/or the Seychelles must transpose IOTC agreed management measures into legally enforceable regulations for their respective fleets.

The IOTC was established in 1993 at the 105th Session of the Council of the Food and Agriculture Organization of the United Nations (FAO) under Article XIV of the FAO constitution. The IOTC Members can make decisions concerning the management of tuna and tuna-like resources, and their associated environment, that are binding on all Members and Co-operating non-Contracting Parties (CCPs). The

Agreement was signed on November 25th 1993 and entered into force on March 27th 1996. The Financial Regulations of the IOTC were adopted at the organisation's First Special Session, held in Rome on March 21-24, 1997 and the IOTC Rules of Procedure were adopted at the Second Special Session, held in Victoria, Seychelles, on 22-25 September, 1997 (and updated in June 2014). Following the decision of the Members at the First Session, the Secretariat was established in Victoria, Republic of Seychelles, and became operational in January 1998.

Membership of IOTC is open to Indian Ocean coastal countries and to countries or regional economic integration organisations that are members of the UN or one of its specialised agencies, and are fishing for tuna in the Indian Ocean. There are currently 32 members, the majority of which are Nation States, although the interests of the European Indian Ocean tuna fleet are represented directly through the European Union.

Fishing Practices

Before 1979 tuna was fished in the Indian Ocean mainly with longlines and pole and lines, but purse seining for tuna expanded considerably during the first half of the 1980s. The bulk of the catch is composed of more or less equal amounts of yellowfin and skipjack tuna. A large proportion of the catch is taken by vessels from outside the region.

Pesqueras Echebatar utilises purse seine gears exclusively to catch target stocks of tuna. The majority of catches result from purse seine sets that are associated with floating objects including both natural objects (e.g. logs) and artificial devices (FADs). These object associated purse seine technique account for the great majority (approaching 80%) of the overall catch of PS tunas – especially of skipjack tuna, which are otherwise difficult to catch by purse seine. In order to ensure that fishing using FADs remains efficient, it is common practice in the Indian Ocean nowadays for tuna fleets to maintain a vessel at sea exclusively for the purposes of deploying, maintaining and retrieving FADs.

The present report considers also Pesquera Echebatar's fishery for skipjack tuna that is based on freeschool sets with purse seine gears. Freeschool sets are those that are made on schools of tuna that are not associated with anything else. Unassociated sets are specifically those that are not made on oceanic within several nautical miles of natural or artificial floating objects (FADs).

In order to locate suitable schools of fish to set upon, tuna seiners typically use look-outs based in a 'crows-nest' high above the water, to scan the waters for signs of tuna activity, indicated most frequently by ocean surface seabird activity. However vessels may also employ sensitive and sophisticated radar that is capable of detecting seabird activity at greater distances or during inclement weather or poor visibility, to aid in locating schools of tuna. Vessels also receive data in relation to oceanographic conditions (especially temperature and the location of ocean fronts) often from satellite derived sensing data to indicate likely discontinuities in ocean surface conditions. The association between tunas and ocean fronts is well known and the vessels use information in order to locate and remain with such ocean fronts.. A detailed account of the tuna purse seining process is available at <http://www.fao.org/fishery/fishtech/40/en> (FAO fishing practice description for tuna purse seining).

Table 1. List of Pesqueras Echebatar member vessels.

Name	Ownership	Registry	Vessel Reg. No.
Alakrana	ECHEBASTAR FLEET S.L.	Spain	3 ^a BI-2-1-05
Elai Alai	ECHEBASTAR FLEET S.L.	Spain	BI-2-1-93
Euskadi Alai	HARTWATER LIMITED (COMPANY NO. 006342)	Seychellois	SC/FV/033
Jai Alai	HARTWATER LIMITED (COMPANY NO. 006342)	Seychellois	SC/FV/030
Izaro	HARTWATER LIMITED (COMPANY NO. 006342)	Seychellois	SC/FV/026

There are five vessels in Echebatar group. All vessels are large (75m+) ocean going purse seine vessels. Vessels are equipped for handling purse seine ear and for storing catches in super chilled sea water brine at temperatures down to -60C. Vessels may stay at sea for up to 30 days. All landings are made into Port Victoria, Seychelles and very occasionally fish may be landed into Spain directly when vessels may return for maintenance. Otherwise, vessels remain in the Indian Ocean and are based out of Port Victoria. Vessels are not equipped for processing at sea.

Historical Fishing Levels

In terms of Echebatar group, catch levels for the last four years are summarized in tables below for all sets combined.

Table 2. Catch levels in tons for year 2012 of all Echebatar Group vessels.

Vessel	ALB	YFT	BET	SKJ	Total by species
Alakrana	24	7.345	886	2.881	11.136
Campolibre Alai	23	3.635	725	2.134	6.517
Demiku	9	3.462	534	1.232	5.237
Elai Alai	2	3.476	503	1.757	5.737
Erroxape	18	4.743	496	2.206	7.462
Xixili	1	1.874	238	1.335	3.449
Total all sets	77	24.535	3.383	11.544	39.538

Table 3. Catch levels in tons for year 2013 of all Echebatar Group vessels.

Vessel	ALB	YFT	BET	SKJ	Total by species
Alakrana	17	8.233	1.520	5.203	14.973
Campolibre Alai	0	3.737	532	2.548	6.817
Demiku	21	4.150	800	2.679	7.650
Elai Alai	2	4.078	768	2.457	7.304
Erroxape	8	4.657	488	1.967	7.120
Xixili	0	0	0	0	0
Total all sets	47	24.855	4.107	14.854	43.864

Table 4. Catch levels in tons for year 2014 of all Echebatar Group vessels.

Vessel	ALB	YFT	BET	SKJ	Total by species
Alakrana	33	5.159	786	4.126	10.104
Campolibre Alai	0	3.904	796	3.585	8.285
Demiku	1	1.731	211	1.499	3.442
Elai Alai	0	3.304	577	2.990	6.872
Izaro	0	2.831	365	1.702	4.899
Total all sets	34	16.930	2.736	13.903	33.602

Table 5. Catch levels in tons for year 2015 of all Echebatar Group vessels.

Vessel	ALB	YFT	BET	SKJ	Total by species
Alakrana	10	5.005	769	4.302	10.086
Campolibre Alai	22	1.580	460	2.569	4.631
Elai Alai	3	2.134	278	2.090	4.505
Euskadi Alai	1	1.405	79	696	2.181
Izaro	23	3.694	501	3.624	7.842
Jai Alai	1	2.818	227	1.983	5.029
Total all sets	61	16.635	2.314	15.263	34.274

1.3.2. Other eligible fishers

Other EU, Seychelles and Mauritius purse seiner fishers targeting skipjack in the Indian Ocean with the same target method.

2. Harmonisation

If relevant, the Client Preparation Assessment Report should identify any overlapping fisheries on Principle 1 stocks that are currently in assessment or certified. Overlapping fisheries are those that have assessed Principle 1 on the same stock ([see Annex B of the pilot simplification process for more detail](#)).

For the purposes of the Simplification Pilots, the Principle 1 results used may be taken from the most recent fishery assessment available. The initial assessment report and any surveillance re-scoring of this 'first mover' fishery may be used to indicate scoring ranges in evaluation of this fishery. Where the Principle 1 scores of another fishery are used to indicate scoring ranges in this assessment, indicate which fishery they are taken from here, and provide links to relevant reports if applicable.

If different scores are used, i.e. Principle 1 is scored as normal, please indicate that this is the case here.

2.1.1. Pole and Line Skipjack Fishery in the Maldives

The stock to be certified is the Indian Ocean Skipjack tuna. At the time of writing, one MSC fisheries assessment had already been completed that overlaps on Principle 1, where overlapping fisheries means those that have assessed Principle 1 on the same stock. The fishery is "Pole and Line Skipjack Fishery in the Maldives" certified in November 2012.

Completed assessments:

- Pole and Line Skipjack Fishery in the Maldives. Certified in November 2012.

<https://fisheries.msc.org/en/fisheries/maldives-pole-line-tuna/@@assessments>

For the purposes of the Simplification Pilots, the Principle 1 results used may be taken from the most recent fishery assessment available. Therefore, the most recent assessment for this fishery is the 3rd audit surveillance report, published in april 2016.

Audit reports:

- Surveillance NO. 3 Report for the Maldives pole & line skipjack and yellowfin tuna fisheries.

<https://fisheries.msc.org/en/fisheries/maldives-pole-line-tuna/@@assessments>

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This is Skipjack tuna stock status summary of the report mentioned above:

The scores of Principle 1 from “Pole and Line Skipjack Fishery in the Maldives” certified fishery are used to indicate scoring ranges in this assessment. The links to relevant assessment and audit reports are provided above. The summary of scores for Principle 1 is shown in Table 6

Table 6. Summary of Assessment Conditions for Skipjack Unit of Certification.

Condition number	Performance indicator (PI)	Status	PI original score	PI revised score
1	1.1.2 (SKJ)	Behind target	65	75
2	1.2.2 (SKJ)	On target	60	Not revised
3	1.2.3 (SKJ)	Closed	75	80

These formed an important background resource for the assessment team - collating and reporting on available stock and fishery information, as well as highlighting areas of stakeholder and assessment team concerns.

2.1.2. Echebatar Indian Ocean Purse Seine Skipjack, Yellowfin and Bigeye Tuna Fishery

In additions to the previous information, “Echebatar Indian Ocean Purse Seine Skipjack Tuna Fishery” completed the MSC certification procces despite not obtaining the certification in March 2015. In that case, the fishery was “Echebatar Indian Ocean Purse Seine Skipjack, Yellowfin and Bigeye Tuna Fishery”. The links to the assessment reports is provided below.

Completed assessments:

https://fisheries.msc.org/en/fisheries/echebatar-indian-ocean-purse-seine-skipjack-yellowfin-and-bigeye-tuna/@_@assessments

In that fishery, the target species of one Unit of Certificaciones was Skipjack tuna. So, there are also scores for Principle 1 for the skipjack tuna in this report.

The summary of scores of Principle 1 from “Echebatar Indian Ocean Purse Seine Skipjack, Yellowfin and Bigeye Tuna Fishery” fishery are shown in Table 7.

Table 7. Final scores by performance indicator.

PI No.	Performance Indicator (PI)	YFT	SKJ	BET
1.1.1	Stock status	100	100	100
1.1.2	Reference points	75	75	75
1.1.3	Stock rebuilding	NA	NA	NA
1.2.1	Harvest strategy	80	80	80
1.2.2	Harvest control rules & tools	60	60	60
1.2.3	Information & monitoring	80	80	80
1.2.4	Assessment of stock status	90	85	80

Analyzing the scoring obtained for Skipjack tuna in Echebatar fishery, they were very similar to the scores from the certified “Pole and Line Skipjack Fishery in the Maldives”.

The scores of Principle 1 from “Pole and Line Skipjack Fishery in the Maldives” certified fishery will be used to indicate scoring changes in this assessment. In addition, the information regarding “Echebatar Indian Ocean Purse Seine Skipjack Tuna Fishery” could be used also as complementary information.

2.1.3 Harmonization Conclusion

3. Traceability (issues relevant to MSC Chain of Custody Certification)

Catches are not sorted on the vessel as they are mechanically loaded into large storage tanks filled with super chilled brine. Catches remain in the brine solution within tanks until they are unloaded in port. Accurate recording of the species mix entering each tank is therefore not possible during the fishing operation or while the vessel is at sea. In order to provide accurate breakdowns of catches, sorting and subsampling is conducted at discharge. In this context, catches are sorted by species as they are removed from tanks. Thereafter they are weighed and accurate catch data by stock is generated. Officers from the Seychelles Fishing Authority (SFA) also subsample catches from all landing events in order to verify the catch breakdown by species component. Inspection and subsampling of catches take place on all vessels discharging into Port Victoria, irrespective of flag. Pesquera Echebstar catch reporting records indeed separated and are reported by species to the national authorities in compliance with EU/Spanish and SFA and IOTC requirements. Echebstar tuna purse seine operations are deemed adequate to ensure fish is caught in a legal manner and is accurately recorded.

The Traceability can be verified by:

- Catch by species and geographical area is estimated during loading and is corded in terms of the holding tank into which it is placed.
- Information in relation to the type of set from which the catch is made is recorded for each set
- The tank into which individual catches are loaded is corded
- No at sea transshipment of catches takes place
- All transshipments takes place in Port Victoria, Seychelles
- All transshipment are witnessed by SFA inspectors
- Catches are sorted by species during unloading and reporting of catch quantities is based on final weights for each species from unloading
- There is accurate catch recording and reporting based on use of electronic log books (Spanish and Seychellois)
- There is 100% inspections of landings in the Seychelles by SFA officers. Port state sampling is implemented on all catches in order to verify the breakdown by tuna species.
- Logbook entries are regularly inspected and cross-checked on completion of in port landings species reporting verification by SFA
- Additional Pesquera Echebstar catch logbooks are also maintained and provide a further means of cross checking landed catches
- Verified landings data are used for official monitoring of catches and national statistics
- Good cooperation between EU and Spanish regulatory and enforcement authorities and the Seychelles Fishing Authority
- An appropriate level of inspection of landings prior to unloading. Officially calibrated weighing systems of landing. Periodic inspection of the entire unloading process.
- All Pesqueras Echebstar vessels use VMS and fleet operations are monitored from FMC in Madrid and by other Coastal States when operating within their EEZ through fishery agreements.
- Additionally Pesqueras Echebstar has obtained the "Traceability Certification" issued by DNV Thisa certification which is yearly audited by DNV.

Factor	Response
<p>Will the fishery use gears that aren't part of the Unit of Certification?</p> <ul style="list-style-type: none"> - If so, please describe whether this would occur on the same trip, same vessels, or during the same season? 	<p>The fishery do not use gears that aren't part of the Unit of Certification. The fishery capture all its catches with purse seiner set on free-swimming schools and purse seiner associated with FADs.</p>
<p>Will vessels in the Unit of Certification (UoC) also fish outside the UoC geographic area?</p> <ul style="list-style-type: none"> - If so, does this occur on the same trip? 	<p>Vessels in the Unit of Certification only fish in UoC geographic area. There are no other stocks of skipjack in the Indian Ocean.</p>
<p>Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fisheries certificate? This refers to both at-sea and on-land activities. Please respond to each factor.</p> <ul style="list-style-type: none"> a. Transport; b. Storage; c. Processing; d. Landing; or, e. Auction. 	<p>The fishery client handle non-certified products during the fishing sets. This fishery yields mainly yellowfin, skipjack, bigeye, albacore and smaller tunas such as frigate and little tuna mixed in with the catch that is taken aboard. However, there is not potential chain of custody risk because SFA officers inspect 100% of landings in order to verify the breakdown by tuna species.</p> <p>Transport and storage Catches are not sorted on the vessel as they are mechanically loaded into large storage tanks filled with super chilled brine. Catches remain in the brine solution within tanks until they are unloaded in port. Accurate recording of the species mix entering each tank is therefore not possible during the fishing operation or while the vessel is at sea</p> <p>Processing There is no at sea processing and vessels are not equipped to undertake any processing. Practically all tuna is landed round frozen. All skipjack is landed round. Small amounts of sashimi grade yellowfin, skipjack and bigeye tuna be landed gutted, bled and head off.</p> <p>Landing In order to provide accurate breakdowns of catches, sorting and subsampling is conducted at discharge. Catches are sorted by species as they are removed from tanks. Thereafter they are weighed and accurate catch data by stock is generated. SFA Officers also subsample catches from all landing events in order to verify the catch breakdown by species component. Inspection and subsampling of catches takes place on all vessels discharging into Port Victoria, irrespective of flag. Pesquera Echebatar catch reporting records indicate that catches are indeed separated and reported by species to national authorities in compliance with EU/Spanish/ and SFA and IOTC requirements.</p> <p>Auction</p>

Once fish is unloaded at Port Victoria it may enter local tuna processing facilities that are not owned or operated by Pesquera Echebatar or significant quantities (mainly skipjack) may be transhipped directly from Pesqueras Echebatar vessels to reefers for onward transport to processors at other locations around the Indian Ocean.

Does transhipment occur within the fishery?

- ? If so, is it at-sea, in port, or both? Would the transhipment vessel handle product from outside the Unit of Certification?

Transhipment mostly of (skipjack tuna) takes place in Port Victoria. However, there is not any potential risk because during transhipment, unloading/loading is witnessed and supervised by SFA inspectors. Transhipment takes place directly from purse seine vessel to reefers, from where fish is transported to final destinations. All transhipped loads are verifiable by species and quantity and no transhipment takes place at sea or without the presence of SFA inspectors.

Are there any other risks of mixing or substitution between certified and non-certified fish)?

There are no other stocks of skipjack tuna in the Indian Ocean, and although Pesqueras Echebatar also catch small quantities of albacore tuna and these may be at risk of being mixed in with other species, the SFA inspectors verified the species of all landings.

Provide any references of supporting information here.

4. Self-assessment of Fishery

4.1 Details

Standard Version

Version of Fisheries Standard used for this assessment.

Fisheries Standard v2.0

4.2. Evaluation of the fishery

4.2.1. Likely scoring levels

The Client Preparation Preparation Assessment Report shall include a completed version of Table 1 for all Performance Indicators that are assessed. The likely scoring level shall be completed using the key below.

Definition of scoring	Score colour shading	Instructions for 'Likely Scoring Level' column
Information suggests fishery is not likely to meet the SG60 scoring issues.	Fail (<60)	Add either text (pass/pass with condition/fail) or the numerical range ($<60/60-79/\geq 80$) appropriate to the estimated outcome to the cell. Shade the cell of each PI evaluation table with the colour which represents the estimated PI score.
Information suggests fishery will reach SG60 but may not meet all of the scoring issues at SG80. A condition may therefore be needed.	Pass with Condition (60-79)	
Information suggests fishery is likely to exceed SG80 resulting in an unconditional pass for this PI. Fishery may meet one or more scoring issues at SG100 level.	Pass (≥ 80)	

Table 1. Overview of likely scoring levels per Performance Indicator

Principle	Performance Indicator	Likely Scoring Level
Principle 1 Sustainable fish stocks	1.1.1	Pass (≥80)
	1.1.2	Not Assessed
	1.2.1	Pass (≥80)
	1.2.2	Pass (≥80)
	1.2.3	Pass (≥80)
	1.2.4	Pass (≥80)
	Number of PIs under 60	0
Principle 2 Minimising environmental impacts	2.1.1	Pass (≥80)
	2.1.2	Pass (≥80)
	2.1.3	Pass (≥80)
	2.2.1	Pass (≥80)
	2.2.2	Pass (≥80)
	2.2.3	Pass (≥80)
	2.3.1	Pass (≥80)
	2.3.2	Pass (≥80)
	2.3.3	Pass with Condition (60-79)
	2.4.1	Pass (≥80)
	2.4.2	Pass (≥80)
	2.4.3	Pass (≥80)
	2.5.1	Pass (≥80)
	2.5.2	Pass (≥80)
	2.5.3	Pass (≥80)
	Number of PIs under 60	0
Principle 3 Effective management	3.1.1	Pass (≥80)
	3.1.2	Pass (≥80)
	3.1.3	Pass (≥80)
	3.2.1	Pass (≥80)
	3.2.2	Pass (≥80)
	3.2.3	Pass (≥80)
	3.2.4	Pass (≥80)

Number of PIs under 60	0
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0

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
b	Stock status in relation to achievement of 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	Yes
Discussion	<p><u>a-SG60</u>: Steepness of the Beverton-Holt stock-recruitment curve provides an indication of recruitment compensation for a given spawning stock size. Given the stock assessment of Sarma <i>et al.</i> assuming Beverton-Holt stock-recruit dynamics, with various values of steepness (0.7, 0.8 and 0.9) and spawning biomass proportional to the total biomass of mature SKJ, it can be concluded that it is highly likely that the stock is above the point where recruitment would be impaired. For SKJ, steepness is considered to be high (>0.75) giving a strong indication that this species is capable of this sort of recruitment compensation.</p> <p><u>a-SG80</u>: An initial stock assessment was conducted in 2011 using Stock Synthesis 3 (SS3) suggested that the stock was not overfished (SSB2009/SB =1.61 with estimates ranging from 1.47 to 1.78) and overfishing was not occurring (F2009/FMSY=0.84 with estimates ranging from 0.63 to 1.10). Spawning stock biomass in 2009 was estimated to be 35% (31–38%) of the unfished levels. Previous estimates of total and spawning stock biomass showed a marked decrease over the last decade, accelerated by high catches in the period 2003–2006. Recent reductions in effort and, hence, catches have halted the decline. Thus it is considered that the stock is highly likely to be above the point where recruitment would be impaired – the default value for this being around 50% of the BMSY level.</p> <p><u>a-SG100</u>: Concerning the target stock level, both SB2013/SB1950 (=SB0) = 0.58 [0.53 – 0.62] and SB2013/SBMSY = 1.59 [1.13– 2.14] have been determined. Resolution 15/10 provides that SBLIM = 0.40 SBMSY or a SBLIM = 0.2 SB0 of 0.20 when MSY reference points could not be estimated robustly. Noting CB2.3.3.4, a value of 0.20 might be more prudent, the base case median estimate of SB relative to its unfished state is 0.58 [0.53 - 0.62], where even the lower 95% confidence bound is well above the default value of 0.20. Similarly, the base case median estimate of SB relative to its SBMSY is 1.59 (1.13-2.14) is well above the SBLIM (0.40 SBMSY). Therefore, taking account of the uncertainty associated with the base case status estimates, there is a high degree of certainty (i.e. greater than 95%, as set out in MSC CR CB2.2.1.3) that the stock is above the point where recruitment would be impaired – the default value for this being around 50% of the BMSY level. This meets SG100.</p> <p><u>b-SG80-100</u>: The current estimate of SB2013/SBMSY is 1.59 [1.13– 2.14]. Based on the SS3 assessment, there is a low risk of exceeding MSY-based reference points in the next 10 years if catches are maintained at 2013 levels of 425,000 tons (1 % risk that SB2016 or 2023 < SBMSY and 1% risk that F2016 or 2023>FMSY). Hence there is a “high degree of certainty” that the stock has been above the MSY reference points in recent years. Thus, this meets SG100.</p>			
References	<ul style="list-style-type: none"> Report of the 18th Session of the IOTC Working Party on Tropical Tunas. IOTC-2016-WPTT18-R[E]. Sharma R, Herrera M. 2014. Indian Ocean Skipjack Tuna Stock Assessment 1950-2013 (Stock Synthesis). IOTC–2014–WPTT16–43 Rev_1. 			
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)		Pass (≥80)		

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?	Don't Know		Don't Know
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?	Are criteria met? (Yes, No)	Are criteria met? (Yes, No)	Are criteria met? (Yes, No)
Discussion	The stock is not depleted therefore this PI is not evaluated			
References	List any references here, including hyperlinks to publically-available documents.			
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)			Not Assessed	

PI 1.2.1

There is a robust and precautionary harvest strategy in place

Scoring Issue	SG 60	SG 80	SG 100	
Harvest strategy design				
a	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
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	Yes
Harvest strategy monitoring				
c	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		
Harvest strategy review				
d	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Yes
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?	Not Relevant	Not Relevant	Yes
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?	Don't Know	Don't Know	Don't Know

discussion	<p><u>a-SG60</u>: Article V of the IOC Agreement outlines the objective, functions and responsibilities of the Commission. The Commission shall promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks. The IOC adopts, in accordance with Article IX and on the basis of scientific evidence, conservation and management measures, to ensure the conservation of the stocks covered by the Agreement and to promote the objective of their optimum utilization throughout the Area.</p> <p>In the previous years, the need for a defined harvest strategy for skipjack has not been established as the stock has consistently been regarded as being well above limit and target reference points, and WPTT expect this to continue as long as catches do not exceed Cmsy. The inferred HS is for the stock to be maintained at or above SSB MSY. The HS is responsive to the current state of the stock and is designed to achieve stock management objectives reflected in MSY reference points as adopted in Resolution 15/10 on Interim target and limit reference points including those for skipjack.</p> <p>However, in 2016 Harvest Control Rules for skipjack has been adopted in IOTC Resolution 16/02.</p> <p><u>a-SG80</u>: The performance of IOTC's harvest strategy for skipjack tuna is evaluated through annual monitoring of the fisheries involved, and evidence exists to show that it is achieving its objectives, although data presented to the WPTT. A full stock assessment was carried out in 2014 that indicated that the aggregate IO population appears to be moderately depleted, with a very low probability that MSY reference points are currently being exceeded. Therefore the harvest strategy is responsive to the state of the stock.</p> <p><u>a-SG100</u>: The resolution 15/10 on target and limit reference points as well as Resolution 16/02 on Skipjack Harvest Control Rules are designed to maintain and achieve stock management objectives reflected in the IOTC mandate.</p> <p><u>b-SG80</u>: Until the year 2015 a HS have not been formally defined at the fishery level. However, the <i>de facto</i> strategy being used was to maintain the stock above B MSY. For IO SKJ there is a high probability that this has been achieved.</p> <p><u>b-SG100</u>: However, since the last assessment of skipjack in 2014 different Harvest Control Rules has been tested through Management Strategy Evaluation to test the robustness of the HCR to the most important uncertainty as agreed by the WPTT and WP on Methods (see IOTC WPTT and WPM 2015 and 2016 reports as well as Nokome and Adam, 2016). The adopted HCR on Resoltuion 16/02 has been, therefore, tested through MSE to be robust to different uncertainty with the objective to maintain the stock above Bmsy reference levels to achieve IOTC Convention objectives as stated in Resolution 15/10 on target and limit reference points and a decision framework.</p> <p><u>c-SG60</u>: Until year 2016, the work of the WPTT provides clear evidence that monitoring of this stock is adequate to determine whether the harvest strategy is working. The different parts of the strategy include maintaining both B>BMSY and F<FMSY. Data are collected to estimate these quantities and updates and assessments conducted. The latter reports best estimates of biomass, which indicates whether management is achieving its objectives or not. Resolution 16/02 on SKJ HCR will be first applied with the assessment of 2017 to set the quotas for 2018 and the Resolution 16/02 establishes that the HCR should be reviewed throught MSE in 5 years no later than 2021.</p>		
References	<ul style="list-style-type: none"> • IOTC RES 12/01, IOTC RES 13/10, IOTC-SC15-R[E], IOTC-WPTT14-R[E]. • Nokome Bentley and M. Shiham Adam. 2016. Management strategy evaluation for the Indian Ocean skipjack tuna fishery. • Resolution 15/10 on interim target and limit reference points and a decisión framework. • Resolution 16/02 on harvest control rules for skipjack tuna in the iotc area of competence. • Sharma R, Herrera M. 2014. Indian Ocean Skipjack Tuna Stock Assessment 1950-2013 (Stock Synthesis). IOTC–2014–WPTT16–43 Rev_1. • 2015 and 2016 IOTC WPTT meeting reports. • 2015 and 2016 IOTC WPMETHODS meeting reports. 		
<table border="0" style="width: 100%;"> <tr> <td style="background-color: #0056b3; color: white; padding: 5px;">Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)</td> <td style="padding: 5px; text-align: right;">Pass (≥80)</td> </tr> </table>		Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)		

PI 1.2.2

There are well defined and effective harvest control rules (HCRs) in place

Scoring Issue	SG 60	SG 80	SG 100	
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Yes	Yes	Yes
b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		Yes	Yes
c	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	Yes	No
Discussion	<p><u>a-SG100</u>: IOTC Res 15/10 on Interim Target and Limit reference points and a decision framework and Resolution 16/02 on Harvest Control Rules for SKJ in IOTC are designed 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. The HCRs approved in Res 16/02 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.</p> <p><u>b-SG100</u>: The HCRs designed (Res 16/02) are likely to be robust to the main uncertainties as agreed by WPTT and WPMETHODS such as steepness, different mortality vectors, etc.... including the ecological role of the target species.</p> <p><u>c-SG80</u>: Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs agreed by The Indian Ocean Tuna Commission as could be inferred from the example of Yellowfin Recovery Plan adopted in Resolution 16/01. Moreover, the catch of SKJ in the last 8 years has not exceeded the MSY level.</p>			
References	<ul style="list-style-type: none"> Nokome Bentley and M. Shiham Adam. 2016. Management strategy evaluation for the Indian Ocean skipjack tuna fishery. Resolution 16/01 on YFT recovery. Review of the statistical data and fishery available at IOTC. http://www.iotc.org/sites/default/files/documents/2016/11/IOTC-2016-WPDCS12-07_Rev1_-_Data_collection.pdf. 			
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)			Pass (≥80)	

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 is 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	Yes
b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes	Yes
c	Comprehensiveness of information			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		Yes	
Discussion	<p><u>a-SG60-SG80-SG100:</u> Skipjack data in the Indian Ocean are comprehensive, informative and relevant. These data consider (a) stock structure, (c) fleet composition (d) stock abundance (mainly standardised CPUE series) (e) fishery removals, and (f) other data and provide information on the spatial distribution of catches, their size frequencies, results of tagging studies as well as growth, maturity and fecundity, and mortality models. The data are adequate to allow appropriate stock assessments and to evaluate the status of the stock against target and limit reference points. In addition environmental data are used in CPUE standardization and to help explain recruitment. Stock structure data while limited are consistent with an Indian Ocean-wide stock. Moreover, an IOTC Stock Structure Project dealing with the Stock Structure analysis using genetic and otolith microchemistry markers will start on 2017 focused on several IOTC species including Skipjack. Overall, data are adequate for stock assessment and for an appropriate harvest control rule, and thus meet the SG80.</p> <p>However, despite the best efforts of the IOTC secretariat it remains the case that i) issues remain with some of the catch data estimated by IOTC Secretariat and ii) there are information gaps such that it cannot be concluded that this information constitutes a comprehensive range of information. Consequently the data do not presently allow the implied harvest control rule to be applied with a high degree of</p>			

certainty, so the SG100 is not met.

b-SG60-SG80: IOTC has put considerable effort into the reporting and recording of catches by the contracting parties. These are summarised in the following resolutions:

- Resolution 10/08 Concerning a record of active vessels fishing for tunas and swordfish in the IOTC area.
- Resolution 11/04 On a regional observer scheme.
- Resolution 15/01 On the recording of catch and effort data by fishing vessels in the IOTC area of competence.
- Resolution 15/02 Mandatory statistical requirements for IOTC Members & Cooperating Non-Contracting Parties.
- Resolution 15/03 On the vessel monitoring system (VMS) programme 10/09 Concerning the functions of the Compliance Committee.
- Resolution 15/11 On the implementation of a limitation of fishing capacity of contracting parties and cooperating non-contracting parties.
- Resolution 16/10 To promote implementation of IOTC Conservation and Management Measures.
- Resolution 16/11 On Port state measures to prevent, deter and eliminate illegal, unreported and unregulated fishing.

The IOTC secretariat puts effort into considering any issues identified relating to the statistics of tropical tunas. This list covers the main issues which the Secretariat considers affect the quality of the statistics available at the IOTC, by type of dataset and type of fishery. Specifically it includes issues relating to non-reporting of fishery removals and attempts to rectify or estimate these. Standardized CPUE indices are available from several fleets. Tagging data is also available. Together, these are considered adequate for the harvest strategy. While indicators of stock abundance - mainly standardised catch-per-unit-effort indices – are available, a single index covering the entire time series is not available.

While data are sufficient to meet SG80 they do not presently allow the implied harvest control rule to be used with great confidence, preventing the SG100 being met.

c-SG80: IOTC Resolution 15/01 requires that all purse seine, longline, gillnet, pole and line, handline and trolling fishing vessels over 24 metres length overall and those under 24 metres if they fish outside the EEZs of their flag States within the IOTC area of competence to keep a bound paper or electronic logbook and to record, inter alia, the weight (kg) or number by species per set/shot/fishing event for each of a comprehensive list of species. For purse seine, this includes IOTC species, marine turtles, marine mammals, sharks, rays and other bony fish. It is apparent that IOTC has put considerable effort into the recording and reporting of catches and that the current level of reporting is adequate given the large number of small countries involved and the difficult task of monitoring small vessels often far away or on the high seas. Overall, data are sufficient to meet the SG80.

References

- Kolody, D. & M.S. Adam. 2011. Maldives skipjack pole and line fishery catch rate standardization 2004-2010. IOTC2011-WPTT13-29.
- Nokome Bentley and M. Shiham Adam. 2016. Management strategy evaluation for the Indian Ocean skipjack tuna fishery.
- Resolution 15/01 On the recording of catch and effort data by fishing vessels in the IOTC area of competence.
- Resolution 15/02 Mandatory statistical requirements for IOTC Members & Cooperating Non-Contracting Parties.
- Sharma R, Herrera M. 2014. Indian Ocean Skipjack Tuna Stock Assessment 1950-2013 (Stock Synthesis). IOTC–2014–WPTT16–43 Rev_1.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	
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	Are criteria met? (Yes, No)
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
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	
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	
Discussion	<p><u>a-SG80-SG100</u>: A single quantitative modelling method (SS3) was applied to this with management advice based on the range of results from the model. The SS3 assessment model is age-structured, iterated on a quarterly time-step, spatially aggregated, with four fishing fleets and Beverton-Holt recruitment dynamics. Model parameters (virgin recruitment, selectivity by fleet, recruitment deviations, and M in some cases) were estimated by fitting predictions and observations of CPUE, length frequency data for all fleets, and tag recoveries (for the purse seine fleets, and in some cases, the Maldivian P&L fleet). A grid of different scenarios including the main source of uncertainty was used to provide the management advice in the last stock assessment carried out in 2014, including different steepness values (0.7, 0.8, 0.9), different Natural mortality vectors, different growth curves, etc... The stock assessment also used the most recent update information on maturity and fecundity of skipjack (Grande et al., 2013 and 2014). The stock status was reported relative to agreed reference points on Resolution 15/10: "Based on</p>			

the stock assessment carried out in 2014, the stock was considered to be not overfished and not subject to overfishing. [IOTC–2015–WPTT16–R[E].”

The recent declines in catches from this stock are thought to be caused by a recent decrease in purse seine effort as well as a decline in CPUE of large skipjack tuna in the surface fisheries. There remains considerable uncertainty in the assessment, and the range of runs analysed illustrate a range of stock status to be between 1.13– 2.14 with a median of 1.59 of SB2013/SBMSY based on all runs examined.

Based on the SS3 assessment, there is a low risk of exceeding MSY-based reference points in the next 10 years if catches are maintained at 2013 levels of 425,000 tons (1 % risk that SB2016 or 2023 < SBMSY and 1% risk that F2016 or 2023>FMSY). Hence there is a “high degree of certainty” that the stock has been above the MSY reference points in recent years. Thus, this meets SG100.

The assessment approach is appropriate for the stock and for the current harvest control rule, and takes into account the major features relevant to the biology of SKJ and the nature of the fishery.

b-SG60-SG80: The assessment estimate stock status relative to reference points as agreed in Resolution 15/10 and SB2013/SB0 and F2013/FMSY are presented as point estimates with 95% confidence intervals. The skipjack stock status results in relation to reference points are illustrated in a SS3 aggregated Kobe plot and Kobe 2 Strategy Matrix where the probabilities of the stock to be consistent with IOTC convention objectives are shown (SB->SBmsy and F<Fmsy) for a range of future catch projections.

c-SG60-SG80-SG100: The stock assessment methods used in the analysis of this stock report uncertainty in estimates of stock status. These uncertainties have also been examined as alternative model structures. Similarly the stock status associated with these alternatives have been evaluated in a probabilistic manner. While these weightings are not statistically rigorous they represent a consensus of experts on relative importance and have been carried through Kobe plots a strategy matrix. A decision table is provided to help assess risk. The use of probability in the management advice allows risk to be taken into account in the decision making.

d-SG100:

The assessment has been tested using a systematic exploration of the interactions among different sets of assumptions and uncertainties. The final stock status estimate represents a synthesis from a grid of 144 models. This confirms that alternative hypothesis and assessment approaches have been rigorously explored.

e-SG80: For example, the 2014 IOTC skipjack stock assessment was internally reviewed by the WPTT. The assessment was externally reviewed by the IOTC Scientific Committee during the Fourteenth Session in December 2014 but this is not a formal approach.

References

- IOTC-2014- WPTT16 Report.
- IOTC-2014- SC17-R[E] Report.
- IOTC-2016- WPTT18-R[E] Report of the 18th Session of the IOTC Working Party on Tropical Tunas.
- Sharma R, Herrera M. 2014. Indian Ocean Skipjack Tuna Stock Assessment 1950-2013 (Stock Synthesis). IOTC–2014–WPTT16–43 Rev_1.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

PI 2.1.1 The UoA aims to maintain primary species above the 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		
	<p>Guide post</p> <p>Main primary species are likely to be above the PRI</p> <p>OR</p> <p>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.</p>	<p>Main primary species are highly likely to be above the PRI</p> <p>OR</p> <p>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.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>
	Met?	Yes	Yes
b	Minor primary species stock status		
	<p>Guide post</p>		<p>Minor primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species</p>
	Met?		Yes
Discussion	<p>a-SG80-SG100: As this is an industrial fishery that catches large volumes of fish in individual sets, handling processes do not allow sorting or accurate monitoring of retained catch. Practically all fish that is captured enters refrigerated tanks all species other than some large sharks and/or rays are retained. The main source of data available for evaluating retained and bycatch species PI's are published data emanating from EU data collection regulations and Data Collection Framework (DCF). This has been supported in some cases by information of a more general nature from the Echebatar group.</p> <p>Freeschool sets typically yield a catch that will comprise a mix of tuna species. While free school set catches are generally dominated by yellowfin tuna, varying quantities of bigeye tuna are usually taken at the same time and from time to time significant catches of skipjack may also be made, often along with yellowfin and bigeye. When skipjack is caught, catches of both yellowfin and bigeye tuna are common and often exceed the 5% threshold for consideration as 'main' retained species, although not always so. The exact composition of the tuna catch in a freeschool set is impossible to predict and this results in a wide variance in tuna catches between individual sets. Because both yellowfin and /or bigeye tuna may be captured in excess of the 5% threshold along with skipjack, it is considered appropriate to consider both <i>bigeye and yellowfin as main retained species</i> (and therefore individual scoring elements).</p> <p>FAD fishing is commonly used by purse seiners and pole and line vessels to target skipjack (<i>Katsuwonus pelamis</i>) although other associated tunas including juvenile yellowfin (<i>Thunnus albacares</i>), and bigeye (<i>Thunnus obesus</i>) tunas are frequently caught under FADs with skipjack fished with purse seine.</p>		

Indian ocean tuna stock status is reviewed in the Report of the Fifteenth Session of the IOTC Scientific Committee (IOTC-2016-SC19-R[E]) and is repeated below. Bigeye tuna was assessed in 2016 to be highly likely to be within biologically based limits. However, last assessment of YFT in 2016 indicated that yellowfin is overfished and overfishing is occurring. However, there is a recovery plan adopted for Yellowfin (Resolution 16/01 On an Interim Plan for Rebuilding the Indian Ocean Yellowfin tuna Stock in the IOTC area of Competence) with the objective to rebuild the Yellowfin tuna stock to achieve IOTC Convention Objectives of $B > B_{MSY}$ with 50 % by 2024.

Status of the Indian Ocean bigeye tuna (BET: *Thunnus obesus*) resource

TABLE 1. Bigeye tuna: Status of bigeye tuna (*Thunnus obesus*) in the Indian Ocean.

Area ¹	Indicators		2016 stock status determination
Indian Ocean	Catch in 2015 ² :	92,736 t	83.7 %*
	Average catch 2011–2015:	101,515 t	
MSY (1,000 t) (80%):	104 (87-121)		
F _{MSY} (80%):	0.17 (0.14-0.20)		
SB _{MSY} (1,000 t) (80%):	525 (364-718)		
F ₂₀₁₅ /F _{MSY} (80%):	0.76 (0.49-1.03)		
SB ₂₀₁₅ /SB _{MSY} (80%):	1.29 (1.07-1.51)		
SB ₂₀₁₅ /SB ₀ (80%):	0.38 (n.a. – n.a.)		

TABLE 1. Yellowfin tuna: Status of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean

Area ¹	Indicators			2013 stock status determination
Indian Ocean	Catch 2012:	368,663 t		83.7 %*
	Average catch 2008–2012:	317,505 t		
MSY (1000 t):	Multifan 344 t (290–453 t)	ASP 320 (283–358 t)		
F ₂₀₁₀ /F _{MSY} :	0.69 (0.59–0.90)	0.61 (0.31–0.91)		
SB ₂₀₁₀ /SB _{MSY} :	1.24 (0.91–1.40)	1.35 (0.96–1.74)		
SB ₂₀₁₀ /SB ₀ :	0.38 (0.28–0.38)	-		

Status of the Indian Ocean yellowfin tuna (YFT: *Thunnus albacares*) resource

TABLE 1. Yellowfin tuna: Status of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean.

Area ¹	Indicators		2016 stock status determination
Indian Ocean	Catch 2015 ² :	407,575 t	67.6%*
	Average catch 2011–2015:	390,185 t	
MSY (1000 t) (80% CI):	422 (406-444)		
F _{MSY} (80% CI):	0.151 (0.148-0.154)		
SB _{MSY} (1,000 t) (80% CI):	947 (900-983)		
F ₂₀₁₅ /F _{MSY} (80% CI):	1.11 (0.86-1.36)		
SB ₂₀₁₅ /SB _{MSY} (80% CI):	0.89 (0.79-0.99)		
SB ₂₀₁₅ /SB ₀ (80% CI):	0.29 (n.a.-n.a.)		

Source: IOTC 201–SC19–R[E]

b-SG100: 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 as the bycatch of those minor species in the UoA is very small.

References

- Report of the 18th Session of the IOTC Working Party on Tropical Tunas. IOTC-2016-WPTT18-R[E].

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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 point where recruitment would be impaired.	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 point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Yes	Yes	Yes
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
c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Yes	No
d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Yes	Yes	Yes
e	Review of alternative measures			
	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?	Don't Know	Yes	Yes
Discussion		<p><u>a-SG60-SG80-SG100</u>: Indian ocean tuna stock status is reviewed in the Report of the Fifteenth Session of the IOTC Scientific Committee (IOTC-2016-SC19-R[E]) and is repeated below. Bigeye tuna was assessed in 2016 to be highly likely to be within biologically based limits. However, last assessment of YFT in 2016 indicated that yellowfin is overfished and overfishing is occurring. However, there is a recovery plan adopted for Yellowfin (Resolution 16/01 On an Interim Plan for Rebuilding the Indian Ocean Yellowfin tuna Stock in the IOTC area of Competence) with the objective to rebuild the Yellowfin tuna stock to achieve IOTC Convention Objectives of B>Bmsy with 50 % by 2024.</p> <p><u>b-SG60-SG80</u>: Resolution 16/01 On an Interim Plan for Rebuilding the Indian Ocean Yellowfin tuna Stock in the IOTC area of Competence is in place. There is an adoption to reduce their Purse seine catches of yellowfin by 15 % from the 2014 levels .</p> <p><u>c-SG80</u>: Resolution 16/01 On an Interim Plan for Rebuilding the Indian Ocean Yellowfin tuna Stock in the IOTC area of Competence is in place. It is been implemented from 2016 onwards but until next year meetings results of clear evidence of its implementation will not be available.</p> <p><u>d-SG100</u>: It is considered highly likely that shark finning is not taking place. Echebatar group policy explicitly does not permit shark finning. Evidence was provided to the assessment team from Seychellois fisheries officers as well as by Spanish officials to support the company claim that shark finning does not occur in this fishery. In practical terms there are limited opportunities for shark finning to take place while at sea and any sharks returned to the sea are returned directly from the brailer prior to catches entering the hopper. Once retained catches have entered chill tanks, no further access is possible until sharks are discharged from the tanks on landing. Increased onboard observer coverage (100% of all effort) introduced by Echebatar during 2014 is considered to be a level of observer coverage that is capable of detecting whether shark finning is occurring.</p> <p>Shark finning is illegal on EU registered vessels and in the Seychelles the Fisheries (Shark Finning) Regulations 2006 forbids the practice of finning by foreign vessels licensed to operate in Seychelles EEZ by requiring vessels to land fin to the quantity of no more than 5% of the mass of dressed shark carcass. The feasibility/effectiveness of the enforcement of this regulation has yet to be assessed.</p> <p><u>e-SG-80-100</u>: 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.</p>		
References		<ul style="list-style-type: none"> • Anon, 2013. Study of possible mitigation measures in the tropical tuna purse seine fishery. Technical report, September 2013. AZTI Tecnalia. • Council Regulation (EC) No 520/2007 of 7 May 2007 laying down technical measures for the conservation of certain stocks of highly migratory species and repealing Regulation (EC) No 973/2001 • Garcia, V.H., Hernandez, J.J.C. and Ortega, A.T.S 2013. Analysis of incidental catches in the tuna fishery developed by the Pesqueras Echebatar on freeschools or tuna associated with FADs in the Indian Ocean: quantification and prevention actions. Technical Report from the University of Las Palmas Gran Canaria to Echebatar group. • Fisheries (Shark Finning) Regulations 2006, Seychelles Fisheries Act 1987. • http://www.iotc.org/documents/compendium-active-iotc-conservation-and-management-measures (Compendium of Active Conservation and Management Measures for the Indian Ocean Tuna Commission) • IOTC Resolution 12/01 on the implementation of the precautionary framework. • IOTC Resolution 12/13 for the conservation and management of tropical tuna stocks in the IOTC area of competence. • IOTC Resolution 13/06 On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries. • IOTC Resolution 13/10 On interim target and limit reference points and a decision framework. • IOTC Resolution 16/01 On an Interim Plan for Rebuilding the Indian Ocean Yellowfin tuna Stock in the IOTC area of Competence. • Poisson, F., Vernet, A.L. and Dagorn, L. 2012. Good practices to reduce the mortality of sharks and rays caught incidentally by the tropical tuna purse seiners. EU FP7 project 210496 MADE, deliverable 6.2. • Report of the 18th Session of the IOTC Working Party on Tropical Tunas. IOTC-2016-WPTT18-R[E]. 		
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)			Pass (≥80)	

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	
Information adequacy for assessment of impact on main primary species				
a	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	No
Information adequacy for assessment of impact on minor primary species				
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Don't Know
Information adequacy for management strategy				
c	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
Discussion	<p><u>a-SG60-SG80:</u> Qualitative information on the amount of primary species is available from Echebatar group in relation to UoA vessels directly.</p> <p>IOTC Resolution 12/03 on the recording of catch and effort data by vessels fishing in the IOTC area (since superseded by Resolution 13/03) requires the recording of catch and effort data by all vessels and for purse seine vessels as outlined under Annexes I and II. Primary fishing data (location, date, time, set type FAD/non-FAD) and catch (kg) of primary species (tunas) must be recorded by set, while catch of other species grouped by turtles, marine mammals, whale sharks, thresher sharks and oceanic white tip sharks must also be recorded. This information must be provided to the flag state of the vessels (Spain, Seychelles) as well as the coastal state administration where the vessels have fished in those countries EEZ. Data must in turn be provided in aggregated format to IOTC secretariat by June 30th each year for the previous year's operation. Information collected is mainly qualitative in relation to retained species – although data may also be quantitative if implemented fully. However, full implementation requires reporting of all bycatch by individual set which is difficult to carry out as the fishing operation does not</p>			

allow for meaningful sorting of catch. Some useful qualitative data is generated by the implementation of the resolution.

Recording of bycatch (total kg, all species) is also provided for in onboard “diarios” on Echebatar group vessels. Data generated is mainly qualitative and little useful quantitative data appears to be generated by this measure – again this is likely to be related to the inability to sort the bulk catch when it comes aboard.

Port sampling of discharged catch is carried out by officers of the Seychelles Fishing Authority, and is required under resolution 10/11 on port state measures to prevent, deter and eliminate IUU fishing. Under the resolution, contracting parties are required to carry out inspections of 5% of landings or transshipments in its ports annually. Inspections are required to monitor the entire discharge or transshipment and compare quantities by species recorded in the prior notice of landing and the quantities by species landed or transhipped. Again, this requirement is not likely to generate much by way of useful quantitative information, as the initial recording of retained species catch is problematic as has been described.

Under IOTC resolution 11/04, a regional observer scheme has been established. The objective of the IOTC observer scheme is to collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence. The scheme aims to improve the collection of scientific data and applies to all vessels <24m fishing in the IOTC area. At least 5 % of the number of operations/sets for each gear type for each contracting party must be covered. In this regard, Echebatar group have signed a Memorandum of Understanding with the Seychelles Fishing Authority concerning the carrying of observers and evidence presented to the assessment team by SFA and Echebatar group indicated that the scheme was up and running as of September 32013. The functions of the observer scheme includes to “observe and estimate catches as far as possible with a view to identifying catch composition and monitoring discards, by-catches and size frequency”. While only recently implemented, the scheme was in place within the fishery and is expected to yield both qualitative and quantitative results in relation to retained catch in time through observer reports of monitoring of retained catch.

Additional research into bycatch in the purse seine fishery was carried out by Echebatar in collaboration with Grupo de Investigacion en Biodiversidad y Conservacion, Universidad de Las Palmas de Gran Canarias during 2013. A technical report (Garcia et al, 2013) has been provided to the team. The report is based on observer data for bycatch in 168 hauls (7 of which were based on freeschool sets) carried out during February/March 2013. Some useful data are generated in relation to freeschool set bycatch, while an important objective of the study was also to train crew in the use of good practices to reduce the mortality of sharks and other animals captured incidentally by purse seiners, according to the guidelines contained in Poisson *et al* 2012.

Resolution 10/02 on mandatory statistical requirements for IOTC members provides and outlines requirements for recording and submission of catch and effort data. The provisions, applicable to tuna and tuna-like species, are also applicable to the most commonly caught shark species and, where possible, to the less common shark species. CPC's are also encouraged to record and provide data on species other than sharks and tunas taken as bycatch.

Significant additional data is available through published studies and reports e.g. reports of the IOTC Working Party on Ecosystems and Bycatch (WPEB), Amande *et al* (2008), Chavance *et al* (2011), Delgado de Molina *et al* (2005), Romanov (2005), Pianet (2006) and Sarralde *et al* (2006) that analyse and present the results of observer programmes required by European data collection regulations on EU Indian Ocean tuna fleets from 2003-2010 and for other fleets. The studies provide detailed information on retained catches and discarding by the purse seine fleet and have provided the main basis for the evaluation of retained species performance indicator in the current assessment.

c-SG60-SG80: Information is considered adequate in relation to retained tuna catch and supports a partial strategy to manage impacts on bigeye, yellowfin and skipjack tuna. The main source of data available for evaluating retained and bycatch species PI's are published data emanating from EU data collection regulations and Data Collection Framework (DCF). This has been supported in some cases by information of a more general nature from the Echebatar group.

References

- Amande, M.J., Ariz, J., Chassot, E. et al. (2008) Bycatch and discards of the European purse seine tuna fishery in the Indian Ocean: Characteristics and estimation for the 2003-2007 period. Indian Ocean Tuna Commission document, IOTC-2008-WPEB-12, 23 pp.
- Anon, 2013. Study of possible mitigation measures in the tropical tuna purse seine fishery. Technical report, September 2013. AZTI Tecnalia.
- Chavance, P., Amande, J.M., Pianet, R., Chassot, E. and Damiano, A. 2011. Bycatch and Discards of the French Tuna Purse Seine Fishery during the 2003-2010 Period estimated from Observer data IOTC-2011-WPEB07-23 Rev_1
- Delgado de Molina A., Ariz J., Sarralde R., Pallarés P. and J. C. Santana, 2005. Activity of the Spanish purse seine fleet in the Indian Ocean and by-catch data obtained from observer programmes conducted in 2003 and 2004. IOTC-2005-WPBy-13.
- Echebatar S.A. catch data 2008-2011, Western Indian Ocean tuna fishery.
- Garcia, V.H., Hernandez, J.J.C. and Ortega, A.T.S 2013. Analysis of incidental catches in the tuna fishery developed by Pesqueras Echebatar on freeschools or tuna associated with FADs in the Indian Ocean: quantification and prevention actions. Technical Report from the University of Las

Palmas Gran Canaria to Echebatar group.

- http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier–France).
- IOTC Report of the Ninth Session of the Working Party on Ecosystems and Bycatch IOTC–2013–WPEB09–R[E].
- IOTC Resolution 10/02 Mandatory statistical requirements for IOTC members.
- IOTC Resolution 10/11 on port state measures to prevent, deter and eliminate IUU fishing.
- IOTC Resolution 11/04 on a regional observer scheme. IOTC Resolution 13/03 on the recording of catch and effort data by fishing vessels in the IOTV area of competence.
- IOTC Resolution 12/03 On the recording of catch and effort by fishing vessels in the IOTC area of competence.
- IOTC Resolution 13/06 On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries.
- Pianet R., 2006. Analysis of data obtained from observer programmes conducted in 2005 and 2006 in the Indian Ocean on board of French purse seiners. IOTC, WPBE.
- Romanov E. V., 2002. By-catch in the tuna purse-seine fisheries of the western Indian Ocean. Fish. Bull.100(1): 90-105.
- Sarralde R., Delgado de Molina A., Ariz J. and J. C. Santana, 2006. Data obtained from purse-seine observers carry out by the Instituto Español de Oceanografía from the National Database Plan between 2003 and 2006. IOTC-2006-WPTT-07.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

PI 2.2.1

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

Scoring Issue	SG 60	SG 80	SG 100
a	Main secondary species stock status		
	<p>Main Secondary species are likely to be within biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits</p> <p>OR</p> <p>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.</p> <p>AND</p> <p>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 also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main secondary species are within biologically based limits.</p>
	Met?	Yes	Yes
b	Minor secondary species stock status		
			<p>Minor secondary species are highly likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species</p>
	Met?		Are criteria met? (Yes, No)
Discussion	<p><u>a-SG60-SG80:</u></p> <p>The fishery retains specimens of all species that are encountered during fishing operations and evidence has been provided to the assessment team to support this. The only species that are generally not retained in gear are large and/or charismatic species such as whaleshark, manta rays, turtles and cetaceans, although they may be injured or suffer mortality as a result of interactions. However, all of these have been considered under the ETP Criterion.</p> <p>Significant additional data is available through published studies and reports e.g. reports of the IOTC Working Party on Ecosystems and Bycatch (WPEB), Amande <i>et al</i> (2008), Chavance <i>et al</i> (2011), Delgado de Molina <i>et al</i> (2005), Romanov (2005), Pianet (2006) and Sarralde <i>et al</i> (2006) that analyse and present the results of observer programmes required by European data collection regulations on EU Indian Ocean tuna fleets from 2003-2010 and for other fleets. The studies provide detailed information on retained catches and discarding by the purse seine fleet and have provided the main basis for the evaluation of retained species performance indicator in the current assessment.</p>		

References

- Amande, M.J., Ariz, J., Chassot, E. et al., 2008. Bycatch and discards of the European purse seine tuna fishery in the Indian Ocean: Characteristics and estimation for the 2003-2007 period. Indian Ocean Tuna Commission document, IOTC-2008-WPEB-12, 23 pp.
- Amande, M. J., Chassot, E., Chavance, P., Murua, H., Delgado de Molina, A., and Bez, N. 2012. Precision in bycatch estimates: the case of tuna purse-seine fisheries in the Indian Ocean. ICES Journal of Marine Science 69(2): 1501-1510. doi.10.1093/icesjms/fss106.
- Bourjea J., S. Clermont, A. Delgado, H. Murua, S. Ciccione, P. Chavance, J. Ruiz. 2014. Marine turtle interaction with purse-seine fishery in the Atlantic and Indian Oceans: lessons for management. Biological Conservation, 178, 74-87. <http://dx.doi.org/10.1016/j.biocon.2014.06.020>.
- Capietto A., Escalle L., Chavance P., Dubroca L., Delgado de Molina A., Murua H., Floch L., Damiano A., Rowat D., Merigot B. 2014. Mortality of marine megafauna induced by fisheries: Insights from the whale shark, the world's largest fish. Biological Conservation 174 (2014) 147–151. <http://dx.doi.org/10.1016/j.biocon.2014.03.024>.
- Chavance, P., Amande, J.M., Pianet, R., Chassot, E. and Damiano, A. 2011. Bycatch and Discards of the French Tuna Purse Seine Fishery during the 2003-2010 Period estimated from Observer data IOTC-2011-WPEB07-23 Rev_1.
- Echebatar S.A. catch data 2008-2011, Western Indian Ocean tuna fishery.
- L. Escalle, H. Murua, J. M. Amande, I. Arregi, P. Chavance, A. Delgado de Molina, D. Gaertner, I. Fraile, J. D. Filmater, J. Santiago, F. Forget, H. Arrizabalaga, L. Dagorn, B. Merigot. 2016. Post-capture survival of whale sharks encircled in tuna purse-seine nets: tagging and safe release methods. Aquatic Conservation: Marine and Freshwater Ecosystems. Volume 26, Issue 4 (613–805), DOI: 10.1002/aqc.2662.
- Lauriane Escalle, 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. 2015. Cetaceans and tuna purse seine fisheries in the Atlantic and Indian Oceans: interactions but few mortalities. Marine Ecology Progress Series V522: 255-268.
- Lezama-Ochoa N., H. Murua, G. Chust, J. Ruiz, P. Chavance, A. Delgado de Molina, A. Caballero and I. Sancristobal. 2015. Biodiversity in the by-catch communities of the pelagic ecosystem in the Western Indian Ocean. Biodiversity and Conservation, Volume 24 (11): 2647-2671 pp. DOI 10.1007/s10531-015-0951-3.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	
Management strategy in place				
a	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 within 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 within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Yes	Yes	No
Management strategy evaluation				
b	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
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	Yes
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	No
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

Discussion

a-SG60-SG80: There are a range of measures that are considered to represent a partial strategy to manage impacts.

At IOTC level, there are a number of measures in place which are expected to help ensure incidentally captured species remain at levels that are highly likely to be within biologically based limits or that the fishery does not hinder recovery and/or rebuilding. Additional measures are in place amongst relevant flag states (Spain, Seychelles) as well as within the Echebatar group.

Measures in place include:

- » Adoption of an interim harvest strategy including interim target and limit reference points
- » Stock assessment relative to reference points
- » Effort limitation (through restriction on entry/limitation of fishing capacity)
- » Implementation of additional conservation and management measures
- » Adoption of the precautionary approach in IOTC management of tunas
- » IOTC Resolution 13/06 on a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries
- » A management strategy evaluation for IOTC tuna stocks, is underway beginning with albacore tuna. MSE is eventually expected to lead to the adoption of a clear harvest strategy and harvest control rules for IOTC stocks.
- » Echebatar company policy with respect to bycatch reduction, reporting and sustainability which includes carrying out research aimed at allowing escapement of unwanted species from purse seines through technical measures and facilitating the carriage of observers from SFA in future.

IOTC Resolution 13/06 entered into force in November 2013. The resolution requires IOTC members to prohibit, as an interim pilot measure, all fishing vessels flying their flag and on the IOTC Record of Authorised Vessels, or authorised to fish for tuna or tuna-like species managed by the IOTC on the high seas to retain onboard, tranship, land or store any part or whole carcass of oceanic whitetip sharks. Furthermore, IOTC member vessels fishing on the high seas are required to promptly release unharmed, to the extent practicable, oceanic white tip sharks. Contracting party vessels are also required to encourage their fishers to record incidental catches as well as live releases of oceanic white tip shark. Contracting parties are also encouraged to undertake research into oceanic white tip sharks in the IOTC area and are further encouraged to engage in scientific data collection using observers.

Other management measures in place relate to recording of catch and effort data by fishing vessels in the IOTC area (Resolution 13/03); Resolution 13/11 on a ban on discards of bigeye, skipjack and yellowfin tuna and a recommendation for non-target species caught in the IOTC area by purse seine vessels; Resolution 12/12 On the implementation of a limitation on of fishing capacity; Resolution 12/12 to promote the implementation of conservation and management measures already adopted by IOTC; Resolution 13/06 on a scientific and management framework on the conservation of shark species captured in association with IOTC managed fisheries and Resolution 10/11 on port state measures to prevent, deter and eliminate IUU fishing.

At EU/national (Spain and Seychelles) level, a comprehensive system of management measures are in place with respect to vessel licensing and permitting, catch reporting, landings restrictions, observer coverage, ban on shark finning, VMS as well as spatial limitations/temporal restrictions. Council Regulation (EC) No 520/2007 lays down technical measures for the conservation of certain stocks of highly migratory species. Under Article 19 Member States shall do their utmost to encourage the release of live sharks caught accidentally, in particular juveniles. Member States shall also encourage the reduction of discards of sharks.

Research into bycatch in the purse seine fishery was carried out by Echebatar in collaboration with Grupo de Investigacion en Biodiversidad y Conservacion, Universidad de Las Palmas de Gran Canaria during 2013. A technical report (Garcia et al, 2013) has been provided to the team. The report is based on observer data for bycatch in 168 hauls (7 of which were based on freeschool sets) carried out during February/March 2013. Some useful data are generated in relation to freeschool set bycatch, while an important objective of the study was also to train crew in the use of good practices to reduce the mortality of sharks and other animals captured incidentally by purse seiners, according to the guidelines contained in Poisson *et al* (2012). A further study in which Echebatar group is a partner (Anon, 2013) investigates possible bycatch mitigation measures in the tropical tuna purse seine fishery. Further research is planned and during October 2013 Echebatar group were confirmed to be in receipt of significant research aid in order to develop a prototype selectivity device for use in purse seine tuna fisheries.

Echebatar also operate on board procedures that are intended to ensure unwanted catch of retained tuna and other species is minimised and that large captured specimens such as sharks, mantas and turtles are removed from the purse seine or brailer at the earliest opportunity according to written guidelines. The measures however fall short of being considered a full strategy as all species captured are retained even though many of these are of little or no economic benefit to Echebatar group.

b-GS60-SG80: The bycatch levels of tuna purse seiners in the Indian Ocean are around 3.5% of the total catches. Under current practice, all catch is retained apart from the largest specimens of species such as sharks, rays and turtles. Management of impacts of the fishery is subject to increasing attention through IOTC and significant developments have been made in the context of resolutions aimed at dealing with issues related to wider environmental impacts. Ultimately, as contracting parties, it is for flag states (in this case Spain – through the EU, and Seychelles) however to implement the requirements of IOTC resolutions. Evidence provided to the assessment team by the Spanish Ministry for Agriculture, Food and Environment suggests that both the EU and Spain are committed to implementation of all measures required under IOTC resolutions as contracting parties to the IOTC.

Preliminary investigations into selectivity windows fitted to purse seine gears in fishing trials conducted by Echebstar group indicate potential for release of significant quantities of unwanted bycatch. The project is ongoing and is in receipt of significant funding for a programme of research in order to develop a prototype escapement panel that will allow the exit of unwanted catches from purse seine gears. Echebstar demonstrated commitment to reducing impacts further provides an objective basis for confidence that the strategy will work.

c-SG80-SG100: Overall incidental capture of unwanted species in purse seine in the Indian ocean amounts around 3.5% of bulk catches. While most of these are retained and are not considered to be bycatch species, it is considered that opportunities could be created to sort catches in future in which case there would be an incentive to further reduce the incidence of accidental capture and reduce or eliminate bycatch of many species.

Other evidence presented are that 14 skippers and crew members of Echebstar group attended an *ISSF Bycatch reduction workshop in tuna purse seine FAD fisheries*. While the workshop focused on reduction of bycatch in FAD fisheries, participation is seen as demonstration of commitment to reducing bycatch at fleet level. In addition, members of Echebstar group participated in the EU funded Sukarieta GAP2 meeting held during 2012 to promote sustainability in Indian ocean tuna fisheries, in addition to participating in a further bycatch mitigation workshop for purse seine skippers held in November 2012.

d-SG60-SG80: It is considered highly likely that shark finning is not taking place. Echebstar group policy explicitly does not permit shark finning. Evidence was provided to the assessment team from Seychellois fisheries officers as well as by Spanish officials to support the company claim that shark finning does not occur in this fishery. In practical terms there are limited opportunities for shark finning to take place while at sea and any sharks returned to the sea are returned directly from the brailer prior to catches entering the hopper. Once retained catches have entered chill tanks, no further access is possible until sharks are discharged from the tanks on landing. Increased onboard observer coverage (100% of all effort) introduced by Echebstar during 2014 is considered to be a level of observer coverage that is capable of detecting whether shark finning is occurring.

Shark finning is illegal on EU registered vessels and in the Seychelles the Fisheries (Shark Finning) Regulations 2006 forbids the practice of finning by foreign vessels licensed to operate in Seychelles EEZ by requiring vessels to land fin to the quantity of no more than 5% of the mass of dressed shark carcass. The feasibility/effectiveness of the enforcement of this regulation has yet to be assessed.

References

- Amandè M. J., Ariz J., Chassot E., Delgado de Molina A., Gaertner D., Murua H., Pianet R., Ruiz J. and P. Chavance. 2010. Bycatch of the European purse seine tuna fishery in the Atlantic Ocean for the 2003–2007 period. *Aquatic Living Resources* 23 (4) : 353-362.
- Anon, 2013. Study of possible mitigation measures in the tropical tuna purse seine fishery. Technical report, September 2013. AZTI Tecnalia.
- Chavance et al, 2011. Bycatch and Discards of the French Tuna Purse Seine Fishery during the 2003-2010 Period estimated from Observer data. IOTC-2011-WPEB07-23 Rev_1.
- Council Regulation (EC) No 520/2007 of 7 May 2007 laying down technical measures for the conservation of certain stocks of highly migratory species and repealing Regulation (EC) No 973/2001.
- Council Regulation (EU) No 40/2013 of 21 January 2013 fixing for 2013 the fishing opportunities available in EU waters and, to EU vessels, in certain non- EU waters for certain fish stocks and groups of fish stocks which are subject to international negotiations or agreements.
- Garcia, V.H., Hernandez, J.J.C. and Ortega, A.T.S 2013. Analysis of incidental catches in the tuna fishery developed by Pesqueras Echebstar on freeschools or tuna associated with FADs in the Indian Ocean: quantification and prevention actions. Technical Report from the University of Las Palmas Gran Canaria to Echebstar group.
- <http://www.iotc.org/documents/compendium-active-iotc-conservation-and-management-measures>. (Compendium of Active Conservation and Management Measures for the Indian Ocean Tuna Commission.)
- IOTC-2008-WPEB-12 . By-catch and discards of the european purse seine tuna fishery in the indian ocean. Estimation and characteristics for the 2003-2007 period. Ecosystem and by-catch Working Group. Bangkok, Thailand 20-22 October 2008.
- IOTC Resolution 12/01 on the implementation of the precautionary framework.

- IOTC Resolution 12/13 for the conservation and management of tropical tuna stocks in the IOTC area of competence.
- IOTC Resolution 13/06 On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries.
- IOTC Resolution 13/10 On interim target and limit reference points and a decision framework.
- Poisson, F., Vernet, A.L. and Dagorn, L. 2012. Good practices to reduce the mortality of sharks and rays caught incidentally by the tropical tuna purse seiners. EU FP7 project 210496 MADE, deliverable 6.2.
- Report of the 18th Session of the IOTC Working Party on Tropical Tunas IOTC-2016-WPTT18-R[E].

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	
Information adequacy for assessment of impacts on main secondary species				
a	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	No
Information adequacy for assessment of impacts on minor secondary species				
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Don't Know
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
Discussion	<p><u>a-SG60-SG80</u>: There is good information in relation to the catch of retained species from a number of published sources that are previously referred to. General information and understanding suggests that large species such as turtles, sharks, rays and billfishes are returned to the water where possible. However, the fact that catches of all species are not fully accounted for in catch recording and reporting is considered a weakness and while data are likely to be sufficient to indicate changes in risk, monitoring is not considered to occur in sufficient detail to assess ongoing mortalities to all non-target species.</p> <p><u>c-SG60-SG80</u>: Effectively, the fishery retains all species encountered by the gear. Data from focused bycatch studies, EU data collection programmes and a recently implemented IOTC observer programme provides a basis for supporting and evaluating the effectiveness of the partial strategy. However, the fact that there is incomplete recording of catches of non-target species means that information cannot be considered adequate to manage impacts or to evaluate with a high degree of certainty whether the strategy is achieving its objective. In particular, instances of slippage, although likely to be rare may not be recorded. Many species that are taken as bycatch are not assessed and while all of these are currently considered as retained catch, there remains associated uncertainty in respect of the impact of the fishery on incidentally captured species.</p>			

References

- Amade, M.J., Ariz, J., Chassot, E. et al. (2008) Bycatch and discards of the European purse seine tuna fishery in the Indian Ocean: Characteristics and estimation for the 2003-2007 period. Indian Ocean Tuna Commission document, IOTC-2008-WPEB-12, 23 pp.
- Anon, 2013. Study of possible mitigation measures in the tropical tuna purse seine fishery. Technical report, September 2013. AZTI Tecnalia.
- Chavance, P., Amade, J.M., Pianet, R., Chassot, E. and Damiano, A. 2011. Bycatch and Discards of the French Tuna Purse Seine Fishery during the 2003-2010 Period estimated from Observer data IOTC-2011-WPEB07-23 Rev_1.
- Echebatar S.A. Catch data 2008-2011, Western Indian Ocean tuna fishery.
- Garcia, V.H., Hernandez, J.J.C. and Ortega, A.T.S 2013. Analysis of incidental catches in the tuna fishery developed by the Pesqueras Echebatar on freeschools or tuna associated with FADs in the Indian Ocean: quantification and prevention actions. Technical Report from the University of Las Palmas Gran Canaria to Echebatar group.
- http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier-France).
- IOTC Report of the Ninth Session of the Working Party on Ecosystems and Bycatch IOTC-2013-WPEB09-R[E].

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

**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
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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?	Yes	Yes	No

b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known 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?	Yes	Yes	No

c	Indirect effects			
	Guide post		Indirect effects have been considered 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 fishery on ETP species.
	Met?		Yes	No

Discussion

a-SG60-SG80: Spain, Seychelles and France are signatories of the Convention on international trade in Endangered species of wild flora and fauna (CITES). CITES regulations apply to those nations. For all practical purposes Echebstar group apply EU legislation in respect of vessel operations where this is permissible and where no Seychellois legislation or other international convention takes precedent for Seychellois registered vessels. Outside of CITES, there are limited EU and Seychellois regulations with respect to ETP species impacted by the fishery.

A range of species may be impacted by the fishery, including turtles, sharks, rays and cetaceans. Amande *et al* (2008) reports that EU observers recorded interactions with 4 turtle species – green turtle (IUCN endangered), loggerhead turtle (IUCN endangered), Olive ridley (IUCN vulnerable) and hawksbill (IUCN critically endangered) during onboard monitoring of Indian ocean tuna purse seine catches. Of these, only olive ridley and hawksbill turtles were record in association with free school sets.

Of the range of international conservation agreements directly or potentially applying to sea turtles, only the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) makes specific provisions to protect sea turtles from international trade. CITES has effectively curbed international trade in sea turtles by prohibiting primarily commercial international trade in all species of sea turtles and their parts.

As reported by Amande *et al* (2008) observations in relation to turtles were occasional and almost exclusively made on log-sets (95%). Captures of turtles are overwhelmingly associated with FADs and floating object related sets. Despite this level of encounter in FAD sets, 90% of turtles were recorded as being released alive. Over the period (2003-2007) less than 300 turtles are estimated to have been killed in EU tuna purse seine fisheries in the Indian Ocean. This is less than 60 individuals per year. Clermont *et al* (2012) analysed interactions between the EU purse seine fleet and marine turtles in the Atlantic and Indian Oceans over a 15-year period. Over the study period, 597 turtles were caught in 9,398 sets on free schools and 6,515 sets related to FADs (15,913 total sets). 86% of all turtles were released alive into the sea.

In addition, Amande *et al* (2008) reports that two species of cetaceans were recorded during purse seine fishing – fin whale (IUCN endangered) and false killer whale (IUCN data deficient). Only fin whales were recorded during so-called free-school sets, but in reality these sets were more/most likely made because of the presence of a whale (hence they are considered associated sets – which are not included under any UoC). It is however likely that the latter were recorded during sets made on whales (so called associated sets). Fin Whales are listed on Appendix I of the Convention on Trade in Endangered Species (CITES).

Fin whales are also listed on Appendices I and II of the Convention on Migratory Species (CMS). Romanov (2002) also reports on interaction of IO pure seine fisheries with cetaceans – however these relate to associated sets also.

Sufficient evidence has been available to the assessment to conclude that the Echebaster fishery does not make sets that are associated with dolphin schools in the IO. Accordingly, it is considered highly unlikely that the fishery interacts significantly with or causes direct or indirect impacts on IO dolphin populations.

Few specific data are available in relation to encounters with whale sharks during purse seine fisheries. However whale sharks are most likely encountered during sets deliberately made on them and not on freeschool sets. Whale sharks are listed on CITES Appendix II. In Seychelles waters, the Wild Animals (Whale Shark) Protection Regulations, 2003 declares the whale shark (*Rhincodon typus*) protected throughout Seychelles at all times. Nevertheless, while they are unlikely to be retained or feature as bycatch in freeschool sets on account of their size they have been included under the ETP component as whaleshark meets with ETP qualifying criteria and the species is undoubtedly vulnerable to fishing interactions. It is normal practice for these animals to be released from the gear prior to bringing catches aboard and there is no direct evidence to suggest that animals are directly harmed or killed in such encounters although clearly there is potential for such events to occur.

b-SG60-SG80: Instances of encounters between ETP turtle, whale and ray species and purse seine gears have been demonstrated to be infrequent by Amade *et al* (2008) in their analysis of data from EU fleets operating in the Indian Ocean. In Bourjea *et al* (2014) it is said that purse-seine fishery has a very low impact on marine turtles. In additions the “Resolution 15/08 Procedures on a fish aggregating devices (FADs) management plan, including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incide” oblies the use of non-entangling FADs what reduces and the interaction with turtles and leads to a hardly nule turtle mortality. There is also a “ Good Practice Code” signed by OPAGAC and ANABAC where if incidental catches of turtles occur, they must be returned to the sea.

c-SG80-SG100: Indirect effects by way of competition for forage species, destruction of habitat or disturbance have also been considered and are thought to be highly unlikely to create unacceptable impacts.

References

- Amade, M.J., Ariz, J., Chassot, E. et al. (2008) Bycatch and discards of the European purse seine tuna fishery in the Indian Ocean: Characteristics and estimation for the 2003-2007 period. Indian Ocean Tuna Commission document, IOTC-2008-WPEB-12, 23 pp.
- Bourjea J., S. Clermont, A. Delgado, H. Murua, S. Ciccione, P. Chavance, J. Ruiz. 2014. Marine turtle interaction with purse-seine fishery in the Atlantic and Indian Oceans: lessons for management. *Biological Conservation*, 178, 74-87. <http://dx.doi.org/10.1016/j.biocon.2014.06.020>.
- CITES Appendix I and II.
- Clermont, S., Chavance, P., Delgado, A., Murua, H., Ruiz, J., Ciccione, S. And Bourjea, J. 2012. EU purse seine fishery interaction with marine turtles in the Atlantic and Indian Oceans. A 15 year analysis. IOTC-2012-WPEB08-35 rev_1.
- Convention on Migratory Species (Bern Convention).
- EU Regulation (EC) 40/2013 fixing for 2013 the fishing opportunities available in EU waters and, to EU vessels, in certain non- EU waters for certain fish stocks and groups of fish stocks which are subject to international negotiations or agreements.
- http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier–France)
- IOTC Report of the Ninth Session of the Working Party on Ecosystems and Bycatch IOTC–2013–WPEB09–R[E].
- IOTC Resolution 15/08 Procedures on a fish aggregating devices (FADs) management plan, including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incide. IOTC-2015-WPDCS11-INF03.
- OPAGAC-ANABAC. Buenas practicas para una pesca de cerco responsable.
- Romanov E. V., 2002. By-catch in the tuna purse-seine fisheries of the western Indian Ocean. *Fish. Bull.*100(1): 90-105.
- Wild Animals (Whale Shark) Protection Regulations, 2003.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	
Management strategy in place (national and international requirements)				
a	Guide post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Yes	Yes	No
Management strategy in place (alternative)				
b	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?	Yes	Yes	Yes
Management strategy evaluation				
c	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Yes	Yes	No
Management strategy implementation				
d	Guide post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		Yes	Yes
Review of alternative measures to minimize mortality of ETP species				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.

	Met?	Yes	Yes	No
Discussion		<p><u>a-SG60-SG80:</u></p> <p>Overall impacts of purse seine tuna fishery on ETP is very low. However, there is a strategy in place to ensure the fishery continues to improve its performance in relation to ETP interaction management. The strategy comprises a range of measures, some of which are designed specifically to manage impacts of the fishery on non-target bycatch species (releasing large specimens from nets by dropping the float line, releasing large sharks from the deck where they are taken aboard, training for staff in bycatch reduction and impact mitigation, bycatch reduction research). At corporate level there is a commitment to ensuring the sustainability of the fishery and this is evidenced by the number and nature of research undertakings Echebatar have commissioned or are involved in with respect to reduction of impacts on unintended bycatch species. Minimisation of impacts on bycatch species is at the core of the adoption of a new design by Echebatar for a vessel that has been commissioned. The new vessel has been designed with a conveyor that allows for the sorting of catch and the return to the sea of specimens that are unwanted once the fish has been put on the conveyor. This has not been possible to date (and will not be possible until the new vessel is operational) given the design of vessels currently making up the fleet. Ultimately as vessels are changed it is envisaged that the new design will be a feature of all future new builds. This undertaking should be seen in tandem with initiatives that the company are involved in to enhance escapement and removal of unwanted species from gears. Higher-level initiatives aimed at ensuring the fishery complies with national and international requirements for ETP species protection also exist. Within the IOTC a number of resolutions have been adopted that means flag nations are required to take initiatives with respect to their own fleets. Resolutions that are relevant in this regard include:</p> <ul style="list-style-type: none"> » 13/04 on the conservation of cetaceans; » 13/05 on the conservation of whale sharks; » 12/04 on the conservation of marine turtles; » 12/09 on the conservation of thresher sharks; » 11/04 on a regional observer scheme. <p>Resolutions contain a range of important measures that are designed to manage impacts and that are also intended to generate data in relation to interactions. The detail of the resolutions has been reviewed by the assessment team and it is considered that these represent important milestones in the overall Indian Ocean tuna fishery ETP management strategy development. IOTC resolutions compliment more general measures contained in EU and Seychellois primary and secondary fishery legislation and which also play a role in management of fisheries interactions.</p> <p><u>c-SG60-SG80:</u></p> <p>The recorded rate of interactions with ETP species is low and a limited number of species may be affected. The range of measures in place to limit impacts has improved and covers all species commonly encountered. Pesqueras Echebatar has demonstrated commitment to reducing and mitigating adverse impacts on ETP species.</p> <p><u>d-SG80-SG100:</u> Data in relation to interactions with unwanted non-tuna bycatch including ETP species given by Amande <i>et al</i> (2008) shows that the rate of interactions is very low. Furthermore, the consequence of instances of capture of unwanted species are frequently non-lethal and captured specimens of turtles, whales and /or manta rays survive the encounter. Overall opinion of the published scientific community seems to support the understanding that the rates of interaction of purse seine gears does not result in unsustainable levels of impact or interaction with ETP species.</p>		
References		<ul style="list-style-type: none"> • http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier-France). • IOTC Resolution 11/04 on a regional observer scheme. • IOTC Resolution 12/04 on the conservation of marine turtles. • IOTC Resolution 12/09 on the conservation of thresher sharks. • IOTC Resolution 13/04 on the conservation of cetaceans. • IOTC Resolution 13/05 on the conservation of whale sharks. • IOTC Resolution 15/08 Procedures on a fish aggregating devices (FADs) management plan, including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incide. IOTC-2015-WPDCS11-INF03. • Report of the 12th Working Party on Ecosystems and Bycatch. IOTC-2016-WPEB12-R[E]. 		

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

Relevant information is collected to support the management of UoA impacts on ETP species, including:				
PI 2.3.3 <ul style="list-style-type: none"> - 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?	Yes	No	No
	Information adequacy for management strategy			
b	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?	Yes	Yes	No
Discussion a-SG60: There is some information available in relation to the rate of interaction with ETP species of EU purse seine fleets operating in the Indian Ocean. These allow for a good understanding of the ETP species involved as well as a general understanding of levels of interaction and to a lesser extent the likely fate (outcome) for species from capture events. Examples of such data include a review of EU purse seine fleet observer data from 2003-2007 (Amande, 2008). Other sources of data include Echebastar group records of bycatch, results of investigations conducted by Echebastar group as well as a wide range of published studies e.g. Romanov (2002), Pianet (2006), Sarraide et al (2006) and Delgado de Molina et al (2005). The reports of the Working Party on Ecosystems and Bycatch of the IOTC (WPB) provide a useful annually updated source of information in relation to bycatch of all types of species and interactions with ETP species in Indian Ocean tuna fisheries. However the assessment team consider that it would be appropriate for scoring at SG80 that specific recording of ETP interactions should be undertaken by Pesqueras Echebastar vessels during all unassociated freeschool tuna sets as part of standard onboard procedures, even where there are no interactions. Specific data for the fleet would allow fishery related impacts to be quantitatively estimated for ETP species and would help identify more clearly the risks by documenting capture rates for species, size distributions of ETP species, temporal and spatial patterns of interaction, response and outcome. Recordings should include interactions with the full range of ETP specie inc. sharks, rays, cetaceans and turtles. b-SG60-SG80: Considerable information is available in relation to qualitative and quantitative nature of interactions between ETP species and the purse seine fleet. Information is relatively recent and is presently being updated through new observer initiatives that commenced during 2013. Additional				

observer schemes will be implemented during 2014 on the fleet under assessment in conjunction with ISSF. Comprehensive information is available in relation to the fleet operations (spatial effort, temporal activity, overall effort) in order to support a full strategy to manage impacts on ETP species. Some information is available in relation to the status of affected ETP populations e.g. IUCN population status assessment, overall population trends, bio geographical range etc. information however does not support a comprehensive strategy that is specifically designed to manage impacts on the ETP component and minimize mortality and injury of ETP species and evaluate with a high degree of certainty whether a strategy is achieving its objectives. Therefore, the assessment team believes that the fishery meets the requirements of the SG 60 and 80 levels for this issue. However, as 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, the SG100 is not achieved for this scoring issue.

References

- Delgado de Molina A., Ariz J., Sarralde R., Pallarés P. and J. C. Santana, 2005. Activity of the Spanish purse seine fleet in the Indian Ocean and by-catch data obtained from observer programmes conducted in 2003 and 2004. IOTC-2005-WPBy-13.
- http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier–France).
- IOTC Resolution 15/08 Procedures on a fish aggregating devices (FADs) management plan, including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incide. IOTC-2015-WPDCS11-INF03.
- Pianet R., 2006. Analysis of data obtained from observer programmes conducted in 2005 and 2006 in the Indian Ocean on board of French purse seiners. IOTC, WPBE.
- Report of the 12th Working Party on Ecosystems and Bycatch. IOTC-2016-WPEB12-R[E].
- Romanov E. V., 2002. By-catch in the tuna purse-seine fisheries of the western Indian Ocean. Fish. Bull.100(1): 90-105.
- Sarralde R., Delgado de Molina A., Ariz J. and J. C. Santana, 2006. Data obtained from purse-seine observers carry out by the Instituto Español de Oceanografía from the National Database Plan between 2003 and 2006. IOTC-2006-WPTT-07.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass with Condition (60-79)

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	Yes
b VME habitat status			
Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
Met?	Yes	Yes	Yes
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?			Yes
Discussion	<p><u>a-SG60-SG80-SG100</u>: The fishery takes place entirely in the epipelagic ecosystem, at all times above 200m depth, although the water may be much deeper. In this context fishing gears do not operate at depths greater than 200m and always in waters that are considerably deeper than this (up to several thousand meters). At no time do purse seine gears make contact with the seabed or any biogenic reef. No vulnerable habitats are impacted during the setting of gears or at any time during the fishing operation or at any other time of the vessels operations in the Indian Ocean tuna purse seine fishery. Accordingly, the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.</p> <p><u>b-SG60-SG80-SG100</u>: At no time do purse seine gears make contact with the seabed or any biogenic reef. No vulnerable habitats are impacted during the setting of gears or at any time during the fishing operation or at any other time of the vessels operations in the Indian Ocean tuna purse seine fishery.</p>		
References	<ul style="list-style-type: none"> IOTC Resolution 15/08 Procedures on a FADs management plan, including a limitation on the number of FADs, more detailed specs of catch reporting from FAD sets, & the development of improved FAD designs to reduce incidence of entanglement of non-target species which implements the use of Non-Entangling FADs. IOTC Resolution 16/01 on the YFT and limitations on FADs. IOTC WPEcosystem and Bycatch Meeting. http://www.iotc.org/sites/default/files/documents/2016/09/IOTC-2016-WPEB12-RE_-FINAL.pdf 		
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)			Pass (≥80)

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	
Management strategy in place				
a	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	Yes
Management strategy evaluation				
b	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	Yes
Management strategy implementation				
c	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	Yes
Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs				
d	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?	Don't Know	Don't Know	Don't Know
Discussion	<p><u>a-SG60-SG80-SG100</u>: The operation of the tuna fisheries utilizing purse seine gears to target tuna on the open ocean (normally in the surface layer of very deep waters) ensures that there are never any interactions with the seabed. The typical cost of a tuna purse seine is up to €800,000 – costs associated with damage to the gear which is not reinforced for seabed contact would render even momentary contact with seabed structures a prohibitively expensive occurrence. While Echebaster group have undertaken to reduce the ecological footprint of their tuna purse seine operations, there is no requirement to manage seabed habitat impacts that are normally associated with gears contacting the seabed or sensitive habitats such biogenic reefs etc. There are measures and a full strategy in place for managing the impact of the fishery on habitat types.</p>			
	<p><u>b-SG60-SG80-SG100</u>: Knowledge in relation to the way purse seine fishing gear is used (on the sea</p>			

surface and the upper 60 meters) as well as the sea areas where the fleet operates (open ocean, deep waters often up to several thousand meters deep) is sufficient to discount any significant impacts on seabed habitats accruing from the fishing operation. No significant impacts on the epipelagic ecosystem habitat are associated with the use of purse seine gears. Accordingly there is high confidence that the strategy will work.

c-SG60-SG80-SG100: There are no recorded instances of gear damage through contact with the seabed. Nets do not regularly require repair due to encounters with subsurface structures and nets tend to last a number of seasons due to the lack of contact related damage. VMS records for the fleet confirm that purse seine operations are not carried out in shallow waters where there is a risk to gear or the seabed. No significant impacts on the epipelagic ecosystem are associated with the use of purse seine gears in tuna fisheries. There is clear evidence that the strategy is being implemented successfully.

References

- IOTC WPEcosystem and Bycatch Meeting.
<http://www.iotc.org/sites/default/files/documents/2016/09/IOTC-2016-WPEB12-RE - FINAL.pdf>

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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		
	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>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.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
	Met?	Yes	Yes
b	Information adequacy for assessment of impacts		
	<p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.</p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>
	Met?	Yes	Yes
c	Monitoring		
		<p>Adequate information continues to be collected to detect any increase in risk to the main habitats.</p>	<p>Changes in habitat distributions over time are measured.</p>
	Met?		Yes

Discussion	<p><u>a-SG60-SG80-SG100</u>: The fishery takes place in the epipelagic habitat. There are no habitat types present that are considered to be vulnerable. The distribution of the pelagic habitat is known over the spatial range within which the fishery operates from widely available sea charts and bathymetric maps of the Indian Ocean. Outside of this epipelagic habitat, many areas of the Indian Ocean have been mapped and there is information in relation to the occurrence of sensitive and/or vulnerable seabed habitats. However, the seabed habitat is considered to be outside of the spatial range within the fishery operates and is therefore not considered relevant to scoring of this issue. There are no sensitive habitats in the pelagic ecosystem that could be damaged or impacted through the use of purse seine gears. Based on the above evidence, the distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.</p> <p><u>b-SG60-SG80</u>: Physical impacts of the gear on the pelagic ecosystem are considered to be highly unlikely to occur and no evidence has been presented that suggests there are specific risks to the pelagic habitat. However, a precautionary approach to fisheries would suggest that the potential for impacts to occur should be investigated. Specific investigations in this regard may therefore be warranted. Therefore the information is adequate to understand the nature of the main impacts of the gear on habitat, and that there is sufficient data available to allow for the determination of habitat impacts. However, the physical impacts of the gear on the habitat types have not been fully quantified yet.</p> <p><u>c-SG80</u>: Changes in distributions of all marine habitats within the oceanic areas that the fishery operates in overtime are not measured. In particular there is little monitoring of coastal and deep-ocean habitats around the Indian Ocean. While the fishery is pelagic and does not take place in these parts of the ocean, the performance indicator is relevant in the context of habitats not used by the fishery also. The habitat within which the fishery operates is entirely pelagic. Subtle physical and or chemical changes in pelagic habitat may occur over time. Some of these e.g. temperature, turbidity and salinity are subject to seasonal variation and can be easily monitored and changes detected using remote sensing (e.g. satellite imagery). Other changes such as water movement (density and wind driven ocean currents, tidal currents and ocean swell) require more direct techniques for measurement. However large-scale changes in the overall distribution of epipelagic habitat do not occur over a time frame that is relevant in the context of managing fisheries. Despite this, the area of pelagic habitat available to and suitable for making sets on freeschools of tuna does vary according to oceanographic conditions as well as changing security and geopolitical circumstances. Information in relation to such changes is available and is updated regularly.</p>		
References	<ul style="list-style-type: none"> IOTC WPEcosystem and Bycatch Meeting http://www.iotc.org/sites/default/files/documents/2016/09/IOTC-2016-WPEB12-RE - FINAL.pdf 		
<table border="0" style="width: 100%;"> <tr> <td style="background-color: #0056b3; color: white; padding: 5px;">Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)</td> <td style="padding: 5px; text-align: right;">Pass (≥80)</td> </tr> </table>		Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)		

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
<p>a</p>	<p>Ecosystem status</p>		
	<p>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.</p>	<p>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.</p>	<p>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.</p>
	<p>Met?</p> <p>Yes</p>	<p>Yes</p>	<p>No</p>
<p>Discussion</p>	<p><u>a-SG60-SG80</u>: Impacts of the fishery on biotic elements of the ecosystem (retained species, bycatch, Endangered threatened and protected species and habitats) have been considered in previous P2 scoring components. Other elements underlying ecosystem structure and function not previously considered include abiotic elements (environmental parameters including physical and chemical parameters) and biotic elements and processes such as photosynthesis, epipelagic oceanic food webs (trophic structure including predator/prey relationships), abundance of predators and availability of forage species. Normal function within an ecosystem is dependent on relative stability in relation to key underlying biotic and abiotic elements.</p> <p>While there are few published studies that examine the overall health of the Indian ocean ecosystem, some depletion of higher level predators in the Ocean has been documented. Preliminary results of an analysis of abundance trends of several elasmobranch and teleost fish in the Indian Ocean pelagic ecosystem were presented to IOTC’s WPEB meeting in October 2009, based on data from research longline cruises. A widespread decline in the abundance of top predators such as large pelagic sharks and tunas was demonstrated, as was the emergence of several mid-sized, lower-trophic-level species such as crocodile shark and lancetfish. The relative abundances of lancetfish and tuna showed a dramatic shift between 1960-1990 and 2000-2008, with tuna being replaced by lancetfish. During 1960-1990 there were 5 tuna to 1 lancetfish, now there is 1 tuna to 5 lancetfish.</p> <p>This is considered to be likely related to removal of large numbers of top predators in directed shark fisheries as well as bycatch of sharks in tuna fisheries, where unobserved capture of sharks is known to be a source of significant ongoing unrecorded mortality. The decline in top predators is also likely to be due in part to declines in large pelagic tunas, especially southern Bluefin, bigeye and yellowfin tuna. Depletion of large tunas, the recovery of the Indian Ocean yellowfin tuna stock in recent years and likely maintenance of most of tuna stocks within biologically based limits is expected to prevent further reductions in abundance of large tunas and therefore consequential further changes in Indian Ocean fish community structure through removal of tuna are not anticipated. It is therefore considered highly unlikely that the purse seine tuna fishery will disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p> <p>Catches of tuna in the freeschool fishery were significantly higher in the past, going back to the early to mid 2000’s. Since then, significant changes have occurred in that drifting FADs were introduced into the fishery and are now used on a wide scale. The majority of Indian Ocean tuna purse seine fisheries are now based around the use of drifting FADs and between 70 and 85 %, depending on the year, of purse seine caught tuna is taken in FAD related sets. The increase use of FADs has also become an increasing source of concern for tuna Regional Fisheries Management Organizations (RFMOs) such as the Indian Ocean Tuna Commission (IOTC). Though FADs have many positive consequences for purse seine fishing, by improving the detection of tuna schools and the success of fishing sets (Fonteneau et al., 2000b), they may also have a number of negative consequences for tropical tunas and marine ecosystems (Dagorn et al., 2013) as they can contribute to the increase of catches of juveniles of yellowfin and bigeye tuna, modifications of the natural behaviour of tropical tunas (Hallier and Gaertner, 2008; Marsac et al., 2000; Sempo et al., 2013), increased levels of bycatch and discard (Amandé et al., 2011, 2012), and potential damages to vulnerable habitats when are lost and beached.</p> <p>However, the increase of juvenile catch of primary species is assessed by IOTC WPTT and SC assuring that those primary species are exploited within safe biological limits and, when it is not the case, several measures are implemented to reduce the level of exploitation and assure the recovery of the stock. For example, in the case of yellowfin apart from reducing 15 % the level of catches of the PS there has been a reduction on the number of FADs from 550 (Resolution 15/08) to a maximum of 425 FADs per vessel active at any time (Resolution 16/01). So, in one year from the implementation for the first time the limitation on FADs there has been a reduction of around 23% on the number of FADs in one year. The hypothesis that FADs could modify the natural behaviour of tropical tunas has not been proven and the tagging information available from IOTC-RTTP does not suggest any behaviour modification of tuna species. Although there is more bycatch on FADs than in free schools, the level of bycatch in FAD fisheries is lesser than the level of bycatch in other IOTC fisheries such as the gillnets and longliners. Moreover, the Echebatar PS are following the signed agreement on best code of conduct and make all possible</p>		

effort to release alive the megafauna such as sharks, marines turtles, etc... This has been covered in the EPT section. Non-entangling FADs are used in the Echebatar fleets and they are also proving biodegradable material in the FADs so as to reduce the garbage and contamination on the sea and to mitigate the beaching and potential damages to vulnerable habitats. Echebatar group is working with environmental groups to foresee and predict FAD beaching events beforehand so as those FADs can be retrieved before beaching.

References

- http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier-France).
- IOTC Report of the 12th Working Party on Ecosystems and Bycatch. IOTC-2016-WPEB12-R[E].
- Polacheck, T, 2006. Tuna longline catch rates in the Indian Ocean: Did industrial fishing result in a 90% rapid decline in the abundance of large predatory species? Marine Policy 30 (2006) 470–482.
- Sherman, K., Okemwa, E.N. and Ntiba, M.J. (eds.) 1998. Large marine ecosystems of the Indian Ocean: Assessment, sustainability and management. Published by Blackwell Science Inc.
- Southwest Indian Ocean Fisheries Project <http://www.swiofp.net>

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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
Management strategy in place			
a	<p>Guide post</p> <p>There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.</p>	<p>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.</p>	<p>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.</p>
Met?	Yes	Yes	No
Management strategy evaluation			
b	<p>Guide post</p> <p>The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).</p>	<p>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</p>	<p>Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved</p>
Met?	Yes	Yes	No
Management strategy implementation			
c		<p>There is some evidence that the measures/partial strategy is being implemented successfully.</p>	<p>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).</p>
Met?		Yes	No
Discussion	<p><u>a-SG60-SG80</u>: A partial strategy is defined as “a cohesive arrangement which may comprise one or more measures, an understanding of how they work to achieve an outcome and an awareness of the need to change the measure/s should they cease to be effective. It may not have been designed to manage impacts on the specific component”.</p> <p>Tuna – especially yellowfin and bigeye, but also bluefin, albacore and skipjack are important predatory species in the Indian Ocean. There is range of measures in place in order to ensure the fishery does not cause serious or irreversible harm to ecosystem structure and function. Of greatest relevance perhaps is the adoption of the precautionary approach by IOTC in relation to management of tuna fisheries, the implementation of interim stock specific biomass target and limit reference points as well as the commitment to development of robust harvest control rules through the MSE process.</p> <p>Other measures that contribute to ensuring that serious or irreversible harm is avoided include:</p> <ul style="list-style-type: none"> » Creation of a single body (RFMO-IOTC) in order to co-ordinate and provide a unified approach to management of Indian Ocean fisheries amongst contracting parties and co-operating non-contracting parties. » Capacity limitation of fleets. » Spatial and temporal closures. » Implementation of full catch reporting and elimination of IUU fisheries. » Development of resolutions to ensure that efforts are made to reduce the bycatch of vulnerable species such as pelagic sharks, turtles, cetaceans and whalesharks. » Collection of data and statistics in relation to tuna catches, bycatch, ecosystem component interactions and a range of other fishery specific criteria through mandatory reporting requirements as well as the operation of independent observer schemes. » Ongoing research and investigations into impacts of tuna fisheries on the Indian Ocean 		

ecosystem amongst IOTC members.

Although not specifically designed to manage impacts on the ecosystem, the range of measures is considered to represent a partial strategy that works to achieve the intended outcome.

b-SG60-SG80: The partial strategy considers most of the significant sources of fishery related risks to the Indian Ocean ecosystem, namely the removal of target species, risks associated with impacts of bycatch and discarding of a wide range of non-target species and IUU. A range of other risks are also addressed in the strategy. Overall, the partial strategy is considered likely to work. In recent years, a range of new management measures have been agreed amongst IOTC members and these have been introduced through IOTC resolutions that are in general adopted and implemented by all members and co-operating non-contracting parties. Resolutions are agreed by majority vote and where adopted has caused member states to respond accordingly by introducing new rules and/or regulations that apply to its vessels.

c-SG80: There is some evidence that the measures comprising the partial strategy are being implemented successfully. All tuna stocks are believed to be within biologically based limits and above interim limit reference points. Other evidence that the partial strategy is working is also available. This is demonstrated by the substantial reduction of IUU within the IOTC area of competence, by the updating of stock assessments, increased sharing of information and co-operation amongst members and co-operating non-contracting parties, the increased levels of research undertaken by IOTC members in the Indian Ocean fisheries, agreement over new and expanded management initiatives (such as adoption of the PA and commitment to MSE) through adoption of IOTC resolutions.

References

- Indian Ocean Tuna Commission <http://www.iotc.org>.
- Southwest Indian Ocean Fisheries Project <http://www.swiofp.net>

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	
b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	Yes	Yes	Are criteria met? (Yes, No)
c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood.
	Met?		Yes	No
d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Yes	No
e	Monitoring			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Yes	No
Discussion	<p><u>a-SG60-SG80</u>: 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 Indian Ocean. Most coastal states in the western Indian 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 also carries out significant amounts of research in the Indian Ocean.</p> <p>Much information of direct relevance to management of fisheries impacts is presented to and exchanged or published through the working parties of the IOTC such as the Working Party on Tropical Tunas, Working Party on Ecosystems and Bycatch, Working Party on Billfish, Working Party on data Collection and Statistics.</p> <p>Information available covers all main areas of relevance in the context of understanding key abiotic and biological elements of the Indian Ocean ecosystem.</p>			

b-SG60-SG80: Impacts of the fishery on key ecosystem elements (biological, abiotic) can be inferred from existing information. Impacts of the fishery on some biological elements in particular have been investigated in detail, or can be inferred, including status of tuna stocks, levels of bycatch (specifically for Echebatar group vessels as well as at EU fleet level in respect of major species groups), impacts on habitats and ETP species. However, given that the fisheries are industrial scale, not all interactions have been investigated in sufficient or appropriate detail as would be indicative of ecosystem based approach to fisheries management. Possible changes in trophic structure of pelagic oceanic ecosystems have not been investigated in sufficient detail and there is ongoing uncertainty in relation to the role of tuna fisheries in reduction of top-level predators in the Indian Ocean as well as an observed increase in the prevalence of lower trophic level pelagic species. Despite these shortcomings, the fishery currently meets that impacts on some biotic components impacts have been investigated in detail.

c-SG80: The main functions of species impacted by the Indian Ocean purse seine tuna fishery are known. Sufficient information is available in order to identify the range of species that are impacted and to determine their respective roles e.g. as low trophic level species, key low trophic level species, higher trophic level prey species, forage species, predators and potential roles in transfer of energy and nutrients between various pelagic habitats (epipelagic, mesopelagic, bathy-pelagic) or between pelagic and demersal habitats. The main functions of the pelagic habitat are known and the potential impacts of purse seine tuna fisheries on these are understood. However, not all impacts of the fisheries on target, retained, bycatch and ETP species are sufficiently understood to meet with SG100.

d-SG80: The main consequences of ecosystem impacts associated with the freeschool fishery can be inferred from knowledge in relation to the scale of the fishery i.e. removals of target, retained and ETP species and interactions; together with available information in relation to the sensitivity or vulnerability of species and habitats to fishing interactions.

Information in relation to the distribution, abundance and biological/life history characteristics of many species (scoring elements) impacted by the fishery are known at a level that is adequate to allow consequences and impacts on outcome status to be inferred. While available information in relation to the biology some species/scoring elements is significantly greater than for others, general understanding of the likely resilience of species and status and robustness of many affected populations supports determination of the most likely consequences for most. Sources of information in relation to population status for many affected species include www.fishbase.org , IUCN <http://www.iucnredlist.org> , <http://www.iotc.org> .

e-SG80: A wide range of fishery, biological and environmental data continue to be collected by many different organisations with an interest in the Indian Ocean, including Spain, other EU nations, Seychelles and most other coastal states that are members of IOTC or which are co-operating non-contracting IOTC parties. Data are collected in relation to:

- » Catches of all tuna species by Pesqueras Echebatar and at IOTC 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 programmes.

Data is continually being updated for most of these criteria and is available to indicate potential or actual changes in levels of risk to ecosystem elements and components. There are however shortcomings in the availability of information that supports the development of management strategies for specific ecosystem impacts or risks. For example, data in relation to slippage (discarding) of tuna catches is unreliable and discard rates cannot be verified. Data in relation to ETP encounters is not systematically collected onboard vessels, and while there is a reasonable degree of understanding about rates of impact, greater levels of specific information would allow for development of more targeted and specific measures aimed at reducing / minimizing impacts.

References

- Amade, M.J., Ariz, J., Chassot, E. et al. (2008) Bycatch and discards of the European purse seine tuna fishery in the Indian Ocean: Characteristics and estimation for the 2003-2007 period. Indian Ocean Tuna Commission document, IOTC-2008-WPEB-12, 23 pp.
- Chavance, P., Amade, J.M., Pianet, R., Chassot, E. and Damiano, A. 2011. Bycatch and Discards of the French Tuna Purse Seine Fishery during the 2003-2010 Period estimated from Observer data IOTC-2011-WPEB07-23 Rev_1.
- Echebatar S.A. Catch data 2008-2011, Western Indian Ocean tuna fishery.

- EU and Seychellois tuna fleet monitoring (VMS) records.
- http://ec.europa.eu/research/bioeconomy/pdf/ebfmtuna2012_boa_draft26092012.pdf (Mitigating impacts of fishing on pelagic ecosystems: towards ecosystem-based management of tuna fisheries Draft book of Abstracts 15-18 October 2012 Montpellier – France).
- IOTC Reports of the WPEB, www.iotc.org.
- IOTC Reports of the WPTT, www.iotc.org.
- Poisson F., Vernet A.L., Filmalter J.D., Goujon M., Dagorn L. 2011. Survival rate of silky sharks (*Carcharhinus falciformis*) caught incidentally onboard French tropical purse seiners. IOTC-20110WPEB07-28.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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); and
- 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	No
b			
Resolution of disputes			
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
c			
Respect for rights			
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
Discussion	<p><u>a-SG60-SG80:</u> Tuna fisheries in Indian Ocean take place under a double legal framework. On a regional level, the management body responsible for the fisheries is the IOTC which is the RFMO mandated to manage tuna and tuna-like species in the IO and adjacent seas. On the other hand, national Administrations of coastal countries have the fisheries legal responsibility in their EEZ. Most of them are members of IOTC. The IOTC was established in 1993 at the 105th Session of the Council of the Food and Agriculture Organization of the United Nations (FAO) under Article XIV of the FAO constitution. As such, the IOTC Members can make decisions concerning the management of tuna and tuna-like resources, and their associated environment, binding on all Members and Cooperating non-Contracting Parties and entered</p>		

into force in 1996. The Rules of Procedure were in 1997 and these are consistent with international laws and standards. From 1997 additional rules have been approved and at present IOTC is a framework with an effective legal system and organized and effective cooperation with other parties.

The IOTC was formed on the basis of international agreements for fisheries management (the Convention on Highly Migratory Species, the FAO Code of Conduct for Responsible Fisheries etc.). European Union is member of IOTC and their vessels are subjected both legal frameworks (EU and IOTC). In some cases, EU legislation is more restricted than IOTC rules.

The Common Fisheries Policy of the EU stated in Article 29 of the "REGULATION (EU) No 1380/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the Common Fisheries Policy" that: "The Union shall foster cooperation among RFMOs and consistency between their respective regulatory frameworks, and shall support the development of scientific knowledge and advice to ensure that their recommendations are based on such scientific advice."

European Union Vessels operate in Indian Ocean through Fisheries Partnership Agreements. The main roles of EU in the Indian Ocean in relation with tuna fisheries are implemented of two different ways. Fisheries Partnership Agreements (FPA) signed between EU and some coastal members including Seychelles (but not only this. Also Madagascar, Mozambique, Comoros and Mauritius have FPA with the EU). In the other hand, European Union is member of IOTC RFMO. IOTC manages tuna resources of the Indian and therefore, the European Union and any other member country may propose management measures are evaluated in the bosom of the IOTC.

At national level, Seychelles has fisheries legal framework named "Fisheries Act" published in 1981. Seychelles Fishing Authority (SFA) is the Administrative body charged with the fisheries management system in the country and it's signatory to most major international fisheries agreements. This ensures that the management system is consistent with international laws. Seychelles is a member of IOTC. Accordingly, at a regional and national level the framework for the management system is generally consistent with local, national and international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. The elements of scoring issue a. is met at SG 60 and also SG80 but is not met with at SG100.

b-SG60-SG80:

The regional management level (IOTC) incorporate formal dispute resolution procedure in regional level (Article XXIII of the Agreement of IOTC covers "Interpretation and Settlement of Disputes") in two levels. First one through conciliation procedure between the parts to be adopted by the Commission and if the dispute is not settled, it may be referred to the International Court of Justice in accordance with the Statute of the International Court of Justice. The mechanism is transparent; but given the lack of disputes it not may be argued that the system is proactive in dealing with potential disputes.

At the National management level, Seychelles Fisheries Act provides the possibility to appeal some decision against the refusal, suspension, cancellation, or variation of the fishing vessels license conditions but only in this case.

Scoring issue b meets with SG60 and also SG80 requirements, but the management system has not been fully tested and proven to be effective, therefore not possible to score at SG100.

c-SG60-SG80:

The United Nations Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 UN Fish Stocks Agreement) has greatly enhanced the role of RFMOs. RFMOs are enhanced in the management and conservation by establishing (in legally-binding terms) the matters about sustainability of fisheries on which States are expected to agree. These include management measures, agreement on participatory rights such as allocation of allowable catch and/or effort, decision-making rules, and mechanisms to acquire scientific advice and ensuring compliance with management measures.

IOTC is the RFMO for Indian Ocean. However, IOTC provides only for the rights of nations to fish resources and the nation state distributed these rights between groups depending on national policy and legislation of each country.

IOTC does not regulate to influence the catch of people who are dependent on fishing for food and livelihoods. In some resolutions it seeks to support fishing in coastal states and by argument this could assist those who are dependent on fishing for food and livelihoods.

EU FPAs with third countries ensure that Union fishing activities in third country waters are based on the best available scientific advice and relevant information exchange, ensuring a sustainable exploitation of the marine biological resources, transparency as regards the determination of the surplus and, consequently, a management of the resources that is consistent with the objectives of the CFP.

Respect for democratic principles and human rights, as laid down in the Universal Declaration of Human Rights and other relevant international human rights instruments, and for the principle of the rule of law, constitutes an essential element of sustainable fisheries partnership agreements, which should contain a

	<p>specific human rights clause.</p> <p>In national context, in the Seychelles, the Fisheries Act, there isn't distinction in management between commercial fishermen and those that rely on fishing for food and livelihoods.</p> <p>Issue c is scored at SG80. Refer to articles of the IOTC and any other provisions that may protect or acknowledge the rights of people's customary rights for fishing for food or livelihood.</p>
References	<ul style="list-style-type: none"> • Agreement on fisheries between the European Economic Community and Republic of Seychelles Official Journal of the European Union. Entry into: force 10 May 2003. • Establishment Act of Seychelles Fisheries Authority Chapter 214. http://www.sfa.sc/Legislations/SFA%20Establishment%20Act.pdf • FAO Council 1993. The Agreement for the Establishment of the Indian Ocean Tuna Commission. Hundred and Fifth Session in Rome on 25 November 1993. http://www.iotc.org/English/info/mission.php • FAO Code of Conduct for Responsible Fisheries adopted in the FAO Conference 1995. http://www.fao.org/docrep/005/v9878e/v9878e00.HTM • Fisheries Partnership Agreement between the European Community and the Republic of the Seychelles Official Journal L 290 , 20/10/2006 P. 0002 – 0005. • 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 (in force as from 11 December 2001): http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm • United Nations Convention on the Law of the Sea of 10 December 1982 (UNCLOS). http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf.
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)

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
b	Consultation processes			
	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
c	Participation			
	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Yes	No
Discussion	<p><u>a-SG60-SG80:</u></p> <p>Regional context: IOTC define roles and responsibilities both its contracting parties and co-operating non-contracting parties. IOTC ensure that all organizations and individuals involved in the management process have been identified with functions, roles and responsibilities that are explicitly defined and, in general, these are well understood for key areas of responsibility. These key areas are related with the provision of basic catch data and catch sampling, research programs, stock assessments and scientific advice between others. IOTC performs an important effort for parties to understand and accept their roles and responsibilities. However, not always the parties perform this work efficiently and effectively in some areas.</p> <p>National context: Seychelles Fisheries Act functions, roles and responsibilities are also explicitly defined and well understood for SFA and are implemented through their legal acts and administrative mandates.</p> <p>Regional Context: IOTC Working Parties included the Scientific Committee and the Commission. They meet regularly seek and accept relevant information incorporating it managing system. The necessary information that feeds Management System is provided by the countries that constitute the IOTC according to protocols and rules of the Organization. Coastal countries take into account all relevant information for the management of the fishery and include local knowledge. The management system includes this information in their reports, Resolutions and Recommendations. All of them are published and made available to all interested parties through its website. In reference to EU and EC processes consultation, the main consultation process is established through the Long Distance Regional Advisory Council (LDRAC).</p>			

National Context: As any other member of the IOTC, Seychelles takes part of IOTC meeting and provides relevant information, including local knowledge about the tuna fisheries in their waters. This information is incorporated in the resolutions and recommendations of IOTC. However the national consultation processes are not included in the Fisheries Act as system for obtaining relevant information. Stakeholder consultations are held on a regular basis regarding the development of the sector. The SFA works in close collaboration with Ministry Natural Resources, Ministry of Environment and Energy, Seychelles Coast Guard, Seychelles Ports Authority, other Government institutions, fishermen and boat owners associations, NGO's as well as overseas partners.

The management system takes into account existing information about the status of the fishery including the best scientific information available. However, not always socio-economic information is analyzed and included in the management system regularly SG80 PISG has been met with.

This issue is scored at SG80, as the elements of SG60 and 80 are clearly met but not the SG 100 elements.

c-SG80:

Regional Context: IOTC gives the opportunity for all stakeholders involved in the fishery to participate in key meetings. However, not all parties are interested to participate actively IOTC. Secretariat takes a significant effort to encourage the participation of all parties (including the financing of important stakeholders to attend meetings). Additionally, Secretariat provides training to national Administration staffs and help them to improve the scientific knowledge and administrative capacity through encouraging participation and integration in the activities of the IOTC.

In reference to EU and EC processes consultation add that the main consultation process is established through the Advisory Council of Long Distance (LDRAC).

National Context: SFA participates in the IOTC meeting. However, national consultation processes is not sufficient. Stakeholder consultations are held on a regular basis regarding the development of the sector. The SFA works in close collaboration with Ministry Natural Resources, Ministry of Environment and Energy, Seychelles Coast Guard, Seychelles Ports Authority, other Government institutions, fishermen and boat owners associations, NGO's as well as overseas partners.

References

- Establishment Act of Seychelles Fisheries Authority Chapter 214 <http://www.sfa.sc/Legislations/SFA%20Establishment%20Act.pdf>
- FAO Council 1993.The Agreement for the Establishment of the Indian Ocean Tuna Commission. Hundred and Fifth Session in Rome on 25 November 1993. <http://www.iotc.org/English/info/mission.php>
- IOTC (2013). Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission. <http://www.iotc.org/English/resolutions.php>
- Seychelles Fisheries Act Chapter 82. <http://faolex.fao.org/docs/pdf/sey2117.pdf>

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	Partial
Discussion	<p><u>a-SG60-SG80:</u></p> <p>The main objective of IOTC, as reflected in its establishment Agreement: “The Commission shall promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this agreement and encouraging sustainable development of fisheries based on such stocks”. Based in this, the way of IOTC since its establishment has been as clear objective to incorporate the most appropriate measures to achieve a long-term sustainable fishery. For this, long-term objectives are really included, as a whole, in the IOTC Conservation and Management Measures.</p> <p>In this case, given that IOTC is the higher level management it was considered only the Regional level but not National level.</p> <p>In reference to the consistency of the IOTC measures with MSC Principles and Criteria and If the management policy incorporates the precautionary approach, some IOTC resolutions show this reality. So Resolution 12/01 specified to apply the precautionary approach, in accordance with relevant internationally agreed standards, in particular with the guidelines set forth in the UNFSA, and to ensure the sustainable utilization of fisheries resources as set forth in Article V of the IOTC agreement. Resolution 13/10 and Recommendation 12/14 establishes limit reference points as part of a precautionary approach. Furthermore, there are evidences to apply precautionary approach and ecosystem based management in IOTC resolutions including by catch reduction program or monitoring of ecosystem indicators.</p> <p>For this, long-term objectives consistent with MSC Principles and Criteria and the precautionary approach are implemented in this fishery.</p> <p>According to SG100 definition for PI3.1.3, there should be Long-Term objectives implemented in the fishery that guide the decision-making, which are also consistent with MSC Principles and Criteria and the precautionary approach. Furthermore some of this Long Term objectives are required to be explicit within and required by management policy.</p> <p>Management of tuna fisheries is implemented by IOTC in regional context. National level management it is not considered to be included in regional management. There are explicit reference to precautionary approach in IOTC (2001) Resolution 12/01 and the implementation of this with subsequent resolutions. The precautionary approach includes the adoption of interim target and limit reference points and IOTC Recommendations 13/10 and 12/14 on interim target and limit reference points. These measures establish clear and explicit requirements though being considered "interim" can be understood as "partially required".</p> <p>The Final report of last IOTC Commission meeting held in Colombo, May 2014 includes in the performance review panel, in reference to adoption of precautionary approach, that this task is considered “Partially Completed”. The Commission addressed this matter through the adoption of Resolution 12/01 on the implementation of the precautionary approach. Some elements of Precautionary Approach were also adopted in Resolution 13/10 on interim target and limit reference point and a decision framework.</p> <p>http://www.iotc.org/documents/report-eighteenth-session-indian-ocean-tuna-commission</p> <p>There are evidence to apply precautionary approach and ecosystem based management in IOTC resolutions including bycatch reduction program and monitoring of ecosystem indicators and on interim target and limit reference points and a decision framework. If well, while it is true that the target and limit reference points for each of the stocks covered by the certification should be reviewed and that there are no clear well defined harvest control rule that encapsulate the precautionary principle, both tools are being developed and / or implemented. Furthermore, the IOTC are implementing the analytical tool Management Strategy Evaluation (MSE) which integrates inter alia, the precautionary principle and will serve to establish new HCR better adapted to current management objectives.</p> <p>http://www.iotc.org/documents/kobe-plots-and-using-uncertainty-mse-process</p>			

	<p>For this, it is considered that this PI clearly exceeds the SG80 since there are specific long-term management tools and designed under the precautionary principle. However awarding full score at SG100 is not appropriate as those are currently only required for some specific elements of the management policy and therefore are considered as being "partially required" justifying a score of 85.</p>
References	<ul style="list-style-type: none"> • FAO Council 1993. The Agreement for the Establishment of the Indian Ocean Tuna Commission. Hundred and Fifth Session in Rome on 25 November 1993. http://www.iotc.org/English/info/mission.php • IOTC Recommendation 12/14 On interim target and limit reference points. • IOTC Resolution 12/01 on the implementation of the precautionary approach. • IOTC, 2013. Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission. http://www.iotc.org/English/resolutions.php.
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)

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
Discussion	<p><u>a-SG60.SG80</u>: Fisheries objectives are nowadays well defined. IOTC Res 15/10 on Interim Target and Limit reference points and a decision framework and Resolution 16/02 on Harvest Control Rules for SKJ in IOTC are designed 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. The HCRs approved in Res 16/02 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. The HCRs designed (Res 16/02) are likely to be robust to the main uncertainties as agreed by WPTT and WPM methods such as steepness, different mortality vectors, etc.... including the ecological role of the target species.</p> <p>Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs agreed by The Indian Ocean Tuna Commission as could be inferred from the example of Yellowfin Recovery Plan adopted in Resolution 16/01. Moreover, the catch of SKJ in the last 8 years has not exceeded the MSY level.</p> <p>In the national context, there does not appear to be any short-term objectives explicit designed to achieve the outcomes expressed by MSC's Principles 1 and 2. Seychelles, as member of IOTC, adopts the management measures proposed by IOTC but don't have a management plan with short-term objectives included.</p>			
References	<ul style="list-style-type: none"> • FAO Council 1993. The Agreement for the Establishment of the Indian Ocean Tuna Commission. Hundred and Fifth Session in Rome on 25 November 1993. http://www.iotc.org/English/info/mission.php • IOTC Resolution 15/10 on interim target and limit reference points and a decision framework. • IOTC Resolution 16/02 on harvest control rules for skipjack tuna in the iotc area of competence. • IOTC, 2013. Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission. http://www.iotc.org/English/resolutions.php • Mosqueira, T. Kitakado (2012) Working towards the evaluation of reference points and harvest control rules for IOTC stocks. 4th Session of the IOTC Working Party on Methods. IOTC-2012-WPM04-04. • United Nations Convention on the Law of the Sea of 10 December 1982 (UNCLOS). http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf 			
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)			Pass (≥80)	

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	
b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Yes	Yes	No
c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Yes	
d	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Yes	Yes	Yes

e	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability 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
Discussion	<p><u>a-SG60-SG80:</u></p> <p>The specific management system for this fishery has established decision-making processes that result in measures and strategies to achieve specific objectives. The rules and procedures of the IOTC establish the mechanisms by which each member may vote to adopt new measures and strategies, as well as, approval, objection procedure, implementation and compliance.</p> <p>In reference to National context, the Government of Seychelles, through SFA, has a long-term policy of for the fishing industry based in the "promotion of sustainable & responsible fisheries development & optimization of the benefits from this sector for present and future generations". The SFA works in close collaboration with Ministry Natural Resources, Ministry of Environment and Energy, Seychelles Coast Guard, Seychelles Ports Authority, other Government institutions, fishermen and boat owners associations, NGO's as well as overseas partners. Stakeholder consultations are held on a regular basis regarding the development of the sector.</p> <p>In IOTC context, from the available scientific information, the process of decision making is organized as follows:</p> <ul style="list-style-type: none"> • Report of the Scientific Committee is circulated to all Members, who initiate a period of internal consultation with their scientists. • Recommendations are considered and translated, when necessary, to proposals for CMMs. • Briefings are prepared by national administrations (internal consultation), to define the position of the delegations on various matters. • Necessity for action on other areas (e.g. Compliance, combat of IUU fishing) are also included in the briefings consolidating the position of the national delegations. • At the Annual Session, matters are raised and negotiated seeking, when possible, consensus in the action. • Binding Resolutions are adopted during the Session, as well as non-binding recommendations. <p style="text-align: center;">There are two Types of Decisions (Article IX):</p> <ul style="list-style-type: none"> • Recommendations (voluntary and/or transitional). • Resolutions (binding) – after 120 days following the Executive Secretary's notification. <p style="text-align: center;">Approval Process:</p> <ul style="list-style-type: none"> • Consensus process or majority consensus approach. • Voting Process—two thirds majority of those present and voting. • Voting Process (Rule IX of Rules of procedure). • Show of hands. • By roll call (requested by a member). • Secret ballot (requested by a member and seconded by another member). <p style="text-align: center;">Objection process (Article X)</p> <ul style="list-style-type: none"> • Any member of the Commission may, within 120 days object to a Management measure and shall not be bound by the measure. • Any other member may within 60 days from the expiry of the 120 days object to any management measure. • If objections to a measure adopted under above is more than a 1/3, the other members shall not be bound but shall not preclude any other members from giving it effect. • Any member can withdraw its objection and be bound by the measure at any time. <p>Therefore, the elements of SG60 and 80 are met for this issue.</p> <p><u>b-SG60-SG80:</u></p> <p>Implementation and compliance:</p> <ul style="list-style-type: none"> • Upon return from the annual session, each delegation briefs higher authorities on the outcomes. • The need for changes in the domestic legislation arising from any agreed measure is evaluated, and action is taken to modify legislation as necessary. • Contacts are established with other agencies and institutions that could be responsible for implementation of some of the actions (e.g. Port Authority, provincial authorities). 			

- Meeting with stakeholders are scheduled to brief them on the outcomes of the Commission Session and their consequences at the domestic level.
- Monitoring and reporting of activities to the IOTC.
- Secretariat proceeds inter-sessional according to the agreed schedule of reporting.
- Level of compliance is indicative of the effectiveness of the Commission.

This SG issues met at SG80.

The difficulty to rate this SI is based on the effective implementation of resolutions and recommendations adopted within the IOTC by all parties.

The mechanisms of the IOTC support the conclusion that all issues identified in the fishery are taken into account in the decision making process.

However, effective implementation of the same does not always occur at 100%. The IOTC is able to respond effectively to all problems arising from the management but the degree of implementation is not always complete.

Therefore, we do not consider this evidence for this issue meets the requirements for SG100 but it does meet the SG80 according to the provisions of MSC CR CB4.8

For the Europe Union Seychelles and it is considered that the 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 but not the case for all parts of the IOTC and therefore this issue only reaches SG80 level.

c-SG80:

The IOTC has repeatedly stressed the importance of using best available scientific information, in conjunction with sound and clear scientific advice in support of the IOTC decision making process for the conservation and management of tuna species. IOTC use the best scientific information as basis for making decisions and to elaborate the management fishery Resolutions.

IOTC take into account the precautionary approach and this is used in practice under most circumstances intake of decisions.

We believe that the decision-making process IOTC is always based on the best scientific information available. The application of the precautionary principle should be considered from the IOTC Resolution 12/01.

Resolutions 12/01 on the implementation of the precautionary approach and 13/10 on interim target and limit reference points and a decision framework, make possible the implementation of the precautionary approach thanks to the adoption of interim target and limit reference points.

Different Resolutions and recommendation were adopted within the IOTC, from Resolution 12/01, which refers to the application of this principle.

- Resolution 13/04 On the conservation of cetaceans.
- Resolution 13/05 On the conservation of whale sharks (*Rhincodon typus*).
- Resolution 13/06 On a scientific and management framework on the Conservation of sharks species caught in association with IOTC managed fisheries.
- Resolution 13/08 Procedures on a fish aggregating devices (FADs) management plan, including more detailed specification of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incidence of entanglement of non-target species.
- Resolution 13/09 On the conservation of albacore caught in the IOTC area of competence.
- Resolution 13/10 On interim target and limit reference points and a decision framework.
- Resolution 13/11 On a ban on discards of bigeye tuna, skipjack tuna, yellowfin tuna and non-targeted species caught by purse seine vessels in the IOTC area of competence.
- Resolution 14/02 For the conservation and management of tropical tunas stocks in the IOTC area of competence.
- Resolution 14/03 On enhancing the dialogue between fisheries scientists and managers.

This SG issue meets the requirements of the SG80 level.

d-SG100:

Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions. IOTC formally publish all relevant information from the work of the organization at different levels. Thus, both published recommendations for research, monitoring, evaluation and performance review reports and plenary meetings organized. All information is public and available to all interested parties via the website of the organization. For SG100d, The IOTC has the

appropriate consultation mechanisms that involve all stakeholders and dissemination and results and reports. Through meetings, workshops, work parties and other events, scientific information and management schemes are developed with the participation of all parties. The information is properly disseminated to all stakeholders and can also be viewed and downloaded from the website of the Commission. <http://www.iotc.org/>. The different meetings and its results can be viewed on the website of meetings of the IOTC: <http://www.iotc.org/meetings>

e-SG80:

The regional management level (IOTC) incorporate formal dispute resolution procedure in regional level (Article XXIII of the Agreement of IOTC covers "Interpretation and Settlement of Disputes") in two levels. First one through conciliation procedure between the parts to be adopted by the Commission and if the dispute is not settled, it may be referred to the International Court of Justice in accordance with the Statute of the International Court of Justice. The mechanism is transparent; but given the lack of disputes it not may be argued that the system is proactive in dealing with potential disputes.

At the National management level, Seychelles Fisheries Act provides the possibility to appeal some decision against the refusal, suspension, cancellation, or variation of the fishing vessels license conditions but only in this case. It isn't a proactive system.

This issue e. meets the requirements of SG 60 and 80, but not 100.

References

- Establishment Act of Seychelles Fisheries Authority Chapter 214. <http://www.sfa.sc/Legislations/SFA%20Establishment%20Act.pdf>
- FAO Council 1993. The Agreement for the Establishment of the Indian Ocean Tuna Commission. Hundred and Fifth Session in Rome on 25 November 1993. <http://www.iotc.org/English/info/mission.php>
- IOTC, 2013. Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission. <http://www.iotc.org/English/resolutions.php>
- Seychelles Fisheries Act Chapter 82. <http://faolex.fao.org/docs/pdf/sey2117.pdf>
- SFA, 2005. For the Sustainable and Responsible Development of the Fishing Industry. The Fisheries Policy of Seychelles.
- United Nations Convention on the Law of the Sea of 10 December 1982 (UNCLOS). http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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
MCS implementation			
a	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
Met?	Yes	Yes	No
Sanctions			
b	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	Yes	Yes
Compliance			
c	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
Systematic non-compliance			
d		There is no evidence of systematic non-compliance.	
Met?		Yes	
Discussion	<p><u>a-SG60-SG80:</u></p> <p>For this fisheries there are three different umbrellas related with monitoring, control and surveillance issues. And these three components must be analysed jointly for scoring this PI.</p> <p>In a Regional level, IOTC don't have implemented a MCS system which has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules. IOTC has a Compliance Committee as advisory body of the Commission. The main activities of the Compliance Committee are as follows:</p> <ul style="list-style-type: none"> -Review all aspects of CPCs individual compliance with IOTC Conservation and Management Measures; -Review information relevant to compliance from IOTC subsidiary bodies and from Reports of Implementation submitted by CPCs, -To identify and discuss problems related to the effective implementation of, and compliance with, IOTC Conservation and Management Measures, and to make recommendations to the Commission on how to 		

address these problems.

But, this CC can be considered as a system yet. IOTC don't have own mechanism to perform MCS activities.

CPCs are those who must carry out these activities. The EU and Seychelles in the case of the fishery under assessment. In Europe, all ships are constantly monitored through satellite. Catches and landing are heavily monitored through observers program and electronic log-book. The MCS system, in this case has demonstrated an ability to enforce relevant management measures, strategies and/or rules.

The Monitoring and Control Unit is composed of the Fisheries Monitoring Centre (FMC) and the Fisheries Control Unit. FMC deals with the compliance of all fishing vessel's reporting requirements, Vessel Monitoring System (VMS), validation of statistical documents for ICCAT, IOTC, EU and Non-EU catch certificates. The Fisheries Control Unit is responsible for the processing of fishing licences.

The Enforcement Unit carries out all inspectorate duties with regards to port state inspection, land inspection, sea and air surveillance duties pertaining to national and regional requirements.

SFA has an observer program for the vessels with national flag and foreign that fishing in its waters.

This SG issues met at SG80 but not SG100 because there is not a comprehensive MCS system implemented in the region by IOTC

b-SG60-SG80:

For IOTC, sanctions to deal with non-compliance exist and there is some evidence that they are applied. This is a function of the Compliance Committee. For EU fleet the sanction related with non-compliance is consistently applied and demonstrably provide effective deterrence. For Seychelles fleet, sanctions exist and are consistently applied.

SFA port state control has been one of the strong points of Seychelles even before the creation of the MCS section. Despite this fact the overall approach to port state control was reviewed in 2009, concentrating on an investigative rather than an informative approach. The results have been positive since several infractions have since been detected. The results have been positive since then with detection of infractions and in one case it resulted the capturing of the Sri Lankan flag fishing vessel Lucky Too in 2012. The vessel was fined SCR 100,000.00.

This SG issues met at SG80.

c-SG60-SG80:

The Compliance Committee of the IOTC is responsible for tracking the degree of compliance with the different parties involved in this fishery. CC monitors compliance with recommendations and it is responsible for analysing and solving problems related to compliance.

The primary responsibility of the Compliance Committee is to monitor compliance with respect to implementation of IOTC Conservation and Management Measures by CPCs. The monitoring is conducted through the assessment of reports provided by CPCs.

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.

This SG issues met at SG80

d-SG80:

There is not any evidence showing systematic non-compliance.

References

- Establishment Act of Seychelles Fisheries Authority Chapter 214. <http://www.sfa.sc/Legislations/SFA%20Establishment%20Act.pdf>
- IOTC, 2013. Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission. <http://www.iotc.org/English/resolutions.php>
- IOTC Compliance Committee. Roles and Duties <http://www.iotc.org/compliance/coc>.
- IOTC Resolution 10/09 concerning the functions of the compliance committee.
- IOTC Resolution 11/04 on a regional observer scheme.
- Seychelles Fisheries Act Chapter 82. <http://faolex.fao.org/docs/pdf/sey2117.pdf>
- SFA, 2005. For the Sustainable and Responsible Development of the Fishing Industry. The Fisheries Policy of Seychelles.

Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)

Pass (≥80)

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	No
b	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Yes	Yes	Yes
Discussion	<p><u>a-SG60-SG80:</u> IOTC has implemented mechanisms to evaluate all parts of the management system by means of various committees and working groups that meet regularly, and report their advances to the Commission. Furthermore through Performance Review Panel (PRP) has also evaluated all parts of the management system.</p> <p>However, in the Seychelles there are some mechanisms to evaluate key parts of the management system but not all areas are covered. Although, since the management of these fisheries is shared with the IOTC, the assessment considers that the evidence achieves SG 60 and 80 for this indicator</p> <p><u>a-SG60-SG80-SG100:</u> IOTC is subject to regular and permanent internal review. This is demonstrated by the various committees and working groups that meet regularly and report their findings to the Commission. Performance Review Panel (PRP) has also evaluated all parts of the management system.</p> <p>Last update on progress regarding IOTC resolution 09/01 – on the performance review follow-up, indicates that External experts (Invited Experts) are regularly invited to provide additional expertise at Working Party meetings, although this does not constitute a formal process of peer review it does meet with the requirement to have occasional external review.</p> <p>In response to calls from the international community for a review of the performance of Regional Fisheries Management Organisations (RFMOs), the Indian Ocean Tuna Commission (IOTC) agreed in 2007 to implement a process of Performance Review. The IOTC formed a Review Panel, consisting of an independent legal expert, an independent scientific expert, six IOTC Members and a non-governmental organisations observer, which concluded its report to the Commission in January 2009. The Panel's review was based on the criteria developed as a result of a joint meeting of tuna RFMOs, Kobe, Japan, 2007. The report of the performance review is available here.</p> <p>In response ongoing requirements for performance review, the IOTC decided that a second Performance Review of the IOTC be undertaken in 2014, with terms of reference to be developed by interested CPCs and circulated for wider agreement via an IOTC Circular.</p> <p>» <u>IOTC Circular 2014-09: Terms of Reference for implementation and criteria to conduct the second performance review of the IOTC</u></p> <p>At its 18th Session in 2014, the Commission endorsed a set of Terms of Reference and criteria to conduct the 2nd Performance Review of the IOTC and agreed on a process to start undertaking the review in 2014. The composition of the Panel will be as follows, with the IOTC Secretariat acting as facilitator of the process:</p> <p>» Chair with appropriate background.</p>			

	<ul style="list-style-type: none"> » Contracting Parties from coastal States: Maldives, Mauritius, Oman and Seychelles. » Contracting Parties from DWFN: European Union and Japan. » Science expert (To be decided by the Panel Members). » NGOs: PEW and ISSF. » Members from other RFMO's: WCPFC and ICCAT. 		
References	<ul style="list-style-type: none"> • Establishment Act of Seychelles Fisheries Authority Chapter 214 http://www.sfa.sc/Legislations/SFA%20Establishment%20Act.pdf • IOTC, 2013. Collection of Active Conservation and Management Measures for the Indian Ocean Tuna Commission. http://www.iotc.org/English/resolutions.php • IOTC Scientific Committee. Roles and Duties. http://www.iotc.org/science/scientific-committee • Seychelles Fisheries Act Chapter 82. http://faolex.fao.org/docs/pdf/sey2117.pdf • SFA, 2005. For the Sustainable and Responsible Development of the Fishing Industry. The Fisheries Policy of Seychelles • Terms of Reference and criteria to conduct the 2nd performance review of the IOTC 		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #0056b3; color: white; padding: 5px;">Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)</td> <td style="padding: 5px;">Pass (≥80)</td> </tr> </table>		Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)
Likely Performance Indicator Level (e.g. <60, 60-79, ≥80)	Pass (≥80)		

- The report shall include an 'MSC PSA Worksheet for RBF' for each PI (1.1.1, 2.1.1, 2.2.1 and/ or 2.3.1) where the RBF is used
- Complete one PSA Rationale Table for each data-deficient species identified within a given PI, unless the options in PF4.1.4 and 4.1.5 are chosen.
- When required according to PF4.4.3, complete one susceptibility rationale section for each fishery impacting the given scoring element.

[See FCR Annex PF4](#)

[Download the MSC PSA Worksheet for RBF](#)

PSA Rationale Table

PI number

Productivity

Scoring element (species)	State scoring element (species).	
Attribute	Rationale	Score
Average age at maturity	Insert attribute rationale.	Score
Average maximum age	Insert attribute rationale.	Score
Fecundity	Insert attribute rationale.	Score
Average maximum size	Insert attribute rationale. Not scored for invertebrates.	Score
Average size at maturity	Insert attribute rationale. Not scored for invertebrates.	Score
Reproductive strategy	Insert attribute rationale.	Score
Trophic level	Insert attribute rationale.	Score
Density dependence	Insert attribute rationale. Invertebrates only.	Score

Susceptibility

Fishery

only where the scoring element is scored cumulatively

Insert list of fisheries impacting the given scoring element (PF4.4.3)

Attribute	Rationale	Score
Areal Overlap	Insert attribute rationale	Score
Encounterability	Insert attribute rationale	Score
Selectivity of gear type	Insert attribute rationale	Score
Post capture mortality	Insert attribute rationale	Score
Catch (weight) only where the scoring element is scored cumulatively	Insert weights or proportions of fisheries impacting the given scoring element (PF4.4.4)	

- The report shall include an 'MSC CSA Worksheet for RBF' for PI 2.4.1.
- Complete one CSA Rationale Table for each habitat assessed.

[See FCR Annex PF7](#)

[Download the MSC PSA Worksheet for RBF](#)

CSA Rationale Table

PI 2.4.1

Consequence	Rationale	Score
Regeneration of biota	Insert attribute rationale.	Score
Natural disturbance	Insert attribute rationale.	Score
Removability of biota	Insert attribute rationale.	Score
Removability of substratum	Insert attribute rationale.	Score
Substratum hardness	Insert attribute rationale.	Score
Substratum ruggedness	Insert attribute rationale.	Score
Seabed slope	Insert attribute rationale.	Score

Spatial	Rationale	Score
Gear footprint	Insert attribute rationale.	Score
Spatial overlap	Insert attribute rationale.	Score
Encounterability	Insert attribute rationale.	Score

This list should be as complete as possible to aid the assessment team with the evaluation of this fishery.

For example: *Author. "Title of Article." Title of Journal Volume number (Year): Page(s).*