Echebastar Indian Ocean Skipjack Tuna Purse Seine

MSC Certificate code: MSC-F-30029

Picture from: fao.org

Third Surveillance Report

Conformity Assessment Body (CAB)	Bureau Veritas Certification Holding SAS
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Fishery client	Pesqueras Echebastar, S.A. (Echebastar)
Assessment Type	Third Surveillance
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2 Glossary

The terms below do not contradict terms used in the MSC-MSCI Vocabulary

AGAC	Asociación de Grandes Atuneros Congeladores
ANABAC	Asociación Nacional de Armadores de Buques Atuneros Congeladores
AZTI	Spanish (Basque) fisheries research institute
BET	Bigeye tuna
Blim	Limit biomass reference point
Bmsy	Biomass achieving maximum sustainable yield
BRD	Bycatch Reduction Devices
BV	Bureau Veritas
CEPESCA	Confederación Española de Pesca
CFTO	Compagnie Française du Thon Oceanique
CMM	Conservation Management Measure adopted by the IOTC
CPUE	Catch per unit effort
DEA	Electronic Logbook (Diario Electrónico de a Bordo)
dFAD	drifting Fish Aggregating Device
EC	European Commission
EEZ	Exclusive Economic Zone
EIO	Echebastar Indian Ocean
ETP	Endangered, threatened and protected species
EU	European Union
F	Fishing Mortality
FAD	Fish aggregating device
FAO	United Nations Food and Agriculture Organisation
FCI	Fisheries Certification International
FiTI	Fisheries Transparency Initiative
Flim	Limit reference point for fishing mortality
F_{MSY}	Fishing mortality achieving maximum sustainable yield
Fpa	Fishing mortality expected to maintain the SSB at the precautionary reference point
FSC	Free (Tuna) School
GT	Gross Tonnage
HCRs	Harvest Control Rules
HCTs	Harvest Control Tools
IO	Indian Ocean
IOTC	Indian Ocean Tuna Commission
IPNLF	International Pole and Line Foundation
IUU	Illegal, unreported and unregulated fishing
LL	Longline
MAPA	Spanish Ministry of Agriculture, Fisheries, and Food (Ministerio de Agricultura, Pesca y Alimentación)
MCS	Monitoring, Control and Surveillance
MP	Management Procedure
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
PCR	MSC Public Certification Report
PI	MSC Performance Indicator
PNA	Parties to the Nauru Agreement
PRI	Point of Recruitment Impairment
RFMO	Regional Fisheries Management Organisation
SA	MSC Surveillance audit
SC	Scientific Committee of the Indian Ocean Tuna Commission
SC	Scientific Committee of the Indian Ocean Tuna Commission
SFA	Seychelles Fishing Authority
SFPA	Sustainable Fisheries Partnership Agreements

SGCI	Spanish Sub-directorate for Fisheries Control and Inspection (Subdirección General de Control e Inspección)
SGP	Spanish General Secretariat for Fisheries (Secretaría General de Pesca)
SI	Scoring Issue (MSC)
SIDS	Small Island Developing States
SKJ	Skipjack tuna
SONAR	Sound navigation and ranging
SS3	Stock Synthesis 3. Length based stock assessment modelling
SB or **SSB**	Spawning Stock Biomass
SWIOP	Development and Management of Fisheries in the Southwest Indian Ocean
t	Metric tons, Unit of weight used in referring to catch or landings
TAC	Total Allowable Catch
TCAC	IOTC Technical Committee on allocation criteria
UNCLOS	United Nations Convention on the Law of the Sea
UoC	Unit of Certification
VMS	Vessel Monitoring System
WPB	IOTC Working Party on Billfish
WPEB	IOTC Working Party on Ecosystems and Bycatch
WPTT	IOTC Working Party on Tropical Tunas
YFT	Yellowfin tuna

3 Executive summary

The fishery got the MSC certificate on November 9, 2018. As a result of the pandemic and subsequent Covid-19 pandemic derogation issued by the MSC on March 2020, the certificate was extended for 6 months. Current surveillance audit was conducted against FCP2.2 and MSC Full Assessment Reporting Template v2.1 was used to elaborate current report. The site visit was held on site.

As summarised in **Table 5.1.1.1**, 5 conditions were closed as a result of the current surveillance audit (Condition 1 on PI 2.3.3., Condition 2 on PI 2.4.1, Condition 5 on PI 2.5.3, Condition 6 on PI 3.1.2, Condition 7 on PI 3.2.1), while conditions 4, 8, 9 and 10 (on PIs 2.4.3, 3.2.3, 1.2.1, 1.2.2 respectively) were found to be on target. Besides, because of the necessary harmonization with the result of the objection procedure on the AGAC fishery, a new condition was set on PI 3.2.3 (compliance and enforcement) (see **section 7.4** for more details). To ensure that harmonisation discussion was completed before the publication of this report, a variation to postpone for 2 months the submission of this surveillance report was requested to MSC, and it was granted by the 20th of September.

All previous recommendations set as a result of the initial assessment were closed at the first surveillance audit. However, a new recommendation is now set on the management of the bigeye tuna (PI 2.1.2) (see **section 5.1.3**).

Table 3.1 presents overall scores given to each MSC Principle as published at the PCR and after subsequent surveillance audits, while **Table 3.2** presents scores for each Performance Indicator.

The main findings of current surveillance audit are listed below:

- The IOTC needs to ensure that catches of skipjack tuna during this period do not exceed the agreed limit. However, no agreement in term of quota allocation was reached during the 26th session of the IOTC commission.
- Notwithstanding this problem, the evidence of a decreasing pattern of the catches, the revised catch limit characterized by a value smaller than the true MSY and the indication that the 2019 exploitation rate was estimated again to be highly likely below E_{MSY} leads the team to consider that both PI 1.2.1(a) and PI 1.2.2(c) could meet SG80. However, no agreement was reached on this matter during the harmonisation discussion held with the teams assessing the overlapping fisheries. Thus, no re-scoring on those PIs takes place at this surveillance audit.
- The Echebastar Sustainability Working Group (ESWG) has been active since last surveillance audit, while the website created by the client to provide information relevant for the MSC-fishery certificate has been kept updated (https://echebastar.com/echebastar-certificada-por-msc/msc-up-to-date/). The ESWG has updated the historical review of the Echebastar's fleet catch composition (2006-2021) and fishing effort and interactions with ETP species (2014-2021) (ESWG 2022). The client (in collaboration with SIOTI) has also presented other relevant documents on: (i) options for integrating multispecies catch limits in HS for IO tropical tuna fisheries (Merino, 2022); (ii) Options for HCTs for IO tunas' fisheries (Sauer & Bove, 2022); (iii) Survival rates of silky shark (Grande et al, 2022); (iv) Interaction of derelict FADs on coral communities in the IO (Zudaire et al, 2022).

- The update on the catch species composition of the UoA shows consistent results with the initial information assessed during the initial evaluation, with yellowfin tuna and bigeye tuna as the only 'main' primary species, irrespective of whether the vessels are targeting FADs or FSC.
- A new stock assessment for the yellowfin tuna has been carried out in 2021 (IOTC, 2021). At light of the results presented in this assessment, no re-scoring of PI 2.1.1 is necessary for this stock.
- No new stock assessment for bigeye tuna. However, Resolution 22/03 on a new management procedure for the bigeye tuna has been adopted in May 2022 at the 26th Session of the Commission. The adoption of this new regulation allows PI2.1.2 score to be maintained at 80 for this stock, unlike in Akroyd et al (2022) where this Resolution was not considered. A new recommendation was set to ensure that Res 22/03 is implemented according to the schedule detailed in the Resolution.
- During these years, the client has proved that all fishing trips are observed, and despite the pandemic situation faced in recent years, the sampling coverage per set has been maintained above 52%. Consistent data observed interactions between the UoA and ETP species are provided, as well as estimates of the total interactions and survival rates per species for a period that stretches from 2017 to 2021. The ANABAC/OPAGAC Code of Good Practices is being correctly implemented by Echebastar as confirmed by AZTI during its annual audits. The efficiency of different bycatch reduction devices (BRD) has been tested on board the Echebastar fleet and the results obtained have been used in recent papers (e.g., Murua et al 2022). Besides, Echebastar has promoted studies on relevant issues such as the post-capture survival rate on silky sharks. Based, on all this evidence, the team closed the condition on the PI 2.3.3(b) during this 3SV audit and re-scored that PI.
- Despite the study on the risk posed by derelict FADs (Zudaire et al, 2022) is still a work in progress, the team decided to re-score PI 2.4.1 based on the rationale and score published in the Public Certification Report of the AGAC fishery published in July 2022 (Akroyd et al 2022). The AGAC fishery is similar to the Echebastar fishery for the purpose of scoring this PI since it operates in the same manner and in the same areas. The AGAC fleet has also adopted the same code of good practices on board, and it is certified against the UNE195006.
- The condition on PI 2.4.3 was found to be on target since the study on the impact of derelict FADs on corals is still a work in progress.
- The comprehensive document prepared last year by Juan-Jordá (2021), was again reviewed, and discussed during the current surveillance audit. Besides, the Public Certification Report of the AGAC fishery (Akroyd et al, 2022) was published finally in July. Akroyd et al (2022), when assessing the AGAC fleet scores 80 in PI 2.4.1(b)&(d). At the same time scores only 60 in SI(a), but Akroyd et al (2022) did not take into account Juan-Jordá (2022). Thus, the team decided to re-score the entire PI 2.5.3 based on the work prepared by Juan-Jordá (2022), and also the rationale and score published in Akroyd et al (2022).
- The second annual report covering calendar year 2020 has already been published (FiTI, 2021b). The report highlights the improvements carried out by Seychelles in terms of transparency (including consultations and participation). There are no significant negative remarks addressed to industrial purse seine fishery. It is currently expected that the validation of the Seychelles fisheries management against the FiTI standard will be completed by October 2022.
- Based on the improvements showed by Seychelles in the FiTI report (and its imminent validation with the FiTI standard), the lack of negative comments related to the industrial purse seine tuna fishery (national and foreign fleets), and also considering that score provided to the AGAC fleet in Akroyd et al (2022), the team decided to close condition on PI 3.1.2 and re-score that PI.
- Despite the fact that the development of the Seychelles National Tuna Management and Development Plan is still a work in progress, the team decided to close the condition on PI 3.2.1 and re-score it based on the rationale and score published in the Public Certification Report of the AGAC fishery published in July 2022 (Akroyd et al 2022). The AGAC fishery is identical to Echebastar for the purpose of scoring this PI, since it is a fleet comprised by industrial purse seiners flagged by Spain and Seychelles. The scores provided by Akroyd et al (2022) are based on the applicable IOTC regulatory framework, and they do not include considerations about the private agreements signed by Seychelles. The team agrees with the approach, in particular when all agreements applicable to the Echebastar fishery are signed among IOTC CPCs.
- Both Seychelles and the EU respected their quota allocations in 2019 and 2020, and no issues on the compliance of the UoA's vessels have been identified by the team during the current surveillance audit. However, as a result of the objection process to the AGAC fishery, a new condition on PI 3.2.3(d) was opened (Akroyd et al, 2021). The reason that motivates this new condition is the irregular use of AIS of the industrial tuna fleets in the Indian Ocean. It relates in particular to EU vessels and non-compliance with the EU Directive 2002/59/EC (as amended) and Council Regulation (EC) No 1224/2009. Despite AIS is not considered to be a fishery-specific management tool,

and its use relates to safety purposes, the team decided to re-scored PI 3.2.3(d) to comply with the harmonisation requirements.

Based on the findings mentioned above, the assessment team concludes that **the MSC Certificate for this fishery shall remain active**, subject to the agreed annual surveillance schedule and progress on the remaining conditions.

Table 3.1. Scores obtained by the fishery for each MSC Principle as published at the PCR and subsequent surveillance audits.

Principle	PCR	1SA	2SA	3SA
Principle 1 – Target Species	90.0	86.7	85,8	85,8
Principle 2 – Ecosystem	80.7	=	81,3	83,3
Principle 3 – Management System	81.9	=	=	83,3

Table 3.2. PIs scores of the certified fishery as published at the PCR and subsequent SAs. PI score above 80 are highlighted in green, while PI scores between 60 and 80 are highlighted in orange.

Principle	Component	Performance Indicator (PI)	PCR	1SA	2SA	3SA
One	Outcome	1.1.1 Stock status	100	=	=	=
	Management	1.2.1 Harvest strategy	85	70	=	=
		1.2.2 Harvest control rules & tools	80	75	=	=
		1.2.3 Information & monitoring	90	=	80	=
		1.2.4 Assessment of stock status	85	=	90	=
Two	Primary species	2.1.1 Outcome	90	=	=	=
		2.1.2 Management strategy	85	=	=	=
		2.1.3 Information/Monitoring	95	=	=	=
	Secondary species	2.2.1 Outcome	80	=	=	=
		2.2.2 Management strategy	85	=	=	=
		2.2.3 Information/Monitoring	85	=	=	=
	ETP species	2.3.1 Outcome	80	=	=	=
		2.3.2 Management strategy	85	=	=	=
		2.3.3 Information strategy	70	=	=	80
	Habitats	2.4.1 Outcome	70	=	=	90
		2.4.2 Management strategy	75	=	85	=
		2.4.3 Information	75	=	=	=
	Ecosystem	2.5.1 Outcome	80	=	=	=
		2.5.2 Management	80	=	=	=
		2.5.3 Information	75	=	=	80
Three	Governance and policy	3.1.1 Legal &/or customary framework	80	=	=	=
		3.1.2 Consultation, roles & responsibilities	75	=	=	80
		3.1.3 Long term objectives	100	=	=	=
	Fishery specific management system	3.2.1 Fishery specific objectives	75	=	=	90
		3.2.2 Decision making processes	75	=	=	=
		3.2.3 Compliance & enforcement	85	=	=	75
		3.2.4 Monitoring & management performance evaluation	80	=	=	=

4 Report details

4.1 Surveillance information

Table 4.1 – Surveillance information

1	Fishery name	
	ECHEBASTAR INDIAN OCEAN SKIPJACK TUNA PURSE SEINE FISHERY	
2	Unit(s) of Assessment (UoA)	
	Target stock: Skipjack Tuna (Katsuwonus pelamis). Indian Ocean stock Fishing Area: FAO 51 & 57 Fishing method: Purse seine including all set types, specifically Fish Aggregating Device (FAD or associated) and free school (FSC or non-associated) Fishing operators: Purse seiners owned and operated by the Echebastar Group – Pesqueras Echebastar S.A. (Echebastar Fleet SLU and Hartswater Limited). The updated list of vessels can be downloaded from the MSC website Other elegible fishers: There are no other eligible fishers	
3	Date certified	Date of expiry
	09/11/2018	08/05/2024
4	Surveillance level and type	
	Level: The surveillance level determined in the PCR was 6 (4 on-site surveillance audits). However, due to the Covid-19 health crisis (preventing travel) and the MSC Derogation 6 on Covid-19 Fishery Conditions Extension, the CAB conducted an off-site second surveillance audit. Thus, the surveillance level was modified to level 5 (i.e., 1 off-site and 3 on-site audits). No further modifications to the surveillance level and type are proposed for the forthcoming surveillance audit and recertification (see **section 6.3** for more details). In addition, the number of auditors (as explained in the 1st Surveillance audit) was brought down from 3 (as indicated in the PCR) to 2 (see **section 6.3** for more details). Type: On-site visit (see **Appendix 6.1.1** for more details).	
5	Surveillance number	
	1st Surveillance	
	2nd Surveillance	
	3rd Surveillance	**X**
	4th Surveillance	
	Other (expedited etc)	
6	Surveillance team leader	

	José Ríos[1]
7	Surveillance team members
	Giuseppe Scarcella[2]
8	Audit time and location
	Meetings were held at the Echebastar's headquarters in Bermeo (Spain) between June 27 and 29, 2022.
9	Assessment and review activities
	During the site visit, the team conducted assessment activities in accordance with FCP 7.28.15-18. In the case of the current fishery the team concentrated in: (i) checking for any relevant modification affecting the fishery; (ii) assess progress against conditions set to the fishery. See **Appendix 6.1** for details on the people interviewed and for details on the stakeholder engagement strategy, and **Appendix 6.2** for details on topics discussed during the site visit and other stakeholder inputs. Harmonization activities with overlapping fisheries are described in **Appendix 6.4.**

4.2 Background

Major changes to the fishery since the last surveillance are outlined below:

4.2.1 Personnel involved in science, management or industry

No significant changes in the Ministry of Fisheries and Blue Economy recently re-structured by the Minister Jean-Francois Ferrari in 2020. At the SFA, Nicol John Elizabeth is still the CEO, however Vincent Lucas (chief fisheries officer at SFA) resigned in 2021. A total of 14 employees have resigned from SFA since the new Minister took responsibility of the Ministry. The team interviewed Mr. Nicol Elizabeth and he confirmed that those vacant have been replaced and the SFA is performing well.

In the case of Spain, there have been the following new appointments within the General Directorates of Sustainable Fisheries and General Directorate of Fisheries Management and Aquaculture (both under the General Secretariat for Fisheries -SGP-):

- Maria Isabel Artime García has been appointed as the new General Director for Sustainable Fisheries
- Teresa Molina has been appointed as the head of the General Subdirectorate for International Agreements and RFMOs.
- Aurora de Blas Carbonero has been appointed as the head of the General Subdirectorate for fisheries inspection and fight against IUU fishing.

No significant changes were identified by the team in the composition and/or roles of the personnel involved in science, or the industry concerned with the certified fishery.

4.2.2 Certified fleet and client group

The client group owning the certificate remains the same: Pesqueras Echebastar S.A. The list of vessels included remains the same as for the previous surveillance audit. The last list of certified vessels was published at the fishery-specific MSC site in June 2019, and updated details on the fishing licenses and landing reports for each of the vessels can be found at the specific site created by Echebastar to share all relevant information related to the MSC certification (https://echebastar.com/echebastar-certificada-por-msc/msc-up-to-date/2020-annual-surveillance-audit/documents/).

The Echebastar Sustainability Working Group (ESWG) described in the previous surveillance report has been active and keeps the same members. All the minutes of their meetings held, and the documents elaborated, are available at a specific site within Echebastar's website.

[1] See the Surveillance announcement at the MSC website for more details on how the team meets the competency criteria and the areas that they are responsible for.
[2] See the Surveillance announcement at the MSC website for more details on how the team meets the competency criteria and the areas that they are responsible for.

4.2.3 Fishery management and regulatory framework

The most relevant modifications related to fisheries management and regulatory framework at the different levels (RFMO and flag States) are summarised below. However, it is important to remark that some changes in the scoring of PI 3.1.2, PI 3.2.1, and PI 3.2.3 have been triggered due to the harmonization with the scores given to the AGAC fleet in the recently published PCR for this overlapping fishery (Akroyd et al, 2022). In the case of PI 3.1.2 the improvements of Seychelles by means of the FiTI initiative were also taken into consideration. A summary of the justifications can be found in the **Executive Summary**, and detailed explanations can be found in the correspondent tables in **section 5.3.2.**

4.2.3.1 IOTC fishery management

Since the previous surveillance audit held in May 2021, the Indian Ocean Tuna Commission held its 26th Session in May 16-20, 2022, In Victoria (Seychelles). The meeting report was still not available at the time of preparing this report. Only CMM proposals and reference documents are available at the IOTC website. The IOTC CIRCULAR 2022-35 issued on the 25th of May 2022 confirmed that 4 new Resolutions were adopted at the 26th Session of the Commission. These CMMs shall become binding on Members, 120 days from the date of its notification.

- Resolution 22/01 on climate change as it related to the IOTC.
- Resolution 22/02 on establishing a programme for transhipment by large-scale fishing vessels.
- Resolution 22/03 on a management procedure for bigeye tuna in the IOTC area of competence.
- Resolution 22/04 on a regional observer scheme.

All 4 Resolutions are applicable to the certified fishery. However, Resolution 22/03 was identified by the team as the only one that could potentially have a significant impact on the scoring. Thus, a summary of this Resolution is provided below. Otherwise, the two most relevant fishery specific CMMs (Res 21/03 on HCRs for skipjack, and Res 21/01 on an interim plan for rebuilding the IO yellowfin tuna stock) remain unchanged since previous surveillance audit. A summary on these CMMs, together with Rec 19/02 was already provided in the previous surveillance report (Kirchner and Rios, 2021).

(i) Resolution 22/03 on a management procedure for bigeye tuna in the IOTC area of competence.

A management procedure (MP) for the bigeye tuna stock managed by the IOTC with a view of maintaining the stock biomass in the green zone of the Kobe plot (not overfished and not subject to overfishing) while maximizing the average catch from the fishery and reducing the variation in the total allowable catch (TAC) between management periods.

The MP adopted for the BET has two data inputs: total catch biomass and spatially aggregated longline CPUE from 1980 to the most recent year of catch data. It then fits a Pella-Tomlinson biomass dynamic model to the CPUE data given the catch biomass. Estimated parameters are carrying capacity (K), intrinsic rate of increase (r), initial biomass depletion (delta), the production curve shape parameter (m), and finally annual biomass B and its stochastic variability sigmaB. From these parameters the following key variables used in the harvest control rule (HCR) are derived:

1) Ratio of fishing mortality to the value which produces MSY (FMSY ratio)
2) Relative biomass or depletion: B/K

The HCR is a simple hockey stick type: for biomass depletion above 0.4 the HCR multiplier (HCRmult) is 1, it decreases to (almost) zero linearly by a biomass depletion of 0.1. The overall fishing mortality used to estimate the TAC is calculated as follows: FMSY ratio x HCRmult x tuning parameter (Fmult). This fishing mortality is used in conjunction with the estimated biomass B to calculate the new TAC. A symmetric maximum change of 15% is then applied to calculate the actual recommended TAC. The main suite of equations that define the HCR are as follows:

$$HCR_{mult} = 1 \; if \; \frac{B_y}{K} \geq 0.4$$

$$HCR_{mult} = \frac{\frac{B_y}{K} - 0.1}{0.3} \; if \; 0.1 < \frac{B_y}{K} < 0.4$$

$$HCR_{mult} = 0.0001 \; if \; \frac{B_y}{K} \leq 0.1$$

$$TAC_{new} = B_y(1 - exp(-F_{mult} \times HCR_{mult} \times F_{MSY} \; ratio))$$

Consistent with the adopted management objectives of the Commission, the management procedure described above is designed to achieve:

a) a 60% probability that the bigeye tuna spawning stock biomass achieves the target reference point of SBMSY3 by 2034-2038;

b) the bigeye tuna spawning stock biomass avoids breaching the interim limit reference point specified in Resolution 15/10 with a high probability;

and operates with the following constraint:

c) the maximum increase or decrease in the TAC shall be 15% relative to the previous TAC

The Scientific Committee shall run the MP and advise the Commission of the outcome, including a recommended TAC and any advice on exceptional circumstances in accordance with the Commission endorsed Guidelines for the Provisions of Exceptional Circumstances for IOTC MPs as documented in Appendix 6a of IOTC-2021-SC24-R.

The Commission shall adopt the TAC based on the outcome of the MP, unless the Scientific Committee identifies exceptional circumstances that require consideration of alternate management actions to be taken by the Commission.

The first TAC derived from the MP shall apply in 2024 and 2025. After 2025, the TAC shall apply in each of the subsequent three years following the year it is set by the Commission4.

If exceptional circumstances are triggered, the pre-existing TAC shall remain in place until a new TAC or other management action is agreed by the Commission.

Allocation of the TAC among CPCs will take place according to a process agreed external to this measure. The Commission will develop a mechanism to constrain catch to the MP derived TAC for bigeye tuna no later than 2025, if an allocation scheme has not yet been agreed and implemented by the Commission.

A review of performance of the MP by the Commission and its subcommittees is to occur in 2030.

The Scientific Committee is requested to review, and if necessary, further develop and refine (not later than 2024), the exceptional circumstances guidelines, taking into account, inter alia, the need for an appropriate balance between specificity versus flexibility in defining exceptional circumstances, and the appropriate level of robustness to ensure that exceptional circumstances are triggered only when necessary. The IOTC, through the Technical Committee on Management Procedures, is requested to review the need for, and if necessary, develop at latest by 2025, guidance on a range of appropriate management responses should those exceptional circumstances be found to occur.

4.2.3.2 Update on the EU/Spanish fisheries management

In view of the yellowfin tuna rebuilding plan and the catch limit established by the IOTC Res 16/01, since 2017 the EU Council sets a Total Allowable Catch (TAC) for the EU and establishes an allocation by Member State. The Council Regulation (EU) 2022/109 of 27 January 2022 sets the limitation of fishing capacity of European vessels targeting tropical tunas in the IOTC and fixes for 2022 the fishing opportunities for Union vessels in certain non-Union waters such as the IOTC area of competence. However, quota allocation of the IO-YFT among EU Member States was still to be established at the time of publishing Regulation 2022/109. Then, a first allocation of approximately 50% of the expected total UE quota was issued in March 31, through Regulation (EU) 2022/515. While the final quotas were adopted in June 30 through Regulation 2022/1091. A total of 73,146 tons were allocated to the EU, of which 42,943 tons were allocated to Spain.

In Spain, Orden APA/25/2021 issued by the MAPA sets a specific Census of freezer purse seiners authorized to fish for tropical tuna in the Indian Ocean (CATI). The CATI is updated (including auxiliary vessels) by the SGP during the first quarter of each year. The system to allocate individual catch limits is based on historical catches of the vessel (70%) and GT (30%). A summary of this regulation was provided in Kirchner and Rios (2021). However, Order APA/914/2021 issued by the MAPA in August 22, 2021 modified Order/25/2021. This modification allowed and regulated joint quota management between 2 or more vessels listed in the CATI (regardless of the same fishing company to which they belong). This joint quota management was adopted as a response to the exceptional circumstances created by the Covid pandemic situation. The latest Order adopted in 2022 (Orden APA/332/2022) follows Orden APA/25/2021 and allows the continuation of the join quota management adopted in Orden APA/914/2021.

4.2.3.3Seychelles fisheries management

Seychelles' overall quota for yellowfin tuna catch for 2022 had been reduced by 9,184 tons by the Indian Ocean Tuna Commission (IOTC) as a payback provision for over-catch in 2020 by industrial longline fleets. However, this penalty was finally removed during the 26th Session of the IOTC held in May 2022. The payback penalty was based on confirmed data submitted by Seychelles to the IOTC Secretariat. It was also based on estimates made by the Secretariat for 2021 on the assumption that Seychelles' industrial longline fleet had over-caught the same amount as they did in 2020. The

total quota for Seychelles in 2022 rises to 37,000 tons, covering catch from all fleets registered in the island state (purse seiners, industrial longlines and semi-industrial longlines).

Some modifications have been included by the Ministry of Seychelles in order to improve the monitoring of the YFT quota allocation. For instance, at the beginning of the fishing season each vessel gets only 90% of its quota, while the remaining 10% is only allocated at the end of the season, once the quota consumption has been verified by the SFA.

Also, the SFA confirmed that technical issues with T3 software used to monitor the YFT quota consumption were encountered in 2021. Hence, for year 2021 the logbook data were used, but species composition was corrected using port-sampling data.

The 2021 FiTI report includes a single negative remark related to the industrial purse seine fishery, and it is related to the fact that discard data are not provided disaggregated by species or species group. The SFA confirmed that for most vessels the bycatch and discards data provided were not disaggregated by species for years 2019 and 2020. Some vessels were reporting only for some trips and not for all trips. Some vessels were reporting only for a particular bycatch species. A lack of consistency in data reporting on bycatch by vessels or by trips was acknowledged. However, SFA also informed that they have noticed a significant improvement in data reporting of bycatch for the year 2021. For the purposes of the MSC audits, the catch composition is calculated based on the observer's data, so this negative remark was not considered relevant for scoring purposes.

As mentioned in the previous surveillance report (Kirchner and Rios, 2021), there is a current Sustainable Fisheries Partnership Agreement signed between the EU and Seychelles valid for the 2020-2026 period. The agreement and the two subsequent Council Regulations (Council Regulation 2020/272 and Council Regulation 2020/271) were published at the Official Journal of the European Union. A Joint Committee monitors the application of this Agreement. According to the representative of the Ministry of the Seychelles interviewed during the site visit, there are no issues.

4.2.4 Compliance

No YFT quota over catches have occurred since 2019 by either the Spanish or the Seychelles purse seine fleets have occurred. The representative of the Ministry of Seychelles confirmed that no issues on compliance have been identified in relation with any of the national purse seiners, including those owned by Echebastar.

No issues on the compliance of the UoA's vessels have been identified by the team during the current surveillance audit.

However, as a result of the objection process to the AGAC fishery, a new condition on PI 3.2.3(d) was opened (Akroyd et al, 2022). The reason that motivates this new condition is the irregular use of AIS of the industrial tuna fleets in the Indian Ocean. In particular as it relates to EU vessels and non-compliance with the EU Directive 2002/59/EC (as amended) and Council Regulation (EC) No 1224/2009.

In relation to this issue, the team acknowledges that AIS is a universally mechanism used primarily for safety purposes since the 1974 SOLAS Convention. However, the European Union, in point 3 of Article 10 of Regulation 1224/2009 on control to ensure compliance with the Common Fisheries Policy, states that "Member States may use AIS data, where such data are available to them, for the purpose of cross-checking with other data available to them, Article 11 on Vessel Detection System includes that Member States may use AIS "in order to determine the presence of fishing vessels in a specific area, where there is clear evidence that this procedure has cost advantages compared to traditional means of detection of fishing vessels". Article 109, to which Article 10 refers, includes in point 2bv a reference to this system: "where appropriate, cross-checks, analyses and verifications shall be carried out on the following data: (v) data from the automatic identification system. Thus, although AIS is mentioned is mentioned in the Control Regulation 1224/2009, it is not considered as the key element of the monitoring. control and surveillance system of the fishing activities of vessels flying the flag of a European Union country. It is just referred to as a complementary source of information to be used if available and necessary. Therefore, the team considers that AIS should not considered to be part of the EU fisheries management system and should not be analysed in this context.

However, this PI is subject to harmonisation (see **annex 6.4**). No agreement was reached as a result of the harmonisation activities carried out as part of this surveillance, and therefore PB 1.3.4.5 was applied (i.e the lower score shall be adopted) this PI was re-scored (see **section 5.2**) and a new condition was set (see **section 5.3.3**).

Finally, during a harmonisation call held with the CAB assessing the CFTO team also communicated that the French Administration had sanctioned the French fleet because of breaching the 10% tolerance margin on the catch estimates reported in the prior notification. In turn, the team assessing the Echebastar fishery conveyed that no findings related to systematic non-compliance of the prior notification had been communicated by the Spanish Administration. However, the BV team noted this fact and committed to look at it in detail during the next surveillance audit (since this finding was only communicated by CU in October).

4.2.5 Traceability issues

No changes were declared by the client in relation to traceability since previous surveillance audit, and the team has not identified any changes in regulations affecting this matter.

4.2.6 Scientific based information related to P1

The latest assessment of the target stock (FU, 2020) was already available at the previous surveillance audit. However, as a recap it is important to present the main results of Fu (2020) again in this surveillance report, since the team considers that the implications of the F value for the scoring of PI 1.2.2 would have a significant impact on the score of this PI (and also on PI 1.2.1). However, these two PIs (1.2.1 and 1.2.2) have not been finally re-scored in this surveillance audit since no agreement was reached during the harmonization discussions held (see **section 6.4** for more details).

Fu (2020) carried out an assessment using Stock Synthesis 3 (SS3). The assessment used a spatially aggregated, age structured model that integrates multiple datasets into a unified framework. The assessment included catch data grouped into four separate fisheries covering the period from 1950 through to 2019, two CPUE series, length composition data, and tag-recapture data. The final overall estimate of stock status indicated that the stock is above the adopted target and that the current exploitation rate is below the target. Also, the models estimated that the spawning biomass was above its SSB_{MSY} and the fishing mortality was below E_{MSY} (harvest rate at MSY) with very high probability (**Table 4.2.6.1**). Over the history of the fishery, biomass has been well above the adopted limit reference point ($0.2*SSB_0$). The recent catches have been within the range of estimated target yield (see $C40\%SSB_0$). Current spawning stock biomass relative to unexploited levels is estimated at 45%. Thus, on the weight-of-evidence available in 2020, the skipjack tuna stock is determined to be: (i) above the adopted biomass target reference point; (ii) not overfished ($SSB_{2019} > SSB_{40\%SSB0}$); (iii) with fishing mortality below the adopted target fishing mortality, and; (iv) not subject to overfishing ($E_{2019} < E_{40\%SSB0}$).

The new stock assessment results were very similar to the previous results (see: IOTC, 2017). During the present surveillance visit, scientists and stakeholders did not raise any doubt about the status of the target stock and confirmed that the evaluation carried out by Fu (2020) is still accurate. Therefore, no rescoring of P1.1.1 and 1.2.4 was required at this third surveillance audit. Scientists and stakeholders also confirmed that the data collection and observer programme did not change since the last surveillance audit, thus also P1.2.3 is not rescored.

– Table 4.2.6.1. Status of skipjack tuna (*Katsuwonus pelamis*) in the Indian Ocean (Fu, 2020). Source: https://www.iotc.org/sites/default/files/documents/science/species_summaries/english/3_Skipjack2021E.pdf

Area[1]	Indicator	Value	Status[23]
Indian Ocean	Catch in 2020 (t)[2]	555,211	60.4%*
	Average catch 2016-2020 (t)	546,095	
	$C_{40\%SB0}$ (t) (80% CI)	535,964 (461,995–674,536)	
	C_{2019} / $C_{40\%SB0}$ (80% CI)	1.02 (0.81–1.18)	
	$E_{40\%SB0}$ [4] (80% CI)	0.59 (0.53–0.66)	
	E_{2019} / $E_{40\%SB0}$ (80% CI)	0.92 (0.67-1.21)	
	SB_0 (t) (80% CI)	1,992,089 (1,691,710–2,547,087)	
	SB_{2019} (t) (80% CI)	870,461 (660,411–1,253,181)	
	$SB_{40\%SB0}$ (t) (80% CI)	794,310 (672,825–1,019,056)	
	$SB_{20\%SB0}$ (t) (80% CI)	397,155 (336,412–509,528)	
	SB_{2019} / SB_0 (80% CI)	0.45 (0.38-0.5)	
	SB_{2019} / $SB_{40\%SB0}$ (80% CI)	1.11 (0.95-1.29)	
	SB_{2019} / SB_{MSY} (80% CI)	1.99 (1.47-2.63)	
	MSY (t) (80% CI)	601,088 (500,131–767,012)	
	E_{2019} / E_{MSY} (80% CI)	0.48 (0.35-0.81)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2] Proportion of 2020 catch fully or partially estimated by IOTC Secretariat: 14.5%
[3]The status refers to the most recent years' data used in the assessment conducted in 2020, i.e., 2019
[4] $E_{40\%SB0}$ is the equilibrium annual exploitation rate (Etarg) associated with the stock at Btarg, and is a key control parameter in the skipjack harvest control rule as stipulated in Resolution 16/02. Note that Resolution 16/02 did not specify the exploitation rate associated with the stock at Blim
*Estimated probability that the stock is in the respective quadrant of the Kobe plot (shown below), derived from the confidence intervals associated with the current stock status

Following Resolution IOTC 16/02, the recommended annual catch limit for the years 2018 to 2020 was 470,029 tonnes. Total catches in 2018 were 30% larger than the resulting catch limit, which raised concern in the WPTT. It is important to note that reaching the management objectives defined in Resolution 16/02 requires that the catch limits adopted by the skipjack HCR are implemented effectively. It should be noted that skipjack catches for most gears increased from 2017 to 2018 (+44% for purse seine (log/FAD-associated), +12% for gillnet and +13% for pole-and-line). In 2019, catch was reduced considerably compared to 2018, to 590,450 tonnes (25,6% over catch limit). In 2020 catches decreased again and were 547,309 t (16,4% over the catch limit) (**Figure 4.2.6.1**). Catch data of the target stock for 2021 are not available at the time the present report was drafted.

The catch limit calculated applying the HCR specified in Resolution 16/02 was revised in 2020 (Res 21/03) and is 513,572 t for the period 2021-2023. The IOTC scientific committee noted that this catch limit is higher than for the previous period. This is attributed to the new stock assessment which estimates a higher productivity of the stock and a higher stock level relative to the target reference point, possibly due to skipjack life history characteristics and favourable environmental conditions. Thus, it is likely that the recent catches that have exceeded the limits established for the period 2018-2020 have been sustained by favourable environmental conditions. Therefore, the IOTC needs to ensure that catches of skipjack tuna during this period do not exceed the agreed limit. However, during the 26th session of the IOTC commission (https://www.iotc.org/meetings/26th-session-indian-ocean-tuna-commission) was not possible to find an agreement about the quota allocation of skip jack tuna. In particular, European Union (see: https://www.iotc.org/documents/hcr-skipjack-cf-res-21-03-european-union-0) and Maldives (see: https://www.iotc.org/documents/conservation-and-management-skipjack-tuna-maldives-0) were unable to agree on a joint text about quota allocation, but the primary reason for withdrawal any sort of country quota allocation was because some CPCs had stated they would object to any cuts in their EEZ. Notwithstanding this problem, the evidence of a decreasing pattern of the catches, the revised catch limit characterized by a value smaller than the true MSY and the indication that the 2019 exploitation rate was estimated again to be highly likely below E_{MSY} (the upper level of 80% CI of E is below E_{MSY}) leads the team to consider that both PI 1.2.1(a) and PI 1.2.2(c) could meet SG80. However, the core of the information used for this analysis was already available in 2019, when these two conditions were set, and FCP 7.28.15.1 states that PI s shall be re-scored where the information has changed. Based on this issue, the interpretations suggested by this team during the harmonization discussions were dismissed and the other teams assessing overlapping fisheries refused to change the current scores. Since the discussion did not lead to agreement among the

teams, the lowest score shall be adopted by this fishery (PB 1.3.4.5) and no re-scoring takes place at this surveillance audit.

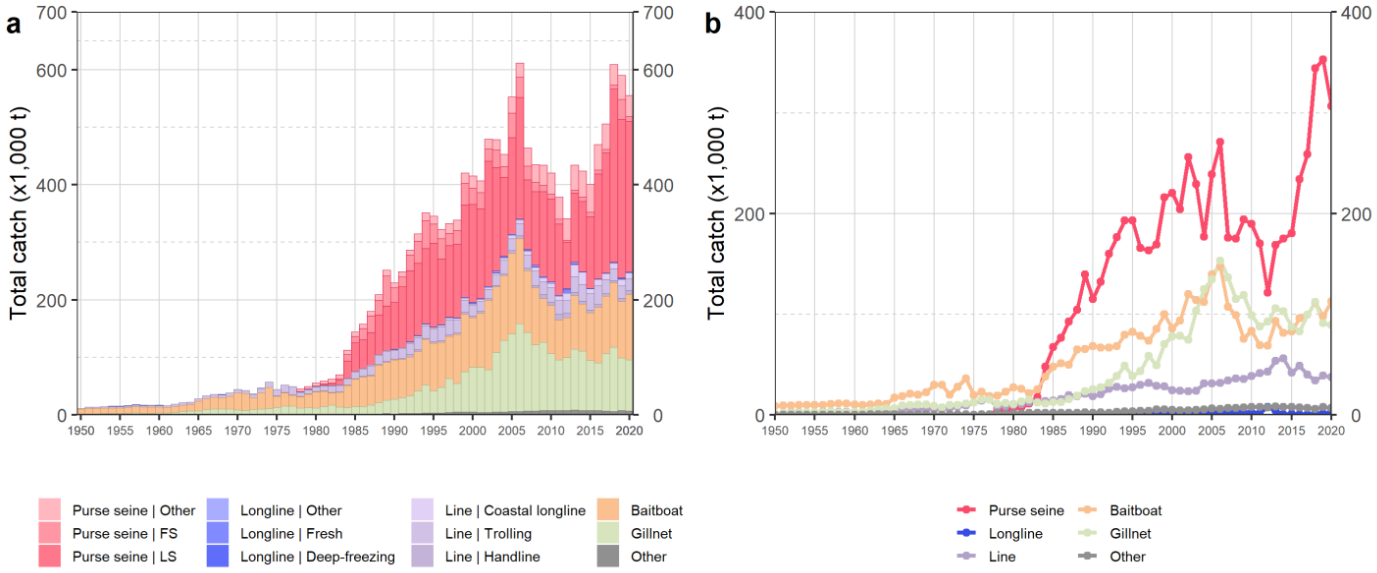

Figure 4.2.6.1.- Annual time series of (a) cumulative nominal catches (t) by fishery and (b) individual nominal catches (t) by fishery group for skipjack tuna during 1950–2020. FS = free-swimming schools; LS = drifting log/ FAD-associated school. Purse seine | Other: coastal purse seine, purse seine of unknown association type, ring net; Other: all remaining fishing gears. Source: https://www.iotc.org/sites/default/files/documents/science/species_summaries/english/3_Skipjack2021E.pdf.

In addition, during the site visit the client presented two new studies carried out in the framework of Sustainable Indian Ocean Tuna Initiative (SIOTI), which is a large-scale Fisheries Improvement Project (FIP) comprising the major purse seine fleets and tuna processors in the region.

The first study (Merino et al., 2022) reviewed the options to define multispecies (bigeye, yellowfin and skipjack tunas) management objectives and provided detail on the scientific support for the adoption of multispecies management. The study also presented a plan for developing a multispecies MSE for the Indian Ocean tropical tunas. Operating Model (OM) for the tropical tuna fisheries is presented. For this, the modelling tool FLBEIA (Garcia, Sánchez et al. 2017) and how the most recent assessments of the three stocks have been used to condition the numerical framework and the necessary modifications for conditioning the multispecies OM.

The second study (Sauer and Bova, 2022) focused on a global revision of the tuna RFMO management measures and the following harvest control tools for IOTC skipjack tuna were selected for further discussion and consideration by SIOTI:

- Total catch limit - can be allocated to individual vessel, country, fishing company. Allocations tend to happen annually, or in cycles. Initial allocation can be made without charge, by auction or at a set price.
- Catch limit allocated to EEZ and high seas rather than vessels and fishing companies. Can be based on historical catch, processing capacity, socio-economic objectives of nations and other criteria.
- Catch limits allocated by vessel, usually based on historical catch but also contribution to development of local fishery, reporting requirements and other criteria.
- Total allowable effort - Specifies total effort, (often translated from TAC) and is usually expressed in terms of limits on the number of fishing days and/or the number of operating vessels in the regulated area.
- Limit on vessels through restrictive licencing. Regional vessel registers can limit the numbers and capacities of vessels permitted to fish in a region, however important to be able to have replacement vessels available.
- A restriction of number of FADS used, as is already being done by segments of the industry.
- A restriction on reefer vessels

- Requirements for materials and design (non-entangling, biodegradable materials) for FADS, already being implemented.
- Monitoring and reporting of FAD locations is a possibility, but commercial data sensitivity needs to be taken into account.
- Create a special working group to continue to monitor impacts of the TAC allocation and more complex arrangements such as time/effort-based allocations, area closures and tradable quotas. The review of other RFMO and subgroups suggests that additional measures can be introduced gradually to overcome resistance and seek buy in from all stakeholders. Further inputs from stakeholders on the HCT assessment contained in this report will be consolidated and added to the analysis.
- Advocate for better management, scientific review process, vessel monitoring, enforcement, compliance, and observer coverage.
- Agree (as a collective) to a set of voluntary measures around FAD management, eco-FADs and non-entangling FAD.
- Advocate for industry wide adherence to conservation measures.
- Collaborate with governments to establish sustainable partnership agreements and bilateral agreements.
- Explore conducting a modelling exercise, possibly using the MSE approach to explore the impacts and implications of various options, and features (including species interaction) to support develop more appropriate RFMO wide measures, by demonstrating costs and benefits to different stakeholders.

4.2.7 Scientific based information related to P2

4.2.7.1 Landings of the Echebastar fleet

Table 4.2.7.1 presents the landings of three tropical tuna species by the Echebastar fleet between 2006-2021 (ESWG 2022). In 2021, the breakdown of the total catch of 59,410 tonnes by the three main species was skipjack 64.4 %; yellowfin 26.4 %; and bigeye 8.9 %. The relative contribution of the skipjack to the total catches of the UoA increased in 2017 (the year that the first yellowfin quota system was adopted). This could be due to: (i) restrictions on yellowfin catch from 2016; with (ii) the resultant shift from FSC to FAD sets. However, skipjack contribution to the total UoA's annual catches was already at very high levels before 2010.

Yellowfin catches in recent years (2017-2020) show a significant decrease when compared to 2014 levels (between 11% and 17%), while in the case of the skipjack is the other way around (they increased between 21% and 96%). However, it is important to consider that the number of vessels has varied throughout this period (e.g., the Euskadi Alai and the Jai Alai started to operate in 2015, while the Aterpe Alai started in 2019).

Table 4.2.7.1. Echebastar landings of main tunas' species 2006-2021. Source: ESWG 2022

	YF		BE		SKJ		Others		
Year	ton	%	ton	%	ton	%	ton	%	TOTAL
2006	19.277	39,3	1.952	4,0	27.178	55,4	665	1,4	49.072
2007	12.289	38,5	1.814	5,7	17.406	54,5	427	1,3	31.936
2008	16.006	39,5	3.192	7,9	20.787	51,3	498	1,2	40.483
2009	16.240	32,9	5.110	10,4	27.525	55,8	483	1,0	49.357
2010	22.116	39,3	3.837	6,8	29.919	53,1	441	0,8	56.313
2011	26.470	53,4	3.193	6,4	19.493	39,3	414	0,8	49.569
2012	24.862	61,3	3.383	8,3	11.544	28,5	759	1,9	40.547
2013	24.906	56,1	4.107	9,3	14.854	33,5	516	1,2	44.383
2014	17.534	50,8	2.736	7,9	13.903	40,2	375	1,1	34.547
2015	17.542	49,4	2.314	6,5	15.263	43,0	402	1,1	35.521
2016	17.653	43,1	2.894	7,1	19.980	48,8	384	0,9	40.911
2017	15.121	32,8	3.230	7,0	27.308	59,3	417	0,9	46.075
2018	14.800	28,1	3.603	6,8	33.866	64,2	460	0,9	52.729
2019	14.668	29,6	3.827	7,7	30.682	62,0	306	0,6	49.483
2020	15.702	29,4	3.654	6,8	33.867	63,4	208	0,4	53.431
2021	15,676	26.4	5,275	8.9	38,270	64.4	188	0.4	59,410

4.2.7.2 UoAs observer catch composition and total estimated catches in 2021

a) UoA observer coverage and sampling:

There is always an observer on board. However, not all sets are observed, sampled and reported. **Table 4.2.7.2** shows the trend of the percentage of observed (and sampled) sets out of the total of sets performed by the Echebastar fleet between 2014 and 2021. In 2021, 67% of all the sets were sampled. These results show an increase in the sampling compared to the previous year, since the restrictions on observers boarding vessels resulting from the COVID-19 pandemic regulations applied in Seychelles eased in 2021. However, the sampling effort is still below the levels reached in 2017, 2018 and 2019. During the meeting held as part of this surveillance audit, Echebastar confirmed their intention to keep increasing the sampling effort, since their goal is that all sets are observed and sampled.

During the interviewed held as part of the surveillance audit, AZTI representatives confirmed that they could be re-opened their offices in Seychelles in autumn 2021. This office is in the same offices as the SFA, ensuring that they can work side by side with the local observers and their managers. This will improve the effort of retrieving and reviewing all observers' data. AZTI representatives also confirmed that they are responsible for running the courses for the local SFA observers, together with Ifremer (France).

Table 4.2.7.2 Results based on real total FAD and FSC set proportion and updated data. Source: ESWG (2022)

Year	Fishing modality	Total sets	% set by fishing modality	Observed sets	% observed sets per modality	Total sets	Total observed sets	Total observed sets
2014	FAD	831	**64%**	221	**27%**	1058	347	**33%**
	FSC	227	**36%**	126	**56%**			
2015	FAD	1161	**81%**	672	**58%**	1353	831	**61%**
	FSC	192	**19%**	159	**83%**			
2016	FAD	1512	**90%**	613	**41%**	1672	684	**41%**
	FSC	160	**10%**	71	**44%**			
2017	FAD	1250	**89%**	1074	**86%**	1463	1207	**83%**
	FSC	213	**11%**	133	**62%**			
2018	FAD	1369	**98%**	1197	**87%**	1398	1223	**87%**

	FSC	29	**2%**	26	**90%**			
2019	FAD	1384	**90%**	1089	**79%**	1531	1203	**79%**
	FSC	147	**10%**	114	**78%**			
2020	FAD	1608	**98%**	949	**59%**	1651	790	**52%**
	FSC	43	**2%**	23	**53%**			
2021	FAD	1467	**94%**	1024	**70%**	1629	1085	**67%**
	FSC	162	**6%**	61	**38%**			

b) UoA observed catch and total estimated catch in 2021

Upper table 4.2.7.3 shows that 98,85% of the FAD catches performed by the Echebastar fleet in 2021 were comprised by skipjack (66%), yellowfin (23%) and bigeye (10%). While, in the case of the FSC catches (**lower table 4.2.7.3**) the percentage rises to 100%, being yellowfin tuna the species accounting for a higher % of the catch (80%). Again, FAD catches account for a higher number of species/species groups compared to FSC catches. ETP species are restricted to rays, sharks and turtles, with FSC catches showing not a single interaction with sharks, rays or turtles. The number of individuals from ETP species impacted by the UoA during 2021 was low for all species but for the Carcharhinus (a total of 2640 silky sharks -*C.falciformis*-, and 26 oceanic whitetip sharks -*C.longimanus*- were caught by FAD sets in 2021). Up to 47% of the sharks, rays and turtles incidentally caught were released alive.

The percentage of observed FSC sets is lower than in previous year but it is still 36%, which is well above the minimum 20% observer coverage which the IOTC is recommending (IOTC 2020) for class 1-5 purse seine vessels (small purse seiners where no formal fleet-wide observer program exists) to assess trends even for rare encountered species.

Table 4.2.7.3. UoA observed and total estimated catches on FADs (top table) and FSC (lower table) in 2021. Source: https://echebastar.com/wp-content/uploads/2022/02/Echebastar-Analized-Catch-Data-Year-2021-Table-53-54pdf.pdf

(i) FAD sets

Year	2021
Set type FAD	FAD
Number of observed sets	857
Total number of sets	1467
Observed sets (%)	58%
SRT released alive (%)	47%

Species group	Sepecies	Observed Catch		% Total Wt.	Estimated Total Catch	
		Tons	Individuals (non-tuna)		Tons	Individuals (non-tuna)
Billfishes	Istiophoridae	0,41	9	0,00%	0,70	15
Billfishes	Makaira indica	3,46	63	0,01%	5,92	108
Billfishes	Makaira nigricans	8,75	96	0,03%	14,98	164
Billfishes	Istiophorus platypterus	0,25	13	0,00%	0,43	22
Other bony fishes	Aluterus monoceros	0,87	700	0,00%	1,49	1.198
Other bony fishes	Platax teira	0,04	77	0,00%	0,07	132
Other bony fishes	Platax sp.	0,04	77	0,00%	0,07	132
Other bony fishes	Coryphaena equiselis	0,06	14	0,00%	0,10	24
Other bony fishes	Carangidae	0,01	26	0,00%	0,02	45
Other bony fishes	Canthidermis maculata	13,15	18753	0,04%	22,51	32.101
Other bony fishes	Caranx sexfasciatus	0,33	658	0,00%	0,56	1.126
Other bony fishes	Diodon hystrix	0	10	0,00%	0,00	17
Other bony fishes	Coryphaena hippurus	40,61	4886	0,13%	69,52	8.364
Other bony fishes	Sphyraena barracuda	1	182	0,00%	1,71	312
Other bony fishes	Kyphosus vaigiensis	0,08	160	0,00%	0,14	274
Other bony fishes	Lobotes surinamensis	0,78	299	0,00%	1,34	512
Other bony fishes	Scomber japonicus	0,01	25	0,00%	0,02	43
Other bony fishes	Masturus lanceolatus	0,02	2	0,00%	0,03	3
Other bony fishes	Decapterus macarellus	0,01	52	0,00%	0,02	89
Other bony fishes	Elagatis bipinnulata	27,79	11011	0,09%	47,57	18.848
Other bony fishes	Uraspis secunda	0	10	0,00%	0,00	17
Other bony fishes	Acanthocybium solandri	8,04	1288	0,03%	13,76	2.205
Other bony fishes	Seriola rivoliana	0,02	42	0,00%	0,03	72
Rays	Dasyatys (Pteroplatytrygon) violacea	0,01	2	0,00%	0,02	3
Rays	Manta birostris	1,33	5	0,00%	2,28	9
Rays	Mobula sp.	1,35	9	0,00%	2,31	15
Sharks	Carcharhinus falciformis	44,45	2640	0,15%	76,09	4.519
Sharks	Carcharhinus longimanus	1,4	26	0,00%	2,40	45
Turtles	Dermochelys coriacea	0,17	1	0,00%	0,29	2
Turtles	Lepidochelys olivacea	0,08	3	0,00%	0,14	5
Turtles	Eretmochelys imbricata	0,04	3	0,00%	0,07	5
Turtles	Caretta caretta	0,11	2	0,00%	0,19	3
Tunas nei	Thunnus obesus	3017		10,02%	5.164,46	
Tunas nei	Auxis rochei	3		0,01%	5,14	
Tunas nei	Auxis thazard	183,3		0,61%	313,77	
Tunas nei	Auxis sp.	1		0,00%	1,71	
Tunas nei	Euthynnus affinis	2,1		0,01%	3,59	
Tunas nei	Katsuwonus pelamis	19753,8		65,61%	33.814,26	
Tunas nei	Thunnus albacares	6990,75		23,22%	11.966,66	

(i) FSC sets

Year	2021
Set type	FSC
Number of observed sets	59
Total number of sets	162
Observed sets (%)	36,42%
SRT released alive (%)	No observed

Species group	Species / Species group	Observed Catch		% Total Wt.	Estimated Total Catch	
		Tons	Individuals (non-tuna)		Tons	Individuals (non-tuna)
Tunas nei	Thunnus obesus	105		7,22%	179,74	
Tunas nei	Katsuwonus pelamis	190		13,06%	325,24	
Tunas nei	Thunnus albacares	1160		79,73%	1.985,67	

4.2.7.3 Primary species

Species composition of the UoA catches are consistent with the data assessed during the initial evaluation. Yellowfin tuna and bigeye tuna are that the only 'main' primary species, irrespective of whether the vessels are targeting FADs or FSC, so an update of their status and management is offered below. As a result of the current surveillance audit, the team considered that, at light of the latest yellowfin tuna stock assessment carried out in 2021 (IOTC, 2021), no re-scoring was necessary in the case of the yellowfin tuna. On the other hand, PI2.1.2(c) was re-scored for the bigeye tuna based on the on the fact that there is no evidence that Res 05/01 is being implemented successfully at any level (as highlighted in Akroyd et al, 2022). However, the recently adopted Res 22/03 on a new management procedure for the bigeye tuna allows to maintain scores at 80 in PI2.1.2(a)&(b), unlike in Akroyd et al (2022) where this Resolution was not considered.

The remaining primary species (mainly albacore and several species of billfishes) are all 'minor' and information presented in **table 4.2.7.3** confirms that no significant changes on the impact of the fishery on these species have been identified. No significant modifications at managerial level were either identified. No re-scoring for minor species was considered necessary.

(i) Yellowfin tuna

A new stock assessment was carried out for yellowfin tuna in 2021. A brief summary of the results is presented below based on the information presented in IOTC (2021). Thus, the information presented here was retrieved from IOTC (2021), and the implications for the certificate are discussed at the bottom of this section.

The 2021 stock assessment was carried out using Stock Synthesis III (SS3), a fully integrated model that is currently used to provide scientific advice for the three tropical tunas stocks in the Indian Ocean. For specific details on the model and data used refer to IOTC (2021). A number of sensitivity runs were conducted to address additional uncertainty, including two new natural mortalities, a new growth curve, an assumed longline catchability increase, as well as a model that includes only the Japanese size data for the Longline fishery. The results of these models generally indicate a more pessimistic stock status and would lower the estimated median biomass if included in the final grid of models. However, the results from the sensitivity runs were within the range of uncertainty estimated by the model grid. The sensitivity models still require further exploration to ensure uncertainty is being captured appropriately and models are not mis-specified. Other key uncertainties (for example, catch levels) were not explored. However, the new model grid represents a marked improvement over the previous results available in 2018 and incorporates a far wider range of uncertainty.

According to the information available in 2021, the total catch has remained above the estimated MSY since 2012 (i.e., between 399,000 t and 448,642 t), with the 2019 catch (448,642 t) being the largest since 2010.

Overall stock status estimates do not differ substantially from the previous assessment. Spawning biomass in 2020 was estimated to be 31% on average of the unfished (1950) levels (**Table 4.2.7.4**). Biomass estimates have been generally declining over time and particularly since 2011 (**Figure 4.2.7.1**). Spawning biomass in 2020 was estimated to be 87% of the level that supports the maximum sustainable yield (SB2020/ SBMSY = 0.87). Current fishing mortality is estimated to be 32% higher than FMSY (F2020/ FMSY = 1.32). The probability of the stock being in the red Kobe quadrant in 2020 is estimated to be 68%. On the weight-of-evidence available since 2018, the yellowfin tuna stock is determined to remain overfished and subject to overfishing (**Table 4.2.7.4**).

It is noted that the estimated productivity of the stock (MSY) was very low for some of the scenarios of the reference grid. Their plausibility and reasons for this low productivity are yet to be fully investigated. It is noted that there is also considerable uncertainty in the reported catches by some fisheries. In particular, several artisanal fisheries have increased their catches substantially in recent years, the implication of which should be further investigated. There was a lack of information to explain this sharp increase in catch. Inconsistencies in the biomass trend by region also remain unresolved and this also deserves further investigation.

Outlook. The increase in catches in recent years has substantially increased the pressure on the Indian Ocean stock, resulting in fishing mortality exceeding the MSY-related levels. The critical errors in the projections and estimations for computing probabilities in the K2SM developed in 2018 have been addressed and the updated projections no longer suffer from the issues previously experienced.

Table 4.2.7.4. Status of yellowfin tuna (*Thunnus albacares*) in the IO. Source: IOTC, 2021

Area[1]	Indicator	Value	Status[3]
Indian Ocean	Catch in 2020 (t)[2]	430,956	68%*
	Average catch 2016-2020 (t)	434,235	
	MSY (1,000 t) (80% CI)	349 (286-412)	
	F_{MSY} (80% CI)	0.18 (0.15-0.21)	
	SB_{MSY} (1,000 t) (80% CI)	1,333 (1,018-1,648)	
	F_{2020} / F_{MSY} (80% CI)	1.32 (0.68-1.95)	
	SB_{2020} / SB_{MSY} (80% CI)	0.87 (0.63-1.10)	
	SB_{2020} / SB_0 (80% CI)	0.31 (0.24-0.38)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2]Proportion of 2020 catch fully or partially estimated by IOTC Secretariat: 12.5%
[3]The stock status refers to the most recent years' data used in the assessment conducted in 2021, i.e., 2020

*Estimated probability that the stock is in the respective quadrant of the Kobe Plot (shown below). Median and quantiles calculated from the uncertainty grid taking into account of weighting on models

Colour key	Stock overfished (SB_{2020} / SB_{MSY}<1)	Stock not overfished (SB_{2020} / SB_{MSY}≥ 1)
Stock subject to overfishing (F_{2020} / F_{MSY}≥ 1)	68%	2%
Stock not subject to overfishing (F_{2020} / F_{MSY}≤ 1)	13%	17%
Not assessed / Uncertain		

The percentages are calculated as the proportion of model terminal values that fall within each quadrant with model weights taken into account

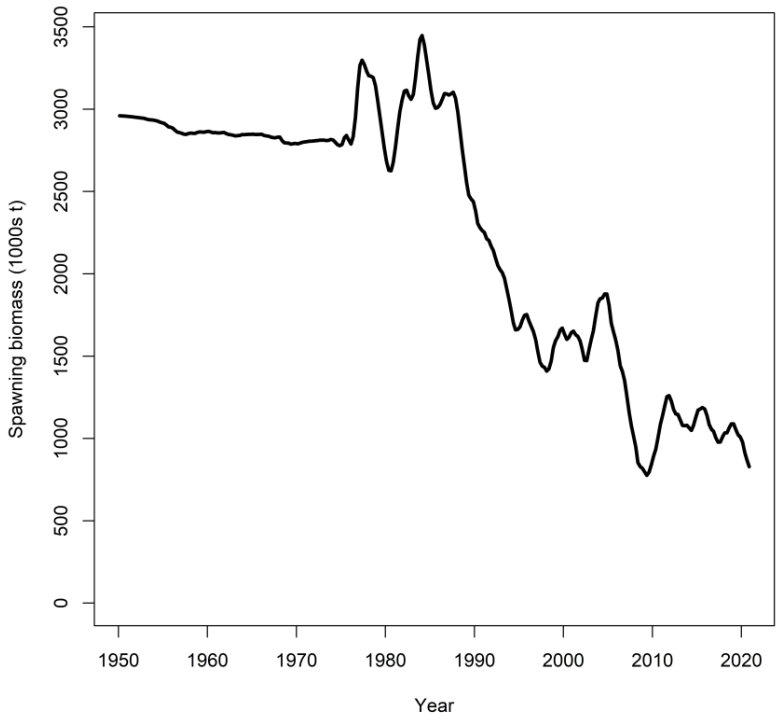

Figure 4.2.7.1: Estimated time series (1950-2020) of total spawning biomass of yellowfin tuna (left) from the reference model of the 2020 assessment.

Management advice

For each catch scenario, the probability of the biomass being below the SBMSY level and the probability of fishing mortality being above FMSY were determined over the projection horizon using the delta-MVLN estimator, based on the variance-covariance derived from estimates of SB/SBMSY and F/FMSY across the model grid. According to the K2SM,

- if catches are reduced to 60% of 2020 levels1 there is >50% probability of being above Bmsy levels by 2023.
- if catches are reduced to < 80% of 2020 levels there is a >50% probability of being above BMSY in 2030.
- if catches are reduced to less than 80% of 2020 levels there would be a >50% probability of ending overfishing (F<Fmsy) by 2023 and also by 2030.
- The probability of breaching the biological limit reference point (0.4Bmsy) with 2020 catches is 7% by 2023 and 64% by 2030. The probability of breaching the F limit reference point (1.4 Fmsy) with 2020 catch is 52% by 2023 and 78% by 2030.

The Commission has an interim plan for the rebuilding the yellowfin stock, with catch limitations based on 2014/2015 levels (Resolution 21/01which superseded 19/01, 18/01 and 17/01). Some of the fisheries subject to catch reductions have achieved a decrease in catches in 2020 in accordance with the levels of reductions specified in the Resolution; however, these reductions were offset by increases in the catches from CPCs exempt from and some CPCs subject to limitations on their catches of yellowfin tuna.

Table 4.2.7.5. Yellowfin tuna: Stock synthesis assessment Kobe II Strategy Matrix. Probability of violating the MSY-based target (top) and limit (bottom) reference points for constant catch projections (relative to the catch level from 2020 -40%, - 30%, -20%, -10%, 0%, +10%, +20%) projected for 3 and 10 years

Alternative catch projections (relative to the catch level from 2020) and probability of violating MSY-based target reference points ($SB_{targ} = SB_{MSY}$; $F_{targ} = F_{MSY}$)							
Reference point and projection timeframe	60%	70%	80%	90%	100%	110%	120%
$SB_{2023} < SB_{MSY}$	0.45	0.56	0.68	0.74	0.76	0.82	0.88
$F_{2023} > F_{MSY}$	0.13	0.30	0.53	0.63	0.72	0.82	0.91
$SB_{2030} < SB_{MSY}$	0.1	0.33	0.54	0.76	0.93	0.99	1
$F_{2030} > F_{MSY}$	0.07	0.31	0.49	0.69	0.84	0.97	0.99
Alternative catch projections (relative to the catch level from 2020) and probability of violating MSY-based limit reference points ($SB_{lim} = 0.4\ SB_{MSY}$; $F_{Lim} = 1.4\ F_{MSY}$)							
Reference point and projection timeframe	60%	70%	80%	90%	100%	110%	120%
$SB_{2023} < SB_{Lim}$	0	0	0	0.05	0.07	0.1	0.16
$F_{2023} > F_{Lim}$	0.03	0.11	0.25	0.43	0.52	0.63	0.78
$SB_{2030} < SB_{Lim}$	0	0	0.01	0.18	0.64	1	1
$F_{2030} > F_{Lim}$	0.02	0.19	0.33	0.60	0.78	0.98	0.98

Implications for the certificate: Currently, the IO yellowfin tuna scores 80 at PI 2.1.1. The requirement to meet SG80 is as follows: "Main primary species are highly likely to be above the PRI". According to table PSA9 (Annex SA, v2.01), the probability required at SG80 is ≥80%ile. The MSY-based biological limit reference point adopted for this stock is 0.4 SB_{MSY}. The results of the 2021 stock assessment shows that lowest range of the 80% confident interval of the ration SB_{2020}/SB_{MSY} is 0.63. Thus, the stock is still well above its biological limit reference point and SG80 is still met. There is no need to re-score PI 2.1.1 based on the results of the 2021 stock assessment of the IO yellowfin tuna.

The team also considers that there is no need to re-score PI 2.1.2 (currently scored at SG80), since this PI assesses the effectiveness and implementation of the harvest strategy at UoA level, and the SC recognizes that industrial purse seine fleets from countries that have not objected to the yellowfin management plan are complying with the catch limitations and providing catch data. Both Spain and Seychelles (the two flag States) are complying with their catch reductions on yellowfin tuna. Also, data from the client confirms a significant reduction in yellowfin tuna catches in recent years. The main issues identified by the SC are the considerable uncertainty in the reported catches of several artisanal fisheries, and that the yellowfin tuna catch reductions adopted in the Resolutions were offset by increases in the catches from CPCs exempt from and some CPCs subject to limitations on their catches of yellowfin tuna. Thus, the team considers that SG80 is still met.

(ii) Bigeye tuna

The bigeye tuna was assessed in 2019 and the results of this assessment were already considered in the previous surveillance report and re-scoring was considered as necessary (Stokes and Rios 2019). This score is aligned with the score provided in overlapping fisheries where this species has also been as a main primary component of the P2 (see **section 6.4** for more details). Based on the information provided above the team decided not to re-score PI 2.1.1(a).

Akroyd et al (2022) set a condition on PI 2.1.2 for the bigeye tuna, so the team decided to review the scoring for this PI. Akroyd et al (2022) score SI(a), (b) & (c) below 80 based on the fact that Res 05/01 was neither successfully implemented nor updated. Up to this year, Res 05/01 was the only management measure adopted by the IOTC specifically for this stock, and basically set that: (i) CPCs shall limit their catch of bigeye tuna to their recent levels of catch (at that time); (ii) the Commission shall establish interim catch levels for a three-year period for CPCs catching more than 1000t of bigeye tuna; (iii) A mechanism to allocate quotas shall be developed. However, none of the above measures were ever implemented successfully, and bigeye tuna catches in the IO continued to increase since the adoption of Res 05/01, including the catches from Spain and Seychelles, and also the catches of the UoA assessed by Akroyd et (2022), which is the AGAC fleet (and this is also the case of the catches from Echebastar).

However, Resolution 22/03 on a Management Procedure for bigeye tuna has been adopted in May 2022 at the 26th Session of the Commission, and this regulation was not included in the assessment performed by Akroyd et al (2022), since its adoption was subsequent to the publication of the Final Draft Report (October 2021).

As detailed in Annex I of the Resolution, the management procedure has two data inputs: (i) total catch biomass and (ii) spatially aggregated longline CPUE from 1980 to the most recent year of catch data. It then fits a Pella-Tomlinson biomass dynamic model to the CPUE data given the catch biomass. Estimated parameters are carrying capacity (K), intrinsic rate of increase (r), initial biomass depletion (delta), the production curve shape parameter (m), and finally annual biomass B and its stochastic variability sigmaB. From these parameters the following key variables used in the harvest control rue (HCR) are derived:

1. Ratio of fishing mortality to the value which produces MSY (FMSY ratio)
2. Relative biomass or depletion: B/K

The HCR is a simple hockey stick type: for biomass depletion above 0.4 the HCR multiplier (HCRmult) is 1, it decreases to (almost) zero linearly by a biomass depletion of 0.1. The overall fishing mortality used to estimate the TAC is calculated as follows: FMSY ratio x HCRmult x tuning parameter (Fmult). This fishing mortality is used in conjunction with the estimated biomass B to calculate the new TAC. A symmetric maximum change of 15% is then applied to calculate the actual recommended TAC. The main suite of equations that define the HCR are as follows:

$$HCR_{mult} = 1 \; if \; \frac{B_y}{K} \geq 0.4$$

$$HCR_{mult} = \frac{\frac{B_y}{K} - 0.1}{0.3} \; if \; 0.1 < \frac{B_y}{K} < 0.4$$

$$HCR_{mult} = 0.0001 \; if \; \frac{B_y}{K} \leq 0.1$$

$$TAC_{new} = B_y(1 - exp(-F_{mult} \times HCR_{mult} \times F_{MSY} \; ratio))$$

The objective of the Rs 22/03 is to maintain the stock biomass in the green zone of the Kobe plot (not overfished and not subject to overfishing) while maximizing the average catch from the fishery and reducing the variation in the total allowable catch (TAC) between management periods. Further, the Resolution also states that the management procedure is designed to achieve:

a) 60% probability that the bigeye tuna spawning stock biomass achieves the target reference point of SBMSY3 by 2034-2038;
b) the bigeye tuna spawning stock biomass avoids breaching the interim limit reference point specified in Resolution 15/10 with a high probability;

and operates with the following constraint:

c) the maximum increase or decrease in the TAC shall be 15% relative to the previous TAC.

Besides, the Resolution also sets the following regarding, TAC, quota allocation and the review process:

Total Allowable Catch setting

The Scientific Committee shall run the MP and advise the Commission of the outcome, including a recommended TAC and any advice on exceptional circumstances in accordance with the Commission endorsed Guidelines for the Provisions of Exceptional Circumstances for IOTC MPs as documented in Appendix 6a of IOTC-2021-SC24-R. The Commission shall adopt the TAC based on the outcome of the MP, unless the Scientific Committee identifies exceptional circumstances that require consideration of alternate management actions to be taken by the Commission.

The first TAC derived from the MP shall apply in 2024 and 2025. After 2025, the TAC shall apply in each of the subsequent three years following the year it is set by the Commission4. The schedule for setting and applying the TAC, beginning the calendar year immediately following adoption of this Resolution, is shown below (Annex II of the Resolution).

IOTC COMMITTEE	2022	2023	2024	2025	2026	2027	2028	2029
Commission (May/June)	Select and adopt BET MP	Annual Review of SC advice →						
		Set TAC (2024-2025)		Set TAC (2026-2028)			Set TAC (2029-2031)	
WPTT and WPM (Oct)	Collate catch data and CPUE series used in MP		Collate data used in MP			Collate data used in MP		
	Consider exceptional circumstanc es (EC), advise SC		Consider EC			Consider EC		
SC (Dec)	Run MP		Run MP			Run MP		
	Assess* stock status				Assess stock status			Assess stock status
	Annual Review of Exceptional Circumstances →							
	Provide TAC advice to the Commission		Provide TAC advice			Provide TAC advice		

If exceptional circumstances are triggered, the pre-existing TAC shall remain in place until a new TAC or other management action is agreed by the Commission.

TAC allocation
Allocation of the TAC among CPCs will take place according to a process agreed external to this measure. The Commission will develop a mechanism to constrain catch to the MP derived TAC for bigeye tuna no later than 2025, if an allocation scheme has not yet been agreed and implemented by the Commission.

Review
A review of performance of the MP by the Commission and its subcommittees is to occur in 2030. The aim of the review is to ensure the MP is performing as expected and whether there are any conditions that warrant reconditioning the operating models, retuning the existing MP, or consideration of alternate candidate MPs and a new full management strategy evaluation.

The Scientific Committee is requested to review, and if necessary, further develop and refine (not later than 2024), the exceptional circumstances guidelines (adopted by SC24 and S26), taking into account, *inter alia*, the need for an appropriate balance between specificity versus flexibility in defining exceptional circumstances, and the appropriate level of robustness to ensure that exceptional circumstances are triggered only when necessary.

The IOTC, through the Technical Committee on Management Procedures, is requested to review the need for, and if necessary, develop at latest by 2025, guidance on a range of appropriate management responses should those exceptional circumstances be found to occur.

Implications for the certificate

Based on the information presented above, **the team considers that the recently adopted Res 22/03 on a new management procedure for the bigeye tuna allows to maintain scores at 80 in PI2.1.2**, unlike in Akroyd et al (2022) where this Resolution was not considered. However, since this Resolution has only been adopted in May this year, so

a new recommendation was set to ensure that Res 22/03 is implemented according to the schedule detailed in the Resolution.

Since there is no change in the overall scoring of PI 2.1.2, no re-scoring table for this PI is included in this report. However, the team considered relevant to present here the draft rationales for the bigeye tuna supporting the current scores and accounting for the new Resolution adopted and the new recommendation set:

SI(a)

Resolution 22/03 on a management procedure for bigeye tuna in the IOTC area of competence set out the following objectives: (i) achieving 60% probability that the bigeye tuna spawning biomass reaches the target reference point of SB_{MSY} by 2034-2038; and (ii) avoid breaching the interim limit reference point species in Resolution 15/10 with high probability. Besides clear objectives, this resolution also includes a schedule for setting a total allowable catch, as well as a review of its performance (see **section 4.2.4.3(ii)** for more details). Also, Resolution 19/02 on procedures on a Fish Aggregating Devices (FADs) management plan aims at reducing the mortality of bigeye juveniles associated to FAD operations: setting a maximum number of operational buoys, requesting the record of fishing activities on FADs, establishing the development of management plans by purse-seine fleet and reporting and tracking procedures. Resolution 19/05 on a ban on discards on inter alia bigeye tuna, it is also considered as a relevant regulation affecting this stock.

The above mentioned Resolutions, along with the IOTC applicable regulatory framework (i.e Resolutions 10/08, 14/02, 14/05, 15/10, 15/11), and the monitoring and data recording requirements set in Resolutions 15/01 and 15/02, as well as the results and projections included in the latest stock assessment (IOTC, 2019), the team considers that there is a set of measures that conforms a partial strategy for the UoA that is expected to maintain the species at a level which is highly likely to be above the PRI, therefore **SG60 and SG80 are met**.

SI(b)

Overall results indicate that currently the bigeye tuna stock in the Indian Ocean is not overfished, with SB2018 been above the MSY-related level (1.22) but subject to overfishing, with F2018/FMSY = 1.20. However, according to the figure shown below there has been a high probability of the stock being at the green quadrant of the Kobe plot, with the stock being well above the PRI.

Stock projections were conducted for the reference model over a 10-year period (2016–2025) at a constant level of catch set as a multiple of the fishery catches in 2015. Three levels of catch were investigated representing 80% (74,200 mt), 100% (92,700 mt) and 120% (111,300 mt) of the 2015 catch level. For each stock scenario, the probability of the biomass being below the SB_{MSY} level was determined after 3 years (2018), 5 years (2020) and 10 years (2025). Catches 20% higher than the 2015 level resulted in the biomass being maintained at approximately the SB2015 for the entire projection period. The overall bigeye catches in the Indian Ocean have been maintained below the 2015 level (96,3kt in 2015).

Besides, through Resolution 22/03, a new management procedure for bigeye tuna has been recently adopted by the IOTC Commission at its 26th Session in May 2022. In accordance with the management objectives set by the Commission in Resolution 15/10 and the application of a precautionary approach in Resolution 12/01, Resolution 22/03 has been established with the aim to avoid the bigeye tuna biomass being below Blim and to maintain the fishing mortality rate at or below the F_{MSY} level. The new management procedure includes clear objectives for the stock and it has been designed to achieved the following:

a) a 60% probability that the bigeye tuna spawning stock biomass achieves the target reference point of SB_{MSY} by 2034-2038 and;
b) the bigeye tuna spawning stock biomass avoids breaching the interim limit reference specific in Resolution 15/10 with a high probability.

In addition, there is a first total allowable catch setting expected to apply in 2024 and 2025. After 2025, the TAC shall apply in each of the subsequent three years following the year it is set by the Commission. The allocation of the TAC among different CPCs will take place according to a process agreed external to this measure. If an allocation scheme has not yet been agreed and implemented, the Commission will develop a mechanism to constrain catch to the derived TAC for bigeye no later than 2025. Finally, a review of performance of the management procedure has been set to occur in 2030, where it will be assessed if it is performing as expected.

At this point, it is considered that there is some objective basis for confidence that the partial strategy will work on some information directly about the UoA and species involved, therefore **SG60 and SG80 are met.**

However, bigeye tuna in the Indian Ocean is currently facing overfishing and recent increase in catches from the purse seine fleet (Figure 1(a-b) in Appendix 9 of IOTC 2019) have increased the pressure on the stock.

Resolution 22/03 has only been adopted in 2022, so no testing or performance evaluation have been carried out, and it cannot be stated with high confidence that the strategy will work. **SG100 is not met.**

SI(c)

Res 05/01 sets that: (i) CPCs shall limit their catch of bigeye tuna to their recent levels of catch (at that time); (ii) the Commission shall establish interim catch levels for a three-year period for CPCs catching more than 1000t of bigeye tuna; (iii) A mechanism to allocate quotas shall be developed. However, this Resolution was adopted on the basis of scientific advice issued in 2004 and pending its review in the 10th IOTC Commision. In 2006, the BET's advice was more optimistic than in 2004, and the Resolution was never implemented. Although the Resolution remains in the Active Compendium, it has not been cited in any Scientific Committee or Commission since 2005. Res 22/03 was never revised and updated (until the recent adoption of Res 22/03), and therefore the proposed measures refer to past circumstances in relation to the bigeye stock.

In any case, compared to the mid noughties (2000-2009), the catch of bigeye until 2020 showed a significant decline (Figure 1(a-b) in Appendix 9 of IOTC 2019), and recent levels are consistent with maintaining the stock at levels consistent with SB_{MSY} as detailed in SI(b). Besides, there is evidence that other elements of the harvest strategy (i.e data reporting requirements, stock assessments and scientific advice, etc.) are being implemented successfully. Thus, **SG80 is met.**

However, Res 22/03 has been just recently adopted, and the first TAC derived from the MP shall apply in 2024 and 2025 (see **section 4.2.7(ii)** for more details on the work plan adopted). Thus, there is still no clear evidence of its implementation. **SG100 is not met.** A recommendation is set regarding this matter.

4.2.7.4 Secondary species

As found during the previous surveillance audit and the initial assessment, no main secondary species are impacted by the UoA, while there is a number of minor secondary species (some small tunas and mainly small bony, pelagic or neritic finfish) accounting less than 2% of the total catches (see **table 4.2.7.3**). Data presented in tables above lead the team to consider that there is no need to revise the impact of the UoA on these species.

4.2.7.5 ETP species

During these years, the client has proved that all fishing trips are observed, and despite the pandemic situation faced in recent years, the sampling coverage per set has been maintained above 52%. Consistent data observed interactions between the UoA and ETP species are provided, as well as estimates of the total interactions and survival rates per species for a period that stretches from 2017 to 2021. The ANABAC/OPAGAC Code of Good Practices is being correctly implemented by Echebastar as confirmed by AZTI during its annual audits. The efficiency of different bycatch reduction devices (BRD) has been tested on board the Echebastar fleet and the results obtained have been used in recent papers (e.g., Murua et al 2022). Besides, Echebastar has promoted studies on relevant issues such as the post-capture survival rate on silky sharks. Based, on all this evidence, the team to close the condition on the PI 2.3.3(b) and re-score that PI.

An update on several issues related to the impact of the certified fishery on the ETP species is presented below.

For ETP species, cumulative impacts are only assessed under 2.3.1a where there are limits in place, which is not the case for any of the ETP species impacted by the Echebastar fleet. Thus, cumulative impacts with overlapping fisheries have not to be considered. This is consistent with the approach presented in the reports of the existing overlapping fisheries (see **section 6.4** for more details on the harmonisation process).

(i) ETP species impacted and trends

Table 4.2.7.6 presents the estimated total UoA's catches of each species of turtles, sharks and rays impacted by the UoA between 2017 and 2021, while **figure 4.2.4.2** shows the trend for each of these groups since 2016. Focusing on sharks, there is a clear decreasing trend in individuals captured in the last years, particularly considering that a new

vessel was included in 2019. The average number of silky sharks caught per set has decreased from 5 in 2016 to 4 in 2018 and 2019, to 3 in 2020, and finally 2 in 2021 (ESWG, 2022).

Table 4.2.7.6. Estimated total catches of each the species of rays, sharks and turtles impacted by the UoA (2017 – 2021). Source: ESWG (2022)

FAO	Family	Species	2017	2018	2019	2020	2021
EAG	Rays	*Myliobatidae*	0	0	0	0	0
MNT	Rays	Manta sp.	0	2	0	0	0
PLS	Rays	*Dasyatys (Pteroplatytrygon) violacea*	2	6	7	0	2
RMB	Rays	*Manta birostris*	1	1	2	2	6
RMJ	Rays	*Mobula japanica (rancureli)*	4	6	0	2	0
RMM	Rays	*Mobula mobular*	8	0	1	0	0
RMV	Rays	Mobula sp.	8	9	4	0	12
STT	Rays	*Dasyatidae*	4	0	2	0	0
BSH	Sharks	*Prionace glauca*	0	2	0	0	0
CCE	Sharks	*Carcharhinus leucas*	0	0	0	19	0
CVX	Sharks	*Carcharhiniformes*	0	0	2	0	0
FAL	Sharks	*Carcharhinus falciformis*	4297	5658	4882	4202	3447
OCS	Sharks	*Carcharhinus longimanus*	108	121	55	32	38
SPL	Sharks	*Sphyrna lewini*	0	0	1	0	0
DKK	Turtles	*Dermochelys coriacea*	0	0	0	0	1
LKV	Turtles	*Lepidochelys olivacea*	2	12	4	2	3
TTH	Turtles	*Eretmochelys imbricata*	2	2	3	4	3
TTL	Turtles	*Caretta caretta*	6	1	3	2	2
TTX	Turtles	Turtles not identified	0	3	12	0	0
TUG	Turtles	*Chelonia mydas*	0	2	0	0	0
RHN	Whale shark	*Rhincodon typus*	0	1	1	0	0

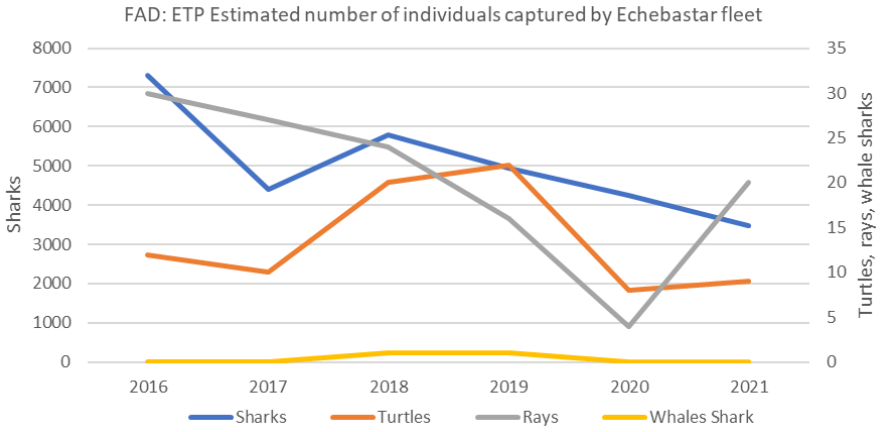

Figure 4.2.7.2. Trend of the estimated total UoA's catches of 4 different group of species (sharks, turtles, rays & whale sharks). Source: ESWG (2022).

(ii) Best practices on board to increase survival rates

The implementation of the ANABAC/OPAGAC Code of Good Practices adopted by Echebastar is being monitored by AZTI, and according to AZTI significant benefits have been identified: e.g. the use of non-entangling FADs, specific data collection protocols allowing a better understanding of the nature of the incidental interactions, and the implementation of best practices on board for the released rays and sharks, including the installation of double conveyor belt in 4 of its 6 vessels and avoiding most of the elasmobranchs being released from deck. The Steering Committee evaluates compliance and regularly updates the bases of the Code of Good Practices. The implementation of this Code of Conduct is annually assessed by AZTI as part of the audit to assess compliance with the UNE195006:2016 Standard for Responsible Tuna Fishing (section 4 of this Standard consist on the Code of Good Practices). All Echebastar vessels have valid certificates of the UNE195006:2016 Standard for the period 2022-2027. The statements of conformity issued by AZTI and declaring that each of the Echebastar vessels have been evaluated and are in accordance with Section 4

of the UNE 1956006 were shared with the team. The validity of this statement of conformity is for 1 year (January 1, 2022, to December 31, 2022).

Also, as part of the implementation of the Code of Good Practices, AZTI representatives are maintaining regular update meetings with each of the fishing companies included in either Anabac or Opagac. In the case of Echebastar 2 meetings were held in 2021 and 1 meeting in 2022 (February), as confirmed by AZTI.

Furthermore, AZTI presented evidence that Echebastar keeps collaborating with them to test new methodologies to improve survival rates of elasmobranchs released from deck, such as:

(i) the use of sharks velcros
(j) sorting grids for mobulids
(k) hoppers with ramps (for the two vessels where the double conveyor belt cannot be installed). During the site visit AZTI representatives confirmed that a hopper is ready to be installed in one of the vessels, and it is expected to be installed soon. An AZTI researcher was on board the Alakrana with this goal at the same time the site visit was taking place and pictures taken on board were shared with the team.

AZTI representatives interviewed during the site visit confirmed that they are working to ensure that all Echebastar vessels will have release ramps and sorting grids for rays. Two meetings on this topic were held between AZTI and Echebastar in 2021-22 as confirmed by AZTI.

Jefferson Murua and other AZTI researchers have prepared a paper on the results obtained using the different bycatch reduction devices (BRD) that have been tested as part of the implementation of the ANABAC/OPAGAC code of good practices, including the Echebastar fleet. This paper (Murua et al 2022)[3] has been recently presented in the 2022 intersessional meeting of the ICCAT-SCRS subcommittee on ecosystems and bycatch (SCRS/2022/108).

(iii) Study on the silky shark survival rate

The study on the post-release survival rate of the silky shark performed on board one of the Echebastar vessels started in 2020 has been continued during 2021, and the intermediate report was presented to the team (Grande et al 2022). As the previous report (Onandia et al 2021), this research was commissioned by Echebastar to AZTI.

The information presented below was extracted from Grande et al (2022).

The main objectives of this phase of the study are:

- Estimate the survival rate after the release of *C. falciformis* using PATs and MiniPAT satellite tags.
- Study of the migratory pattern of the silky shark.
- Study of the silky shark habitat and its overlap with the FAC purse seine fishery
- Assess the contribution of implemented mitigation measures to reduce silky shark mortality and identify complementary measures.

Two samplings have been conducted in the Indian Ocean to tag sharks and recover information on shark biological traits and physiological indicators. Both trips have been conducted in Echebastar´s vessels. The trips lasted from the 22nd of October to the 23rd of November 2020 and from 29th of September to 17th of October of 2021.

In this study, lactate concentrations from blood samples have been used in combination with satellite-linked tags (PATs and mini-PATs) to quantitatively assess the fate of released sharks. Mini-PATs are more expensive tags, but they allow for assessing behaviour (migratory patterns) and habitats (vertical tracks and sea temperature). For each tagged shark a fate was given (dead or alive) based on the depth records transmitted by the SPATs or MiniPATs and the time elapsed from tagging to detachment date. Sharks were considered to survive the fishing operation if tags showed they remained alive ≥15 days.

A total of 28 sharks were tagged with POP-UP satellite archival tags (24 SPAT2 and 4 MiniPATs3) in the first trip in 41 FAD fishing operations. In the second trip 33 sharks were tagged (14 SPAT and 19 MiniPATs).

During the first trip, 7 sharks (25% of tagged sharks) showed immediate mortality within the first 24 hours after release (depth of more than 1,700 m or constant depth for at least three days) attributed to post-release mortality events. One of the tags popped off prematurely after 9 days at sea with no apparent clear reason (i.e., due to the pin broken or tag detach) but was considered as a death event based on the last horizontal and vertical behaviour. Twenty tags remained attached for more than 15 days, which was considered to represent surviving sharks (71.4%).

During the second trip, 2 tags failed, and 8 tags (25% of the tags used in the trip with a correct functioning) popped off within the first 5 days after being released, indicating a post-release mortality. The rest of the tags have remained attached to the animals during more than 15 days (23 tags or 74% of the tags used in the trip with a correct functioning), indicative that the animals survive the fishing operation

To analyse post release mortality (PRM) and identify where and when silky shark lesions occur, specimens were sampled in the different phases of fishing: (i) during the hauling of the net (entangled specimens); (ii) during the Brailing of the catch on board, differentiating the number of the sequence of Brail (first Brails, second Brails and the rest) and measuring the duration of the time from the beginning of the fish handling until the release of the specimens, in which the anoxia is prolonged. After their release, vitality categories were assigned to all the specimens being: 4 (perfect) vigorous swimming and no external injuries; 3 (good) good swimming, although somewhat slower and apparently disoriented; 2 (regular) laborious swimming and / or visible major traumas; 1 (bad) specimen capable of turning around and swimming with great efforts and 0 (dead) specimens that sank with the ventral zone upwards. Post-release survival rates based on vitality index is presented in the table below.

Table 4.2.7.7. Number of sharks and survival rate by vitality index stage and brail and the estimated survival for each trip. Source: Grande et al (2022)

Estimated survival according to the vitality index

Zone	Dead (0)	Poor (1)	Fair (2)	Good (3)	Excellent (4)	Total	Estimated survival N	Estimated survival %
Tangled	0	2	8	15	16	41	**35**	**87.41**
1st_brail	12	12	27	12	0	63	**33**	**53.33**
2nd_brail	31	26	17	4	0	78	**24**	**30.86**
3rd_brail	66	21	9	0	0	96	**13**	**13.78**
(all)	109	61	61	31	16	278	**106**	**38.4**
Pred. survival (%)	*0*	*33.33*	*69.23*	*90.91*	*100*			
Survivors	**0**	**20**	**42**	**28**	**16**			

Trip 1: 38.4% survival

Zone	Dead (0)	Poor (1)	Fair (2)	Good (3)	Excellent (4)	Total	Estimated survival N	Estimated survival %
Tangled	0	2	1	6	7	16	**13**	**86.31**
1st_brail	7	19	38	10	3	77	**44**	**58.09**
2nd_brail	18	17	24	2	0	61	**24**	**39.51**
3rd_brail	49	41	4	0	0	94	**16**	**17.48**
(all)	74	79	67	18	10	248	**99**	**39.95**
Pred. survival (%)	*0*	*33.33*	*69.23*	*90.91*	*100*			
Survivors	**0**	**26**	**46**	**16**	**10**			

Trip 2: 39.95% survival

Also, a survival rate using lactate index was calculated, and results are shown in the table below.

Table 4.2.7.8. Number of sharks for which the lactate was measured by brail and the predicted survival for each fishing trip with a lactate level threshold of < 7.61. Source: Grande et al (2022)

Estimated survival according to lactate level

	Lactate<7.61	N measured	Pred. survival (%)	Total	Survivors
Tangled	10	15	**66.67**	41	**27**
1st brail	4	14	**28.57**	63	**18**
2nd brail	3	8	**37.50**	78	**29**
3rd brail	2	8	**25.00**	96	**24**
(all)	19	45	**35.25**	278	**98**

Trip 1: 35.25% survival

	Lactate<7.61	N measured	Pred. survival (%)	Total	Survivors
Tangled	17	17	**100.00**	16	**16**
1st brail	21	26	**80.77**	77	**62**
2nd brail	11	14	**78.57**	61	**48**
3rd brail	6	22	**27.27**	94	**26**
(all)	55	79	**61.29**	248	**152**

Trip 2: 61.29% survival

When the percentage of survivorship by vitality index stage was applied to predict survivorships for all sharks, a 38.4% and 39.95% survivorship was estimated for sharks bycaught and released during the first and second trip, respectively. When lactate level threshold was estimated for survivorship and used to predict survival rates, we obtained a 35.25% and 61.29% of overall survival in the first and second trip, respectively. According to the authors, due to the objectives of the project (that is, monitoring the migratory patterns and habitat of sharks), sampling of lactate during the second trip was biased towards individuals in better conditions, more suitable for tagging with satellite tags with which daily geolocation is obtained. Therefore, the overall survival rate derived from lactate level should be considered as an overestimate in the case of the second trip.

Some preliminary conclusions considered in SIOTI-ESWG (2020) are listed below:

- As observed in previous works on tuna purse seiners, the post-release mortality is at its lowest when sharks are in good shape and when they are swimming in the net. Mortality starts to increase from the moment the sa is formed and with the number of brails which concomitantly decreases the vitality index observed.
- In this study the at vessel mortality observed (40%) was lower and overall shark survivorship higher than the ratios estimated in previous works. The difference could rely on the fishing operation itself and the time elapsed from the catch to release (which can be influenced for example by set size, brail size or environmental conditions) or shark biological characteristics (e.g., size, age). In addition, the experience gained by the crew over time since the application of best releasing practices several years ago and the adaptation of the deck by the installation of the bycatch release conveyor belt could have a positive influence to reduce the at vessel mortality
- These findings suggest that if best handling and release practices are applied and fauna handling/release devices are incorporated on board, a significant increase in post-release survival of sharks could be obtained on tuna purse seiners.

The data obtained in this tagging campaign will be used to further study the biology of silky sharks by exploring their habitat use and investigating migratory patterns of this species, which could help in the design and development of future alternative mitigation approaches. This work will be carried out during the second semester of 2022.

4.2.7.6FAD interactions with coral reefs

In 2021 Echebastar signed an agreement with AZTI to develop a study aimed at assessing the risk posed by derelict FADs. As a result of this agreement AZTI will complete different activities such as mapping coral communities, analyze FAD drifting, review available information on the structure of reefs, perform a risk assessment to identify areas affected

by FAD beaching, analyze the potential impact of derelict FAD on coral communities in the context of other risks, identify measures to reduce potential impacts, review IOTC policy on recovery of lost FADs, and design and implement a study to provide empirical evidence on the nature and extent of damage to corals resulting from lost FADs.

This project has three main objectives that consider the impact of the fishery on habitats:

• To study the interaction of derelict dFADs with coral communities in terms of the structure and function of coral reefs and whether this can be affected to a point where serious or irreversible damage occurs.

• To study the strategy to reduce potential impacts between dFADs and coral communities in particular abandoned dFADs to avoid, should this occur, that such interaction may reduce coral reef structure and function to a point where serious or irreversible damage occurs.

• To provide evidence that information is adequate to allow identification of the main impacts of derelict dFADs on coral reefs and providing reliable information on the spatial extent of the interaction and gear use timing and location

During this surveillance audit the client shared with the team the second interim report performed by AZTI (Zudaire, et al 2022). This report details the preliminary results on the analysis of the dynamic of dFADs, especially those that are lost and may become derelict. For this first task, data from the echosounder buoys of the ECHEBASTAR fleet in the Indian Ocean for the period between 2016 and 2020 is being used and analized by AZTI. These indicators and their evolution in the studied period were taken into account for the analysis of dFAD drift in order to study their dynamics and the identification of areas with potential strandings by region. This analysis has also taken into account available information on reef structure and coral species composition in the main potentially affected regions. The development of maps showing the location of corals in the Indian Ocean was carried out using a generalised gridded dataset with a resolution of 500 m developed by the World Resources Institute (https://www.wri.org/). The data of the indicators have been analysed using a risk matrix assessment and applying a Productivity and Susceptibility Analysis (PSA) approach to identify areas/regions affected. The matrix will incorporate different parameters, e.g., dFAD losses, deactivations, densities and beaching.

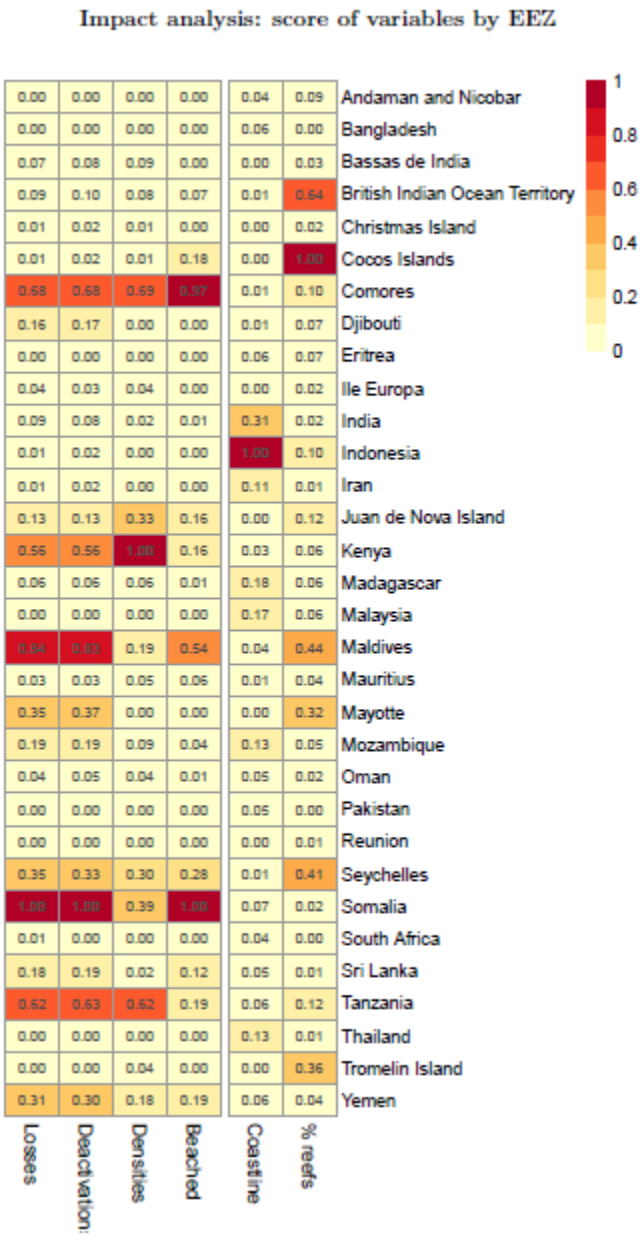

Figure 4.2.7.3. Risk matrix incorporating the indicators obtained by each Indian Ocean coastal country. Source: Zudaire et al (2022)

In order to contextualise the potential impact of derelict dFADs on coral communities, a literature review was carried out to gain a better understanding of other risk factors (e.g., climate change) affecting coral reefs, particularly in the Western Indian Ocean. To this end, in a first phase, an exploratory bibliometric analysis of the content of the abstracts of scientific articles resulting from a search for the terms "impact" AND "coral" AND "Western Indian Ocean" in the Web of Science library was carried out. A total of 231 scientific references were obtained. The content was analysed using the VosViewer software (version 1.6.16). This software allows to visualise the content information of these references by highlighting the terms that appear most frequently, and by defining the connections between the different terms. This information allows to identify the studied topics in the bibliography. As a result of this analysis it was found that existing literature related to impacts on corals in the Western Indian Ocean revolves around five main themes: climate change and its impacts, study and sampling variables, reef functioning, fisheries and fish communities, miscellaneous. In addition, a shift in the topics of study could be observed over time. While the older literature, focused on fisheries and fish community research and coral reef functioning, the more recent literature focuses on the study of climate change impacts.

Following this initial analysis, and in order to explore the potential impacts of FADs in the context of other pressures on coral reefs, the most recent literature exploring the status, threats and trends of reefs was reviewed in detail. This task

provides an overview of what reefs are, their global distribution, the services they provide to society, as well as their status and the main threats they face, and then focuses on the Western Indian Ocean. It is concluded that 65% of the reefs in this area are threatened; more specifically 35% are highly or very highly threatened. The main threats to the whole area are global warming and fishing (in particular over-fishing and destructive fishing). The global threat studies do not explicitly refer to dFADs as an impact factor, although there are occasional references to dFADs causing damage to reefs.

On the other hand, a literature review of studies exploring harms/possible impacts of dFADs have been carried out. Given the scarcity of existing literature, the authors have also explored the literature derived from the impacts of anchoring, with which it could have some similarity. This work has yet to be completed.

Also, a literature review was conducted to support those measures proposed in the scientific literature to mitigate the risk of damage to corals from interaction with dFADs (e.g., biodegradable dFADs, dFAD recovery programmes, dFAD number limitation, counting of dFADs, management of areas and periods for dFAD deployments). Three main groups related to dFAD were identified in which to incorporate these measures: i) design, ii) construction materials and iii) management. Each of the measures has been classified in these three groups including the bibliographical reference to the works where this measure is considered. A classification of the impact of the measure over time (i.e., short, medium or long term) has also been included, as well as an assessment of the economic viability of the measure. This task will also include questionnaire sent to IOTC policy and stakeholders on the potential measures identified. This is still a work in progress.

Finally, a project to provide empirical evidence on the nature and extent of damage to corals resulting from interaction with dFADs has been been designed and implemented. To implement this study a partnership with the NGO Save Our Seas Foundation (SOSF) has been established. The first phase of the fieldwork was conducted from 10 to 27 May 2022. A second phase of the field survey has been scheduled in December 2022. The field work takes place on the islands of D'Arros and St Joseph, as this location was considered suitable to design the methodology to study the impacts of dFADs on coral reefs and provide scientific evidence on the nature and magnitude of the impacts caused by the interaction of dFADs with coral reefs. Data on activated dFAD buoys was requested to different fishing companies (Echebastar included) to identify dFADs that could have drifted towards d'Arros Islands and Saint Joseph Atoll. The FADs´ coordinates were made available to the SOSF team, who visited the area to search for them and for any other additional dFADs that could be in the area. After visiting the different sites and scanning the area, four valid dFADs were identified prior to the fieldwork campaign: three located within the lagoon (two in patch reef areas, and one on seagrass), and another in the reef. Then, the dFAD and the area were characterized in detail, and a methodology was developed to assess the impact of the dFADs on the area. The impact assessment of dFADs on coral reefs was carried out by comparing coral and fish composition between dFAD sites and their corresponding control sites. Due to the high variability in i) type of habitat where the dFADs were found (i.e., one on seagrass, two in patch reefs, and one on the reef) and ii) survey conditions (the entry to the lagoon was determined by the tides, and therefore, we could not control for time of survey which could potentially affect the fish abundance and richness) and the limited number of dFADs (N=4), the outputs of this study cannot be used to make conclusions nor to extrapolate. However, the detailed observations of the different impacts observed has been of high importance as it has allowed to identify how the different components of the FAD interact with the fish and benthic communities, which will be highly important to provide advise on alternative FAD designs. The identification of more beached dFADs in the study area is currently underway.

Although this is a preliminary report, the authors highlight that the report provides valuable information to identify countries and areas where dFADs are most likely to sink or strand. In addition, it provides a good overview of buoy transits and density at country bases by month and geographical location to assist in the interpretation of potential dFAD beaching risk. A general downward trend in all estimated indicators was identified by the authors. This reduction is more significant in buoy activations, deployments and deactivations than in buoy losses and beachings by the ECHEBASTAR fleet. However, the document showed that the proportion of lost and beached buoys over buoy activations increased in 2018 compared to 2016. The authors also indicate the following problems:

- Buoys that are deliberately deactivated when dFADs leave the fishing area and the probability of returning to it is low. By doing so, these dFADs will end up sinking, being picked up by others or beached; and the current used method is unable to estimate beaching events resulting from deactivated buoys. A significant number of buoys are deactivated when drifting east of 70 East and are likely to end up in beaching events that are not detected by the approach used in this work.
- In some regions, there is active collection of buoys by local vessels, probably local fishermen, which the present analysis interprets as beaching events.

- In some regions, the presence of a large shallow shelf could extend potential beaching events beyond the set control area. Increasing the control area or adapting it to the bathymetry of each region could help to avoid underestimation of beaching events.
- Where possible, efforts should be made to discern buoys identified as beaching events from those that have actually beached. Estimating recovery time by area to assess the effectiveness of the 6-month period for identifying the rate of dFAD loss could help to refine the value. Extending the period beyond 6 months could be an option to check if the estimated number of lost buoys is overestimated.

Also, the authors include the following preliminary recommendations, which are aligned with the dFAD recovery workshop organised by ISSF (ISSF, 2018):

- Simplify the structure of the dFAD as much as possible and remove any netting material to reduce its potential negative effect and adapt it to the new resolution in force on 1 January 2019.
- Conduct studies to find simple structures that meet the needs of the fleets. Implement a gradual modification of dFAD design in the short-medium term by orienting changes towards the implementation of non-entangling and biodegradable dFADs.
- Study the dynamics of deployment, loss, deactivation and beaching events in fishing areas, in order to identify possible actions to reduce beaching events and better manage these areas (change the deployment area, limit deployment according to distance from the coast, or season of the year, with reference to currents, bathymetry, etc.).
- Encourage the sharing of dFADs among the fleet and/or other potentially interested fisheries that could exploit those dFADs that are deactivated when dFADs leave the fishing area and the probability of returning to it is low. Where possible (other fisheries) seek commitment from end-users to retrieve dFADs.

Despite this study on the risk posed by derelict FADs is still a work in progress, the team decided to re-score PI 2.4.1 based on the rationale and score published in the Public Certification Report of the AGAC fishery published in July 2022 (Akroyd et al 2022). The AGAC fishery is identical to the Echebastar fishery for the purpose of scoring this PI since it operates in the same manner and in the same areas. The AGAC fleet has also adopted the same code of good practices on board, and it is certified against the UNE195006. The condition on PI 2.4.3 was found to be on target, since the study on the impact of derelict FADs on corals is still a work in progress.

4.2.7.7 Ecosystems

The comprehensive document prepared last year by Juan-Jordá (2021), was again reviewed and discussed during the current surveillance audit. Besides, the Public Certification Report of the AGAC fishery (Akroyd et al, 2022) was published finally in July (the FDR was already published, together with final determination of the objection procedure, before the site visit took place). Akroyd et al (2022), when assessing the AGAC fleet scores 80 in PI 2.4.1(b)&(d). At the same time scores only 60 in SI(a), but Akroyd et al (2022) did not take into account Juan-Jordá (2022).

Thus, the team decided to re-score the entire PI 2.5.3 based on the work prepared by Juan-Jordá (2022), and also the rationale and score published in Akroyd et al (2021).

4.3 Version details

Details on the version of the fisheries program documents used for this assessment are presented in table 2.4, as required in the 'MSC Surveillance Reporting Template v2.1'.

Table 4.3.1 – Fisheries program documents versions

Document	Version number, date of publication (and date effective)
MSC Fisheries Certification Process	Version 2.2, 25 March 2020 (25 September 2020)
MSC Fisheries Standard	Version 2.01, 31 August 2018 (28 February 2019)
MSC General Certification Requirements	Version 2.4.1, 7 May 2019 (28 September 2019)
MSC Surveillance Reporting Template	Version 2.1, 25 March 2019 (25 March 2019)

5 Results

5.1 Surveillance results overview

5.1.1 Summary of conditions

Table 5.1.1.1 lists the condition set during the initial assessment (and closed as a result of the subsequent surveillance audits), together with the new condition set at this audit.

Table 5.1.1.1. Summary of conditions

Condition number	Condition	PI	Status	PI original score	PI revised score
C1	By the fourth annual surveillance audit, the client must demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species	2.3.3	**Ahead of target and CLOSED**	**70**	**80**
C2	By the fourth annual surveillance audit, the client must demonstrate that FADs are highly unlikely to reduce structure and function of coral reefs to a point where there would be serious or irreversible harm.	2.4.1	**Ahead of target and CLOSED**	**70**	**90**
C3	By the third annual surveillance audit, the client must provide evidence that a partial strategy in place that is expected to result that it will be highly unlikely that derelict FADs could reduce structure and function of the coral reefs to a point where there would be serious or irreversible harm	2.4.2	**CLOSED (at 2SA)**	**75**	**80**
C4	By the fourth annual surveillance audit, the client must provide evidence that information is adequate to allow for identification of the main impacts of derelict FADs on coral reefs, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	2.4.3	**On target**	**75**	**N/A**
C5	SIa. By the fourth annual surveillance audit, the client must provide evidence that the main impacts of the FADs used in the UoA/UoC on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail. SId. By the fourth annual surveillance audit, the client must provide evidence that there is adequate information on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	2.5.3	**Ahead of target and CLOSED**	**75**	**80**
C6	By the third annual surveillance audit, the management system in the Seychelles includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	3.1.2	**Ahead of target and CLOSED**	**75**	**80**
C7	By the second annual surveillance audit, 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.	3.2.1	**Ahead of target and CLOSED**	**75**	**90**
C8	By the third annual surveillance audit: SId. Information on the fishery's performance and management action relevant to the Seychelles fishery and private agreements is available on request, and explanations are provided for any actions or lack of action associated with	3.2.2	**CLOSED (at 2SA)**	**75**	Overall PI score did not changed since a new condition

	findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.				(C11) on a different SI was set as a result of harmonization activities
C9	By the first annual surveillance audit following recertification (anticipated to be in 2026), the client must demonstrate that the harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80 (i.e., it is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY).	1.2.1	**On target**	**85** *(revised to **70** in 1SA)*	**NA**
C10	By the first annual surveillance audit following recertification (anticipated to be in 2026), the client must demonstrate that available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	1.2.2	**On target**	**80** *(revised to **75** in 1SA)*	**NA**
C11	By the first annual surveillance audit following recertification (anticipated to be in 2026), the client fishery should demonstrate that at IOTC level, decision-making processes regarding skipjack stock management respond to important issues, specifically to skipjack catches in excess of the annual catch limit corresponding to the HCR, in a transparent, timely and adaptive manner. This could be done by implementing the harvest strategy set out in Resolution 16/02 (to be superseded by Res 21/03) and in Condition 1, or by some other means as appropriate.	3.2.2	**On target**	**75**	**75**
C12	By the fourth surveillance audit, demonstrate that “There is no evidence of systematic non-compliance.”	3.2.3	**NEW**	**75**	**NA**

5.1.2 Total Allowable Catch (TAC) and catch data

Currently, no TAC has been established for the skipjack tuna in the IO, but an annual catch limit of 470, 029 t for the period 2018-2020 was set based on the application of the HCR adopted Res 16/02. This catch limit has been revised to 513,572 for the period 2021-2023 through Res 21/03. No further quota allocation system is adopted for this species.

UoC catches from 2021 are preliminary (ESWG 2022). In 2021, the Echebastar fleet caught 7.5% of the total catch limit for the skipjack in the IO.

Table 5.1.2.1. Catch limit set in 2021 for the skipjack tuna in the IO and skipjack catches corresponding to the Echebastar fleet

Year 2021	
Catch limit (*)	513,572 t (*)
UoC share of the catch limit	N/A (**)
Total green weight caught by the UoC	38.270

(*) as established at the IOTC Res 21/03 for the period 2021-2023.
(**) There is no further quota allocation

5.1.3 Recommendations

5.1.3.1. Progress on existing recommendations

RECOMMENDATION 1. (PI 1.2.1) Observers estimate and report on discarded catch and reasons for discarding.
Progress: Closed at 1 SA (see Stokes and Rios 2020 for more details)

RECOMMENDATION 2. (PI 2.3.3) A higher percentage of observer data is available for review each year at annual surveillance audits to better assess impacts on ETP species
Progress: Closed at 1 SA (see Stokes and Rios 2020 for more details)

5.1.3.2. New recommendations

A new recommendation was set to the fishery as a result of the current surveillance audit:

RECOMMENDATION 3. (PI 2.1.2) Res 22/03 on a new management procedure for the bigeye tuna has been adopted in March 2022. This Resolution contains a schedule for setting and applying the TAC. The client should do everything in its power to ensure the correct implementation of this Resolution, and its progress will be closely evaluated in the successive surveillance audits.

5.2 Re-scoring Performance Indicators

As part of the activities to be performed during surveillance audits, the CAB shall re-score where the information for PI scores has changed (FCP v2.2 7.28.15.1). During current surveillance audit the team closed conditions on PIs 2.3.3, 2.4.1, 2.5.3, 3.1.2 and 3.2.1, thus those PIs are re-scored in this section.

Re-scoring tables are presented below. Changes made to the original rationales and scores are in GREEN, while supersede text is crossed out.

PI 2.3.3– ETP species information (in green the new text)

PI 2.3.3		**Relevant information is collected to support the management of UoA impacts on ETP species, including:** - **Information for the development of the management strategy;** - **Information to assess the effectiveness of the management strategy; and** - **Information to determine the outcome status of ETP species**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide Post	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.

	Met?	FAD sets: **Yes** FSC sets: **Yes**	FAD sets: **Yes** FSC sets: **Yes**	FAD sets: **No** FSC sets: **No**
Rationale				

FAD and FSC set types

Echebastar Fisheries has provided 3 years of observer data (derived from 29 to 53 % of all sets from the EIO tuna purse seine fishery for both the FAD and FSC set types). The data has been summarized, and expanded to the full fishery for impact assessment. While 25% of all observed sets is considered sufficient to accurately estimate the shark bycatch with sufficient precision, an estimate of ETP species bycatch with a high degree of certainty would require a larger sample size as the frequency of these ETP interactions is considerably lower than shark interactions.

The catch summary based on the available data demonstrates that overall there is a low level of interaction with ETP species and where there are interactions that about 50% of the captured animals are released alive to the sea. The FAD fishery has a greater ETP interaction rate than the FSC fishery, but the lack of accuracy and precision in the estimate of ETP interactions is particularly important with both set types. The result of recent research on the survival of silky sharks suggests that about 20-40% of live releases survive, and that overall about 10-20% of those captured survive (Poisson et al. 2011, Poisson et al. 2014, Hutchinson et al. 2015, and Eddy et al. 2016). The results of recent research on sea turtles indicates that live releases have a high probability of survival (Bourjea, et al. 2014). The capture rate of manta and devil rays is very low, and at least 50% are released alive. There were no observed interactions between the EIO skipjack tuna fishery with either the FAD or FSC set types with whale sharks and cetaceans in the 2014-2016 period.

Additionally, there is also published information available in relation to the rate of interaction with ETP species of EU purse seine fleets operating in the Indian Ocean for the period 1995 to 2010. 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 awide range of published studies e.g. Romanov (2002), Pianet (2006), Sarralde et al (2006) and Delgado de Molina et al (2005). The reports of the Working Party on Ecosystems and Bycatch of the IOTC (WPEB) 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.

• SG60 is met
• SG80 is met

A larger observer data sample size providing greater precision in the estimated bycatch rates is needed to conclude that the information available provides a high degree of certainty about the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.

• SG100 is not met.

b	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage the impacts on ETP species.	Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.	Information is adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
	Met?	FAD sets: **Yes** FSC sets: **Yes**	FAD sets: ~~**No**~~ **YES** FSC sets: ~~**No**~~ **YES**	FAD sets: **No** FSC sets: **No**
Rationale				

FAD and FSC set types

The client provides detailed data on observed interactions between the UoA and each ETP species, as well as an estimation of total interactions and survival rates per species for a period that stretches from 2017 to 2021 (ESWG 2022). All fishing trips are observed, and despite the pandemic situation faced in recent years, the sampling coverage per set has been maintained above 52% (ESWG 2022), which is well above the minimum 20% observer coverage which the IOTC is recommending assessing trends even for rare encountered species (IOTC 2020b). The ANABAC/OPAGAC Code of Good Practices is being correctly implemented by Echebastar as confirmed by AZTI during its annual audits.

The efficiency of different bycatch reduction devices (BRD) has been tested on board the Echebastar fleet and the results obtained have been used in recent papers (e.g., Murua et al 2022). Besides, Echebastar has promoted studies on relevant issues such as the post-capture survival rate on silky sharks (Onandia et al 2021, Grande et al 2022). **SG60 and SG80 are met.**

Most of the information related to efficiency of BRD and post-capture survival rates of silky sharks are still preliminary. **SG100 is not met.**

~~Considerable qualitative and quantitative information is available in relation to the nature of interactions between ETP species and the purse seine fleet, and particularly the Echebastar fleet. Data from the first three years of 100% observer coverage is presented in this report, however the observer data available for analysis of impacts is on average less than 50% of the data collected, and this limits confidence in the conclusions.~~

~~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.~~

~~• SG60 is met.~~

~~More than three years of information is needed to measure trends and support a strategy to manage impacts on ETP species, and ensure that ETP bycatch levels remain at levels consistent with those for 2014-2016. The MSC FCR GSA3.4.2 recommends that the catch composition used to classify the MSC species designation be include the last five years of catch data.~~

~~• SG80 is not met.~~

~~• SG100 is not met.~~

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Overall Performance Indicator score	**FAD sets: ~~70~~ 80** **FSC sets: ~~70~~ 80** **Overall score: ~~70~~ 80**
Condition number (if relevant)	**~~1~~ CLOSED**

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	**FAD sets: Yes** **FSC sets: Yes**	**FAD sets: Yes** **FSC sets: Yes**	**FAD sets: Yes** **FSC sets: Yes**
Rationale				

FAD set type

The purse seine fishery (FAD & FSC): (i) takes place entirely in the epipelagic ecosystem; (ii) operates at less than 200 m depth; and (iii) is always deployed in waters considerably deeper (>200m water depth) than where the net is deployed. Accordingly, the purse seine does not make contact with the seabed or any biogenic reef. Vulnerable habitats are not impacted: (i) in the setting of the seine; (ii) during the fishing operation: (iii) in the movements of the vessels.

The purse seine is exclusively set in deep water and pelagic waters are defined as the commonly encountered habitat. There is no contact with the benthos.

In the FAD set type fishery, AZTI estimates that about 20% of the total number of active, authorized FADs that are released into the Indian Ocean are lost. and that 50% of those lost FADs eventually reach a shoreline or shallow water and ground, somewhere in the Indian Ocean. These estimates are confirmed by Maufroy, et al., (2015), as these authors estimate that 9.9% of FADs become beached. These beaching events generally occur due to the FAD drifting outside

of the main fishing grounds and malfunction/or loss of the tracking buoy. An unknown portion of the lost FADs that beach, come ashore on coral reefs in the Indian Ocean.

The UoA consists of 5 seiners, that utilize less than 400 active FADs per vessel, per season. The estimated number of FADs lost annually by the UoA is about 400 annually and the number that may reach a shoreline, including coral reef or grounding in shoal water is about 200 annually.

SIa of PI 2.4.1 addresses commonly encountered habitats, and in terms of the habitat impact of the FADs impacting shallow rock, sand or mud bottom and coral reefs, this is not considered a commonly encountered habitat, as the fishing operation and gear itself does not impact the coral reef. Only a small portion of the FADs released are lost, and of those an unknown portion reach shallow near shore bottoms and coral reefs. The impacts of FADs on VME habitats specifically coral reefs are considered in SIb, and on other shallow benthic habitats in SIc.
Therefore, because the purse seine gear used by the UoA only interacts with the epipelagic habitat, it is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
• SG60 is met.
• SG80 is met.
• SG100 is met

FSC set type
The purse seine fishery (FAD & FSC): (i) takes place entirely in the epipelagic ecosystem; (ii) operates at less than 200 m depth; and (iii) is always deployed in waters considerably deeper (>200 m) than where the net is deployed. Accordingly, the purse seine does not make contact with the seabed or any biogenic reef.

Vulnerable habitats are not impacted: (i) in the setting of the seine; (ii) during the fishing operation: (iii) in the movements of the vessels.
The purse seine is exclusively set in deep water and pelagic waters are defined as the commonly encountered habitat. There is no contact with the benthos.
• SG60 is met.
• SG80 is met.
• SG100 is met

	VME habitat status			
b	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?	**FAD sets: No** **FSC sets: NA**	**FAD sets: ~~No~~ Yes** **FSC sets: NA**	**FAD sets: No** **FSC sets: NA**
	Rationale			

FAD set type
This SI has been re-scored following the rationale provided in the AGAC report (Akroyd et al, 2022), since the Echebastar fleet operates in the same manner and in the same area as the AGAC fleet. Thus, the rationale presented below is based on the rationale presented in Akroyd et al (2022).

Although it is extremely unlikely that the purse seine gear employed in the ECHEBASTAR fishery would contact the seabed at any point, FADs that are employed routinely in the fishery may be lost and subsequently come ashore, where they may impact shallow (neritic) coral reef as a VME habitat (Davies et al 2017, Zudaire et al 2018, Banks & Zaharia 2020). There are several key MSC requirements specific to the assessment of habitat impacts.

- SA3.13.5 When assessing the status of habitats and the impacts of fishing, the team **shall** consider the full area managed by the local, regional, national, or international governance body(s) responsible for fisheries management in the area(s) where the UoA operates (the “managed area” for short).
- SA3.13.5.1 The team shall use all available information (e.g., bioregional information) to determine the range and distribution of the habitat under consideration and whether this distribution is entirely within the “managed area” or extends beyond the “managed area”.

- SA3.3.13.5.3 In cases where a habitat's range overlaps the "managed area", the team shall consider the habitat's range both inside and outside the "managed area".

Burke et al. 2011 identified the major coral regions of the world and reported that there is approximately 31,500 km2 of coral reef in the region identified as the Indian Ocean Basin, with a further 66,000 in the Pacific region, 70,000 km2 in southeast Asia region, and 42,000 km2 in the Australia region, including 37,000 km2 on the Great Barrier Reef. Whilst there is no clear biological distinction between neritic reef as VME in the 'Indian Ocean Basin' region compared with neritic reef in adjacent regions, and whilst it is possible for drifting FADs deployed by the Echebastar fleet to be lost and to impact neritic reef habitats outside of the Indian Ocean Basin, it is precautionary and appropriate to assess the impacts of the Echebastar IO fishery against reefs in the Indian Ocean Basin region as defined by Burke et a. 2011, only, and not include reefs in adjacent regions. This data is in accordance with the preliminary results obtained in the recent review performed by Zudaire et al (2022).

- SA3.13.3.4.1 In the case of VMEs the team shall interpret "serious or irreversible harm" as reductions in habitat structure and function below 80% of the unimpacted level.

For the purposes of the Echebastar fishery assessment, the unimpacted level of neritic reef is deemed to be based on the status in 2006. A precise estimate of the area and condition of neritic reef in in the Indian Ocean Basin 2006 is not known, but the data available on coral reef habitat within the region, as presented by Burke et al. 2011, are a valid proxy that are entirely adequate for the purpose of assessment. As such, the 80% unimpacted level for reef habitat is estimated at 25,200 km2, and a 20% impact therefore equates to 6,300 km2.

- SA3.13.6 The team shall interpret the terms "unlikely", "highly unlikely" and "evidence" in SG60, SG80 and SG100 as in Table SA9

Table SA9 indicates that 'unlikely' at SG60 = <40th %ile, 'highly unlikely' at SG80 = <30th %ile, and 'evidence of highly unlikely' at SG100 = <20th %ile.

The following evidence indicates SG60 and SG 80 are met:

FADs are a source of marine debris and impact on coastal habitats as a result of beaching events. FADs were introduced to the fishery in the early 90s and were increasingly used up until 2015 when limitations were placed on the number of FADs permitted to be deployed. The number of FADs was capped at 550 in operation and 1100 in circulation per vessel annually (Res 15/08), reduced to 350 and 700 (Res 17/08), and further reduced to the current 300 and 500 limitation (Res 19/02). It has been estimated that between 14,500 and 22,000 FADs are deployed annually in the Indian Ocean (based on approximately 18% of global FADs being deployed in the Indian Ocean (Gershman et al 2015, in Davies et al 2017). However, it is important to highlight that this estimation is previous to most of the regulations on FAD reductions adopted by the IOTC in recent years.

The Echebastar fleet is permitted 1800 active FADS at any one time (300 instrumented buoys per vessel for a fleet comprised by 6 vessels) and 3000 in rotation annually (500 instrumented buoys per vessel * 6 vessels). However, the internal FAD management plan adopted by Echebastar is a bit more restrictive and sets a maximum of 250 instrumented buoys at any one time per vessel (i.e a total of 1500 FADs for the entire fleet), and 450 instrumented buoys in rotation annually (i.e 2700 FADs for the entire fleet).

Studies on FAD beaching have been completed in the Atlantic and Indian Oceans and indicated varying levels of beaching likelihood depending on the timing and location of deployments, dispersal patterns and FAD design. Simulation study estimates of FAD-beaching rates range from approximately 10% ocean-wide (Maufroy 2015) up to 32% for the reefs of Comoros, Maldives, Seychelles and British Indian Ocean Territory (BIOT) (Davies et al 2017) with high variability in beaching rates between seasons. The FAD-watch program monitored actual and likely beaching events in high impact marine areas of the Seychelles archipelago and found that, for the AGAC fleet, 0.8% in 2016 and 0.6% in 2017 of FADs recorded drifting in the Seychelles EEZ resulted in beaching events (Zudaire et al 2018).

The direct effect of FADs impacting coral reefs is analogous to the effects of other abandoned, lost or discarded fishing gear (ALDFG, Davies et al 2017). The main impact is linked to nets (fishing nets or FAD subsurface nets) snagging on fragile, erect, high-profile corals and physically breaking those corals during storms, then possibly snagging elsewhere on the reef and repeating the process. Alternately the FADs themselves can come to rest on reefs or coastal beaches and impact a variety of processes including seabird and sea turtle nesting (see references in Davies et al 2017). This effects are now being investigated by AZTI as part of the study commissioned by Echebastar. The preliminary results are presented in Zudaire et al (2022), and a second phase monitoring beached FADs is expected to be carried out by the end of 2022.

The use of lower-entanglement risk FADs (as defined by ISSF 2019b) is now standard practice for the Echebastar fleet, in accordance with requirements adopted in Res 19/02. Also, the materials used by the fleet in FAD construction is evolving toward biodegradable materials (see Kirchner and Rios, 2021 for more details) but some components of the FAD are (and will likely remain to be) synthetic and degrade slowly, so may continue to impact on fragile ecosystems as well as contribute to marine debris and coastal litter.

Serious or irreversible harm to habitat includes changes in the structure and/or function, abundance, and disruption of habitats leading to regime shifts that imply that recovery to 80% of the unimpacted level may not automatically occur even in the absence of fishing. DeAlteris et al 2018 looked at FAD impacts in the Indian Ocean, taking the total area of the Indian Ocean (73.56 million km²) and the total area of coral reefs in the Indian Ocean (Burke et al 2011 31,500 - 32,000 km^2) and assuming that the likely impact of a single FAD beaching event would not be greater than 100m^2. Zudaire et al 2018 also estimated an impact of not more than 100 m^2 while Banks and Zahairia (2020) estimated a more precautionary level of impact taking into account the possibility of multiple stranding's by the same FAD of 500 m^2 in the western central Pacific Ocean. By the same calculation, if all the operational FADs of the UoA (3000) were lost and resulted in beaching events on coral reefs, the total area of coral reefs impacted would be between 0.27 km^2 and 1.35 km^2 for impacts of 100 m^2 and 500 m^2 per FAD respectively. In the context of the total area of coral reefs in the Indian Ocean this which represents a negligible percentage of the total area covered by coral reefs in the Indian Ocean (less than 0,007%). Such a relatively small area of impact means that it is highly unlikely that that the UoA would reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. This does not take into account localised impacts of FADs in particularly high impact marine areas or the possibility of FAD aggregation in those areas nevertheless the likelihood of beaching events has been quantifiably estimated and the likely impact is far less than the crude estimate above if considering the results of Maufroy et al 2015, Davies et al 2017 and Zudaire et al 2018. However, this will be further investigated in the study commissioned to AZTI by Echebastar (Zudaire et al 2022).

It is clear that there is a good understanding of the issue, trends in the number of FAD deployments over the years has been decreasing due to limitations put in place by the IOTC, the impacts of FAD loss are being quantified through collaborative studies and the extent of the coral reefs in the Indian Ocean impacted by FAD beaching is a fraction of the total reefs. Therefore, there is enough information to conclude that the UoA is highly unlikely to reduce structure and function of the VME habitats (coral reefs) to a point where there would be serious or irreversible harm. **SG60 and SG80 are met.**

The following evidence indicates SG 100 is not met:
Cumulative studies analyzing the total impact of all FADs lost by all industrial purse seine fleets since the early 90s when the use of FADs came into prominence, additional information on coastal beaching and expansion of initiatives like the FAD-Watch program to include other island or coastal vulnerable habitats such as seamounts, analysis of the degree to which fleets have converted to NEFADs and BIO-FADs and a variety of other information such as linking FAD-beaching to habitat service interruption, is not available to provide conclusive 'evidence' that the UoA has not and is not creating irreversible impacts to all impacted VME habitats structure and function. Information on likelihood of serious or irreversible harm being caused to reef VME in the Indian Ocean Basin region from FADs deployed by the Echebastar fleet, as presented in the SG80 scoring text above, indicates that there is an extremely low probability of breaching the 80% unimpacted level for reef VME, even with unrealistic FAD beaching rates and over very extended time periods. However, a precautionary perspective it is considered appropriate currently to determine that there is insufficient 'evidence' to score it at SG100. **SG100 is not met.**

~~As noted in the Scope of the Assessment in Relation to the MSC program, MSC has identified FADs as a habitat enhancement; the Echebastar fishery enhance fishing operations by aggregating fish to make capture more efficient. The impact on the ecosystem from aggregating fish is addressed in Component 2.5. The potential impact of derelict FADs on coral reefs is addressed here.~~

~~Coral reefs are considered VME habitats due to their structure, slow recovery time, and their contribution to ecosystem services (MSC CR V2.0 GSA3.13.3.2).~~

~~Note that MSC FCR 2.0 GSA 3.13.5 states "where there is reasonable evidence that the habitat distribution extends beyond the "managed area", the assessment of habitat impacts should be based on this extended distribution". As shown by the Malaysian airlines incident, it is extremely difficult to understand the impact of currents on the distribution of debris.~~

~~To place the issue of potential damage to coral reefs in perspective, the assessment team considered:~~

- The area of the Indian Ocean is 73.56 million km² (https://www.google.cl/search?q=area+of+indian+ocean+in+square+miles&oq=area+of+Indian+Ocean+&aqs=chrome.1.69i57j0l5.7898j0j7&sourceid=chrome&ie=UTF-8).
- Using data from the World Atlas of Coral Reefs, (Spalding et al 2001), the area of coral reefs in the Indian Ocean is 32,000 km2.
- The combined length of the coasts of Mozambique, Tanzania, Kenya, Somalia, Madagascar, Seychelles and Maldives is about 13,700 km, which accounts for the western portion of the total Indian Ocean coastline.
- FADs are small and their potential impact would be on a small area of coast and coral reef. It seems reasonable to assume that the area of coral reef impacted by a single non-entangling FAD (complete with beacon, floats and ropes) is less than a 100 m2. This is less than the early design FADs with hanging netting were more likely to interact with and damage structural components of a coral reef
- At the same time, it has been reported that "more than 65 percent of coral reefs in the Indian Ocean region are at risk from local threats (i.e., coastal development, overfishing/destructive fishing, marine-based pollution, and/or watershed-based pollution), with one-third rated at high or very high risk. Closer examination reveals a sharp focus of threatened areas along continental shores where more than 90 percent of reefs are threatened" ttp://www.wri.org/resources/maps/reefs-risk-indian-ocean (Figure 3).

Annually, about 20% of the total number of FADs are lost and become derelict. It is estimated that about half ground on-shore or in shallow water and ground, of which an unknown proportion ground coral reefs in the Indian Ocean.

The UoA has a total of 2,000 active FADs (5 vessels each with 400 FADs). On the basis of the data above:

- Annually, the UoA may lose a total of 400 FADS. This would imply that on average each year there is a derelict Echebastar FAD for every 183,900 km2 of the Indian Ocean.
- Of those, about 200 will ground, or an average of one grounded FAD for every 68 km of coast. However, a proportion of these become derelict on coral reefs. If 100 FADs ground on coral reef, on average this would represent one FAD for every 320 km2 of coral reef annually, or 1 per 64 km2 over a 5 year period.

Other points to be taken into account when considering the capacity of coral to recover from damage are:

- It has been demonstrated that coral may recover from bleaching (Connell,1997, Gilmore et al., 2013 Marshall and Schuttenberg. 2006, Zahir et al., 2016), and from physical damage caused by hurricanes (Shinn, 1976). The recovery time is slow, and depending on the scale of the damage, sometimes on the decadal time scale.
- Although there is currently not an active fishery for coral, under the Seychelles Fisheries Act (2014) , coral reefs are considered a renewable fishery resource that may be harvested.

MSC requires that the assessment team consider "serious and irreversible harm" as reductions in habitat structure and function below 80%.

If 1,000 lost FADs impact Indian Ocean coral reefs over a five year period, the estimated total area of impact would be 100,000 m2 or 0.1 km2 based on an estimated individual impact area of 100m2 per FAD.. With a total area of coral reefs in the Indian Ocean of 32,000 km2 the proportion of coral reefs impacted by FADs in a 5 year certification period is less than 0.001% of the total coral reef area. Accordingly, while FAD impact on coral reefs is important on a localized basis, overall it is not a significant issue in terms of coral reef ecosystem impacts in the Indian Ocean. Other large scale impacts on coral reefs such as bleaching, pollution, and overfishing are significantly more important.

While the above data are crude, they provide sufficient quantitative insight (following on GSA3.13.1.1) that: i) the distribution and extent of corals and ii) gear (FAD) loss and impact to conclude that the UoA is unlikely to reduce structure and function of coral reefs or have "*significant adverse impacts*" on the coral community as a whole.

Therefore, it is considered unlikely that the FAD set type will reduce the structure and function of VME habitats to a point where there would be serious or irreversible harm.

- SG60 is met.

While there is evidence that it is unlikely that derelict FADs reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm, due to the potential impact over a number of years and limited understanding of the nature of the issue, it cannot be concluded that this is highly unlikely. More evidence is required.

- SG80 is not met.
- SG100 is not met.

FSC set type

The FSC set type does not interact with VME habitats. SIb is not applicable.

	Minor habitat status			
c	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?			**FAD sets: No** **FSC sets: Yes**
Rationale				

FAD set type
A proportion of the derelict FADs may come ashore on rocky, sandy or muddy shoreline, which are considered minor habitats, and it is not likely that a derelict FAD would cause serious or irreversible harm to these habitats.

However, there is no evidence that the derelict FADs are highly unlikely to reduce the structure and function of this minor habitat to a point where there would be serious or irreversible harm.
- • SG100 is not met.

FSC set type
No minor habitats interact in the FSC set type operations
- • SG100 is met.

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Overall Performance Indicator score	**FAD sets: ~~70~~ 85** **FSC sets: 100** **Final score: ~~70~~ 90**
Condition number (if relevant)	**~~2~~ Closed**

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	**FAD sets: Yes** **FSC sets: Yes**	**FAD sets: Yes** **FSC sets: Yes**	
Rationale				

FAD and FSC sets

Over recent years, data has been collected and studies completed to improve understanding of the ecological impacts of fishing on the structure and function of the IO pelagic ecosystem. Examples are: data on bycatch composition and quantities through the fishery observer programme, trophic analyses (e.g. stomach contents, stable isotopes), behavioural studies with tagging programs, and the definition of ecological indicators (e.g. trophic based and size based indicators) to monitor the potential impact of tuna removals from the ocean (Andonegi et al. 2019; Juan-Jordá et al. 2019).

According to Juan-Jordá (2021), this information indicates that it is possible to identify and describe what are the main ecological impacts of the fishery and what ecosystem elements and attributes need to be monitored to assess the impacts:

• The ecological impacts of fishery removals of top predators on the structure and function of marine ecosystem (ecosystem elements: i.e., the impact of removals on the biomass of ecological community, size structure of the ecological community, trophodynamics of ecological community)

• The effect of natural environmental variability (including climate change) on ecosystem productivity and tuna dynamics (ecosystem elements: i.e., effect of environmental and climate scenarios of temperature, salinity, chlorophyl-a, oxygen, on tuna dynamics)
• The ecological impact of FAD uses on the genetic, biology and ecology of species (tunas and non-tunas) on the genetic, biology and ecology of species (ecosystem elements: i.e. the impact of FAD use on the genetic, biology and ecology of species)

Thus, **SG60 is met**.

100% observer coverage for the Echebastar fleet and many other industrial purse seine fleets operating in the IO (including all those certified by the MSC) has improved the understanding of bycatch composition and quantities, is increasing the availability of relevant data and is allowing bycatch studies to be conducted at relevant temporal and spatial scales.

At the scale of the IO, considerable research has focused on understanding (i) the changes in ocean circulation, temperature, salinity, stratification and production in the IO (Marsac 2017) and (ii) how natural environmental variability and climate change affect the dynamics of top predators such as tunas (Marsac 2017; Erauskin-Extramiana et al. 2019). In addition, (i) experimental tagging studies have examined the effects of dFADs on tuna species behaviour and (ii) studies using the fisher's echo-sounder buoys data to study collective dynamics of fish aggregations (instead of using the data from tagging individuals) around dFADs (Hall & Roman 2013; Lopez et al. 2017; Pérez et al. 2020).

On the other hand, trophic and ecological indicator analysis continue to be conducted on a project-by-project basis by individual. This has resulted in studies that are not continuous in space and time, which limits the integration of knowledge at the regional level of IOTC (Juan-Jordá, 2021). Extensive trophic studies have not been undertaken on tropical tuna species to understand their role as a key predator and prey species within foodweb in the IO. Compared to the Atlantic and Pacific Ocean, there have been relatively few research studies studying the trophic ecology for IO tuna species, species interactions and their ecological role in the food web (Olson et al. 2016). The development and use of ecosystem models in the Indian Oceans to inform fisheries management of top predatory species is still at its infancy (Juan-Jordá et al. 2019). This means there is relatively limited understanding of the linkages between functional groups and how these may be affected by IO fisheries.

Despite current constraints in certain topics, the review prepared by Juan-Jordá (2021) indicates that current level of information is adequate to broadly understand the key elements of the ecosystem. Thus, **SG80 is met.**

~~**FAD & FSC set types**~~
~~Significant quantities of regularly updated data are available on the abiotic ecosystem elements from a wide range of sources that monitor and carry out research into environmental (physical and chemical) parameters in the Indian Ocean. This includes:~~

~~• International scientific organizations including UN Food and Agriculture Organization (FAO), UN Environmental Program (UNEP), US NOAA, US NASA, WWF, ICLARM and others. The results of the research of these organizations are publicly available, such as the World Atlas of Coral Reefs that was referenced in this report.~~
~~• Most coastal states in the western Indian Ocean carry out some scientific research and /or monitoring of environmental conditions within their EEZs, such as the Island Conservation Society, that is investigating the impacts of FADs on coral reefs.~~
~~• Over the years, a range of organizations with interests in research and monitoring global environmental conditions complete significant research in the Indian Ocean e.g. Sherman conducted research and published research papers on large marine ecosystems including the Indian Ocean (Sherman et al 1998); this was updated by Tomczak and Godfrey (2003) and Longhurst (2007) (see above).~~
~~• Considerable information relevant to the management of fishery impacts is available from the IOTC, through working Party on tropical tunas, ecosystems and bycatch, billfish, and data collection and statistics.~~

~~This available information on the Indian Ocean provides: an understanding of key abiotic and biological elements of the ecosystem; describes the status of tuna stocks; describes environmental factors that influence the abundance and migration of tuna; identifies the possible impacts of climate change on tuna; assesses the possible effects of FADs on tuna feeding, migrations and behaviour in the Indian Ocean (Dagorn et al 2014), and the possible effects of lost FADs on coral reefs (Balderson and Martin 2016).~~

~~In sum, this information is adequate to broadly identify and understand the key elements of the ecosystem.~~

~~• SG60 is met.~~
~~• SG80 is met.~~

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?	**FAD sets: Yes** **FSC sets: Yes**	**FAD sets: ~~No~~ Yes** **FSC sets: Yes**	**FAD sets: No** **FSC sets: No**
Rationale				

FAD and FSC sets

As already presented in SI(a), Juan-Jorda (2021) identifies the following key ecosystem elements in the IO in relation to assessing the impact of tuna fisheries:

1) The ecological impacts of fishery removals of top predators on the structure and function of marine ecosystem (ecosystem elements: i.e., the impact of removals on the biomass of ecological community, size structure of the ecological community, trophodynamics of ecological community)
2) The effect of natural environmental variability (including climate change) on ecosystem productivity and tuna dynamics (ecosystem elements: i.e., effect of environmental and climate scenarios of temperature, salinity, chlorophyl-a, oxygen, on tuna dynamics)
3) The ecological impact of FAD uses on the genetic, biology and ecology of species (tunas and non-tunas) on the genetic, biology and ecology of species (ecosystem elements: i.e., the impact of FAD use on the genetic, biology and ecology of species)

An assessment of whether the main impact of the UoA on these key ecosystem elements can be inferred from existing information, together with the level of investigation achieved on each of them, is presented below. The assessment is based on the review prepared by Juan-Jordá (2021).

1) The ecological impacts of fishery removals:

Trophic-based or size-based ecosystems of the pelagic food web in the IO is in its infancy. Thus, the western IO lacks a reliable ecosystem model that examines the potential ecological impacts of fishery removals of top predators (or the effects of the environment) on the ecosystem function and structure of the ecosystem. However, modelling work in other oceans, mainly the PO, allows understanding of the pelagic food web dynamics and the impact of predatory removals on the foodweb dynamics in the IO.

The main impacts of Echebastar fishery removals of top predators may be inferred from:

- Vessel logbooks and observer data,
- IOTC tuna stock assessments,
- Some preliminary ecological indicators from the monitoring of impacts of purse serine biomass removals, and
- Understanding of ecosystem dynamics using several ecosystem models carried out in other oceans, that together contribute an understanding of the potential ecological effects of purse seine fishery removals of predatory fishes on the structure and function**.**

2) The effect of natural environmental variability:

The Standard states that "*UoAs should be capable of adapting management to environmental changes as well as managing the effect of the UoA on the ecosystem*" and "*Monitoring the effects of environmental change on the natural productivity of the UoAs should be considered best practice and should include recognition of the increasing importance of climate change*".

Considerable research allows understanding of the importance of physical and biological drivers in tuna distributions, tuna dynamics (recruitment processes) and tuna catchability in the IO (Marsac 2017).

Based on current knowledge and research, a qualitative expert system approach can infer the potential impacts of environment and climate on tuna (Marsac 2017), despite the absence of quantitate integrated ecosystem models for the IO.

3) The ecological impact of FAD use:

Experimental tagging studies have examined the effects of dFADs on tuna species behaviour. In addition, research using data from fisher echo-sounder buoys has studied the collective dynamics of fish aggregations around dFADs in the IO and elsewhere (Lopez *et al.* 2017; Pérez *et al.* 2020). These allow inference of the impact of dFAD use on species behaviour, migrations and biology.

Based on all the information presented above, the team considers that **SG60 and SG80 are met**, since main impacts of the UoA on the 3 key ecosystem elements identified can be inferred from existing information, and some have been investigated in detail.

However, there is a lack of ecosystem models (EwE, SEAPODYM, APECOSM) in the IO to (i) investigate the joint effect of environment and fishing on tuna species, and (ii) project changes in tuna distributions in response to climate change. Besides, incorporating environmental and climate change into the fisheries management decision making process requires the support of research to understand the links between environmental variability and climate change on the productivity of the ecosystem, including the potential impact on tuna distribution and populations dynamics, and monitor any changes. To-date this has not been investigated in detail.

Also, there remain conflicting interpretations and results on the behavioural impacts of dFADs on tunas and the potential consequences on their biology (Dagorn *et al.* 2013; Lopez *et al.* 2017). While the Echebastar fishery only accounts for a small proportion of the dFADs deployed in the IO, there is limited understanding of (i) the influence of dFADs on the residency of tunas and other non-tuna species, and (ii) how the increased number of dFADs is affecting the school sizes of tunas and other species that may impact their behaviour, migration and biology. The impacts of FAD use on behaviour, migrations and biology, and the effects of increasing number of dFADs and dFAD density on the behaviour and biology of the species being aggregated are subject of active research and only some have been investigated in detail.

Thus, **SG 100 is not met.**

~~**FAD set type**~~

~~The impacts of the fishery on some biological elements of the ecosystem have been investigated in detail, or can be inferred, including status of tuna stocks, levels of bycatch (specifically for Echebastar 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 the detail needed to support an 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 toplevel predators in the Indian Ocean as well as an observed increase in the prevalence of lower trophic level pelagic species (Hallier and Gaetner, 2008).~~

~~• SG60 is met.~~

~~The effects of FADs used in the fishery on tuna behaviour, migration patterns and feeding are a subject of numerous ongoing investigations. Dagorn et al (2012) conclude that there is no unequivocal empirical evidence that FADs represent an 'ecological trap' that inherently disrupts tuna biology, although further research should focus on this issue. Therefore, the main impacts of the UoA on these key ecosystem elements cannot be inferred from existing information, and some have not been investigated in detail~~

~~• SG80 is not met.~~

~~All main interactions have not been investigated in detail.~~

~~• SG100 is not met.~~

~~**FSC set type**~~

~~The impacts of the fishery on some biological elements of the ecosystem have been investigated in detail, or can be inferred, including status of tuna stocks, levels of bycatch (specifically for Echebastar 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 the detail needed to support an 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 (Hallier and Gaetner, 2008).~~

~~• SG60 is met~~

~~FSC set types are not thought to impact tuna behaviour etc.~~
~~• SG80 is met~~

~~All main interactions have not been investigated in detail.~~
~~• SG100 is not met~~

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?		**FAD sets: Yes** **FSC sets: Yes**	**FAD sets: No** **FSC sets: No**
Rationale				

FAD and FSC sets

The main functions of the components of the ecosystem (P1 target species, primary, secondary and ETP species and Habitats) are known as related to the FAD and FSC sets types. Sufficient information is available to identify the range of species that are impacted and know their respective roles e.g., as 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. Additionally, the habitats functions are known. Thus, **SG80 is met.**

The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats have been identified and quantified. However, the main functions of those components in the ecosystem are not fully understood. **SG100 is not met.**

~~**FAD and FSC set types**~~
~~The main functions of the components of the ecosystem (P1 target species, primary, secondary and ETP species and Habitats) are known as related to the FAD and FSC sets types. Sufficient information is available to identify the range of species that are impacted and know their respective roles e.g. as 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.~~

~~Additionally the habitats functions are known.~~
~~• SG80 is met.~~

~~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 with the exception of the impacts of FADs on coral reefs and the behaviour of fish and ETP species with regard to FADs.~~
~~• SG100 is not met.~~

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?		**FAD sets: ~~No~~ Yes** **FSC sets: Yes**	**FAD sets: No** **FSC sets: No**
Rationale				

FAD and FSC sets

Information is available from a number of sources including dedicated research projects regarding the impact of FAD fishing on the ecosystem. Significant quantities of data are available from the observer program that monitors over 60% all sets made by the Echebastar fleet thus allowing for bycatch and interaction traits and shifts in bycatch composition to be measured. Consequences for some of the ecosystem components can be inferred from the information collected. **SG80 is met.**

Not all elements of the ecosystem are fully understood and there is likely additional information that can be collected and subsequent research to be undertaken (such as understanding ecosystem impacts of changes to the mean trophic level of catches, changes in abundance of mid-trophic level species) and further research regarding the potential impacts of high FAD densities in certain regions of the fishing grounds that could aid in understanding the impacts of the UoA on the elements of the ecosystem. **SG100 is not met**

~~**FAD set type**~~
~~FAD impact on the epipelagic ecosystem can be inferred from available information; removals and interactions related to target, retained and ETP species; and the sensitivity or vulnerability of species and habitats.~~

~~Information available on the distribution, abundance and biological/life history characteristics of the various elements impacted by the UoA to allow the consequences and impacts on outcome status to be inferred.~~

~~Available information on the biology for some species/scoring elements is significantly greater than for others. 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 .~~

~~A general understanding of the likely resilience, status and robustness of the various elements supports understanding of the most likely consequences on them from interaction with the UoA.~~

~~However, the impact of FADs on tuna behaviour, feeding and migration, and any consequent impacts on ecosystem function, is not fully understood.~~

~~Therefore, adequate information is not available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.~~
~~• SG80 is not met.~~
~~• SG100 is not met.~~

~~**FSC set type**~~
~~FSC impact on the epipelagic ecosystem can be inferred from available information; removals and interactions related to target, retained and ETP species; and the sensitivity or vulnerability of species and habitats.~~

~~Information available on the distribution, abundance and biological/life history characteristics of the various elements impacted by the UoA to allow the consequences and impacts on outcome status to be inferred.~~

~~Available information on the biology for some species/scoring elements is significantly greater than for others. 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 .~~

~~A general understanding of the likely resilience, status and robustness of the various elements supports understanding of the most likely consequences on them from interaction with the UoA.~~
~~• SG80 is met.~~

~~Information of the impact of FSC operations is not considered adequate to allow the main consequences for the various elements in the ecosystem to be inferred.~~
~~• SG100 is not met.~~

	Monitoring			
e	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		**FAD sets: Yes** **FSC sets: Yes**	**FAD sets: No** **FSC sets: No**
Rationale				

FAD and FSC sets

An assessment for each of the 3 key ecosystem elements identified in Juan-Jordá (2021) (see SI(a)) is presented below. The assessment is based on the review prepared by Juan-Jordá (2021).

1) **The ecological impacts of fishery removals:**

While the observer programs have been designed mainly to monitor the impacts of the fishery on target and non-target species rather than monitoring ecosystem impacts, this together with logbooks and data on dFADS is sufficient to detect any increase in risk level.
SG80 is met.

Trophic studies that have taken place are typically not continuous in space and time. Extensive studies have not been undertaken to understand the role of tropical tuna species as key predator and prey species within the IO foodweb. Compared to the Atlantic and Pacific Ocean, there have been relatively few research studies studying the trophic ecology for IOTC tuna species, species interactions and their ecological role in the food web (Olson et al. 2016).

While the data collected by the UoC might be sufficient to support the development of strategies to manage its ecosystems impacts, this would need to incorporate broader ecosystem information (e.g., size structure of the species, trophic ecology of the species) than currently available.
SG 100 is not met.

2) **The effect of natural environmental variability:**

Extensive environmental data is available and continues to be collected (e.g., World ocean atlas, remote sensing data, ocean circulation models, climate models) that would allow any increase in risk to be detected.
SG80 is met.

This data needs to be supported by extensive research to understand the links between environmental variability and climate change on the productivity of the ecosystem, and the effect on tuna distribution and populations dynamics. The links need to be understood and monitored so management strategies may be developed to account for the effect of natural variability and climate change on the tuna species under management.
SG100 not met.

3) **The ecological impact of FAD use:**

Data collection by the UoC is sufficient to detect any increase in risk level associated with it, but not at the scale of all purse fisheries operating in the IO. The observer programme provides adequate data to monitor ecosystem impacts (e.g., understanding FAD use on the behaviour, migrations and biology of pelagic species), and is sufficient to detect any increased risk at the scale of UoC.
SG80 is met.

SG100 is not met.
Current monitoring lacks the capacity to integrate cumulative studies analyzing the total impact of all FADs lost by all industrial purse seine fleets since the early 90s when the use of FADs came into prominence. Also, additional information on the extend and impacts of the coastal beaching is needed. **SG 100 is not met.**

~~**FAD & FSC set types**~~

~~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:~~

- ~~• The number and characteristics of the Echebastar vessels;~~
- ~~• All catch by Echebastar;~~
- ~~• Interactions with ETP species;~~
- ~~• The spatial and temporal operation of the fishery (VMS);~~
- ~~• Catch by area;~~
- ~~• Catch per unit effort;~~
- ~~• The status of vulnerable species potentially impacted by the fishery~~
- ~~• The number of FADs deployed;~~
- ~~• The number of FADs lost.~~

~~These data are adequate to detect any increase in risk level posed by the UoA.~~
- ~~• SG80 is met.~~

~~There are shortcomings in the availability of information to support the development of management strategies for specific ecosystem impacts or risks. Data in relation to ETP encounters have only recently begun being systematically collected onboard vessels, and while there is a reasonable degree of understanding about rates of impact, better information would allow for development of more targeted and specific measures aimed at reducing /minimizing impacts.~~
- ~~• SG100 is not met.~~

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Overall Performance Indicator score	**FAD sets: ~~75~~ 80** **FSC sets: 80** **Final score: ~~75~~ 80**
Condition number (if relevant)	**~~Condition number: 5~~ Closed**

PI 3.1.2 – Consultation, roles and responsibilities

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

A wide range of organisations and individuals are involved in the overarching management process in the three jurisdictions.
The IOTC has CPs, NCPs, various committees, working groups and a large number of observers.
In the EU, the plethora of actors is supported by others with specific roles in the management of IO tuna; e.g. SMARTFISH, FISH-I Africa and SADC. In addition, international non-governmental organisations, such as WWF, have a strong role in bringing about change in management practises.
The activities of each of these actors are well known, and their role in the management process is documented and understood.
• SG60 is met

Most of the key areas of responsibility and interaction are vested in the IOTC with its CPs, NCPs and various committees. Except for enforcement, the roles and responsibilities of other identified actors are ancillary to, and dependent on, what happens in the IOTC, especially as IOTC regulations are automatically incorporated into legislation. In that sense, the roles of the various actors are well defined and understood, even of some CPCs are not as efficient as others.

Cooperative and collaborative work within the IOTC identifies and investigates key issues related to stock status and other elements of the ecosystem, with the related decisionmaking process defining regulations and roles. Review of the

extensive IOTC documentation (rules, reports, meetings etc.) indicates that the key management areas are explicitly defined and well understood.

The enforcement of the regulations and rules is largely the responsibility of individual countries and the fishers. The response of fishers in implementing the regulations is monitored through vessel lists, observers, VMS, logbooks and catch reports. Due to their limited resources, individual coastal states in the IO are supported by international projects such as SMARTFISH.

• **SG80 is met**

To-date there has been a lack of any meaningful involvement of local stakeholders in the decision-making process of Seychelles. While the position may be changing, there is evidence to conclude that the roles and responsibilities of stakeholders has not been well understood by the Seychelles authorities.

• **SG100 is not met.**

	Consultation processes			
b	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	**Yes**	~~**No**~~ **YES**	**No**
Rationale				

~~MSC v2.0 guidelines state "*The main point of scoring issue (b) is that the management system is open to stakeholders and that any information that is viewed as important by those parties can be fed into and be considered by the process in a way that is transparent to the interested stakeholders*".~~

The main affected parties are national fishery managers and scientists responsible for broad policy development and associated research who are involved in the IOTC process. Their participation introduces local knowledge for consideration in the response many issues that are raised within the IOTC.

~~• • **SG60 is met**~~

Various parts of the IOTC (e.g. scientific committees and working parties) seek information on a continuous and, in some cases, permanent basis (statistics). The data are submitted by the CPCs to IOTC, analysed and discussed by the Scientific Committee and scientific working parties, where the fishing industry is also represented. This information forms the basis of its management advice.

At European level, the Advisory Councils, here the Long-Distance fleet (LDAC) were set up to facilitate participation, information sharing including local knowledge and validation of data collected by scientists and by fishing crew.

~~At the Seychelles level, the representatives of the Ministry of Fisheries and Blue Economy and the SFA interviewed during the second and third surveillance audits confirmed to the assessment team that multi-stakeholder meetings are organized to address key issues (i.e. discussions on the quota allocation, preparation of the IOTC meetings, prior to submissions of proposals to the IOTC…). Besides, one-to-one meetings under request are organized with specific stakeholders. Evidence of these meetings have been shared with the assessment team (e.g. emails from the Ministry calling stakeholders to the particular meetings), and the client have confirmed that they are called by the Ministry on a regular basis, and that they also have access to Ministry in case they request it. According to the information gathered, the Ministry circulates in advance the documents to be discussed, and no decisions are taken during the meetings. In case of disagreement, the Ministry analyses the situation and takes a decision.~~

~~Besides, the Seychelles became the first country to submit its report to the Fisheries Transparency Initiative (FiTI) in 2021. The latest FiTI report (FiTI, 2021b) shows that Seychelles is addressing the initial recommendations made by the ad-hoc multi-stakeholder group in the first FiTI report (FiTI, 2021a). FiTI is a global partnership that seeks to increase transparency and participation for a more sustainable management of marine fisheries. The diversity of different stakeholders (ensuring equal participation from government, companies and civil society) is a central feature of how the FiTI works, for national implementations as well as international governance. The FiTI is a voluntary initiative; however, once a country has decided to participate, mandatory requirements must be followed. The FiTI International Board has not validated Seychelles against the FiTI Standard yet. However, the FiTI International Board has tasked the FiTI International Secretariat to launch the validation process in accordance with the FiTI Standard (section D.1) for Seychelles; time frame: April 2020 until December 2021 [Decision ID: BM-14_2021_D-04]. It is currently expected that the validation will be completed by October 2022 (https://www.fiti.global/seychelles). The only negative remark related to the industrial purse seine fishery is that data on fish discard is not disaggregated (as explained in section. During the meeting held with SFA representatives as part of the 3rd surveillance audit in 20222 they acknowledged this concern, but they also informed that they have noticed a significant improvement in data reporting of bycatch for the year 2021. For the purposes of the MSC audits, the catch composition is calculated based on the observer's data, so this negative remark was not considered relevant for scoring purposes.~~

SG60 and SG80 are met.

IOTC Meeting reports provide evidence that the management system considers the information obtained and include explanations about how and why some could be used or not. The same applies to LDAC meetings in preparation of IOTC. All meeting reports are publicly available on the IOTC and LDAC websites.

However, in the case of Seychelles, it has been acknowledged by the Ministry representatives interviewed during the second surveillance audit that no feedback on the meetings is provided to the stakeholders. Also, the minutes of these meetings are not available to the public. Thus, **SG100 is not met.**

~~Evidence (Welch & Kerrigan (2015), Standing (2016), stakeholder interviews – SFBOA, SFA, MAF & Blue Economy) indicates the limited input of local stakeholders in the Seychelles decision making process. Where local stakeholders have expressed views, it is not clear how these have been taken into account. At the site visit, it was reported that meetings between the Minister and stakeholders are not minuted.~~
~~The lack of a mechanism to indicate if and how stakeholder information is used in the management system impacts transparency on how Seychelles fishery managers obtain and consider information and local knowledge.~~
- ~~**SG80 is not met.**~~
- ~~**SG100 is not met.**~~

	Participation			
c	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		**Yes**	**No**
Rationale				

The IOTC process provides the opportunity for all countries with a fishery interest to be involved as either a CP or an NCP. The IOTC also provides the opportunity for interested stakeholders to be involved through observer status. While Taiwan is not a CP it is involved in the consultation process.
In the EU, stakeholders are strongly involved in the consultation process, mainly, in relation to tuna fisheries, through the LDAC and the representative organisations.
In the Seychelles, the Fishery Law (2014) provides for stakeholder consultation in the design, implementation, monitoring and review of FMPs. Increasingly, stakeholders are involved in the decision-making process for tuna, although the tuna FMP remains a proposal.
- **SG80 is met**

Substantial evidence supports the conclusion that there is encouragement and opportunity for stakeholder input in the IOTC and EU. Effective engagement is facilitated by the established processes (e.g. local EU representative associations, LRAC, contacts with EU representatives and observer status).
However, it is questionable whether the effective engagement of Seychelles stakeholders has, thus far, been facilitated. While recent changes have led to the involvement of local fishers in the consultation process, there is no evidence that their involvement has been effective i.e., that their point of view has been taken into consideration in the management of the Seychelles tuna fishery.

- **SG100 is not me**

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Overall Performance Indicator score	~~75~~ 80
Condition number (if relevant)	~~6~~ Closed

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.
	Met?	**Yes**	~~**Partial**~~ **Yes**	~~**No**~~ **Partial**
Rationale				

The IOTC Agreement objective, to *"ensure, through appropriate management, the conservation and optimum utilisation of stocks covered by the mentioned Agreement and encouraging sustainable development of fisheries based on such stocks and minimising the level of bycatch"* applies to the IO skipjack purse seine fishery. Both flag States (Spain and Seychelles) are IOTC CPCs.

As articulated in the EU-CFP and applicable to external waters and thus SFPAs, the objective of the EU is based on the sustainable exploitation of marine resources based on the precautionary approach, taking into account: (i) available scientific data; (ii) the protection of the marine environment; (iii) the sustainable management of all commercially exploited species; and (iv) the achievement of good environmental status.

In the case of the Echebastar fleet (flying either the Spanish or the Seychelles flag), strict authorizations apply for fishing in either the waters of a partner (through SFPA for Spanish vessels and other bilateral agreements in the case of the Seychellois vessels) or directly through the RFMO to fish on the high seas. In the case of the Echebastar fishery, the approach to private agreements / vessel licensing is always within the context of the IOTC, since all coastal / island states with agreements / licensing are members of the IOTC.

Thus, **SG60 is met.**

Well-defined and measurable short and long-term objectives consistent with achieving the outcomes expressed by MSC's Principle 1 are adopted in Resolution 16/02 (e.g. to maintain the stock at MSY level, catch limit based on HCRs, provision to review the HCR in "case that the estimated spawning biomass falls below the limit reference point")

Resolution 16/02 also considers long-term objectives consistent with achieving the outcomes expressed by MSC's Principle P2 since it states the following: "To maintain the Indian Ocean Tuna Commission Skipjack tuna stock in perpetuity, at levels not less than those capable of producing maximum sustainable yield (MSY) as qualified by relevant **environmental** and economic factors including the special requirements of Developing Coastal States and Small Island Developing States in the IOTC area of competence and considering the general objectives identified in Resolution 15/10 (or any subsequent revision)".

Other CCMS applicable to the fishery containing long- and short-term objectives consistent with achieving the outcomes expressed by MSC's Principle P2 are listed below:
Resolution 19/01 On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC Area of competence. (UoA 4)

- Resolution 19/02 Procedures on a fish aggregating devices (FADs) management plan. (all UoAs)
- Resolution 19/05 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. (all UoAs)

- Resolution 15/10 on target and limit reference points and a decision framework (all UoAs)
- Resolution 22/03 On a Management Procedure for bigeye tuna in the IOTC area of competence
- Resolution 22/01 On climate change as it relates to the Indian Ocean Tuna Commission.
- Resolution 12/04 on the conservation of marine turtles
- Resolution 13/04 on the conservation of cetaceans
- Resolution 13/05 on the conservation of whale sharks
- Resolution 18/02 on management measures for the conservation of blue shark caught in association with IOTC fisheries
- Resolution 17/05 on the conservation of sharks caught in association with fisheries managed by IOTC
- Resolution 13/06 On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries
- Resolution 12/09 On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence

All IOTC-CMMs applicable to the tropical tunas´ purse seine fishery are binding for both flag States (Spain and Seychelles), since they have not objected any of them.

Besides, all Echebastar vessels have adopted the "Code of Good Practice" as well as an overall Code of Good Practice for OPAGAC /AGAC and also certification through a "Spanish Standard" – AENOR, 2016 (UNE 195006) for Tuna from Responsible Fishing Purse Seine Freezer Vessels. This code aims to: (i) Improve the operations performed in the tuna purse-seine fleet by both organizations; (ii) Improve the selectivity of fishing with FADs; and (iii) Minimize the impact of fishing on the ecosystem. These are translated into short-term objectives consistent with achieving the outcomes expressed by MSC's Principle P2 such as: the design and implementation of non-entangling FADs, the design and implementation of bycatch reduction devices (BRD) to reduce post-capture mortality of sharks and turtles, the design and implementation of detailed FAD accountability independently verified, 100% observer coverage, observer training, etc.

Thus, **SG80 is met.**

While some short- and long-term objectives are well-defined and measurable, such as target and limit reference points adopted for tropical tunas; other objectives are not that well-defined or not measurable, in particular those related to bycatches. Thus, **SG100 is only partially met.**

~~The objective of IOTC management is to maintain the skipjack stock at MSY over the long term, within the context of a healthy ecosystem. This objective governs the IOTC approach to management of the stock and the associated fleets.~~

~~As articulated in the CFP and applicable to external waters and thus SFPAs, the objective of the EU is based on the sustainable exploitation of marine resources based on the precautionary approach, taking into account: (i) available scientific data; (ii) the protection of the marine environment; (iii) the sustainable management of all commercially exploited species; and (iv) the achievement of good environmental status. In addition, the EU is a CP that incorporates IOTC regulations into its own legislation.~~

~~The approach in Seychelles is tempered by the importance of the fishery sector and especially the harvest of tunas by foreign owned vessels to the overall economy. MSC CR 2.0 notes that while social needs may in some cases be consistent with achieving sustainability these should not take precedence and priority over ecological considerations.~~

~~In the case of Seychelles, while social considerations are important, the overriding interest is in the sustainable harvest of the resources as fisheries, along with tourism, are the two pillars of the national economy. Thus, the aims of the Blue Economy initiative are important in understanding that objectives consistent with P1 and P2 are in place.~~

~~The approach to private agreements / vessel licensing is within the context of the IOTC. The coastal / island states with agreements / licensing are all members of the IOTC.~~
~~• SG60 is met~~

~~There is strong evidence to show that short and long-term objectives related to P1 and P2 outcomes are explicit in the IOTC. IOTC 16/02 states: "To maintain the Indian Ocean Tuna Commission Skipjack tuna stock in perpetuity, at levels not less than those capable of producing maximum sustainable yield (MSY) as qualified by relevant environmental and economic factors including the special requirements of Developing Coastal States and Small Island Developing States~~

in the IOTC area of competence and considering the general objectives identified in Resolution 15/10 (or any subsequent revision)".

Short term objectives are encapsulated within IOTC 16/02 i.e. total annual catch limit, maximum change in annual catch limit, and "In the case that the estimated spawning biomass falls below the limit reference point, the HCR will be reviewed, and consideration given to replacing it with an alternative HCR specifically designed to meet a rebuilding plan as advised by the Commission".

In relation to P2, two IOTC resolutions are relevant.
IOTC Resolution 16/01 relates to the rebuilding of the yellowfin stock (this is considered in detail under C2.1.

IOTC Resolution 17/08 includes a number of relevant points:

- "Mindful of …. the United Nations General Assembly Resolution 67/79 on Sustainable fisheries to collect the necessary data in order to evaluate and closely monitor the use of large-scale fish aggregating devices and others, as appropriate, and their effects on tuna resources and tuna behaviour and associated and dependent species, to improve management procedures to monitor the number, type and use of such devices and to mitigate possible negative effects on the ecosystem, including on juveniles and the incidental bycatch of non-target species, particularly sharks and marine turtles"
- • All gears deployed to target resources under the competence of IOTC should be managed to ensure the sustainability of fishing operations
- • The Commission should consider the recommendations of the IOTC Scientific Committee as regards the development of improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials, together with socio-economic considerations, with a view to adopting further measures to mitigate interactions with marine turtles in fisheries covered by the IOTC Agreement.
- • It establishes procedures on a FAD management plan, including more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incidence of entanglement of non-target species;
- • Only non-entangling FADs, both drifting and anchored, should be designed and deployed to prevent the entanglement of sharks, marine turtles and other species

The first meeting of the FAD working group was held in April 2017. The objectives of the WG can be considered to be short term and fishery specific; including

- To collect and compile information about past and present numbers of buoys and FADs, changes in FAD-related technology and activities of supply vessels;
- To assess the effect of FAD's density and spatial distribution on the behaviour, distribution and species composition of the tuna schools;
- To assess the developments in FAD-related technology notably with regards to: changes in catchability due to technological improvement; using FAD and buoys marking and identification as a tool for monitoring, tracking and control of FADs;
- Reducing FAD's ecological impacts through improved design, such as non-entangling FADs and biodegradable material.
- Through an active exchange of views, to identify management options, including the regulation of deployment limits and characteristics of FADs, and activities of support vessels;
- To assess the consequences of these management options, in conjunction with other fleets fishing mortality components, on IOTC-managed species and on the pelagic ecosystems" (Resolution 15/08).

The EU FAD management plan highlighted the following objectives:

- Improving information collection for scientific advice purposes.
- Contributing to enhanced knowledge of catch composition in FAD sets.
- Increasing knowledge of these devices with regard to their technical features and their possible impact on ecosystems.
- Establishing information-sharing mechanisms among operators, scientists and administrations, in order to achieve better knowledge of progress made in this field and the implications thereof.

ANABAC and OPAGAC signed in February 2012 a Code of Good Practices for responsible tuna purse-seine fishing. This code, in force in all the OPAGAC-AGAC and ANABAC-OPTUC fleets, aims to:

- Improve the operations performed in the tuna purse-seine fleet by both organizations;
- Improve the selectivity of fishing with FADs; and
- Minimize the impact of fishing on the ecosystem.

~~These are translated into short term objectives with, for example, the research into bio-degradable FADs and OPAGAC work in the Seychelles to reduce the impact of derelict FADs on coral reefs.~~

~~In the Seychelles, explicit short and long-term objectives for the Seychelles tuna fishery will not be available until the planned FMP is drafted and implemented.~~

~~One of the objectives of an EU SFPA "*is to contribute towards resource and environmental sustainability through rational and sustainable exploitation of living marine resources of the partner country*".18~~
~~While specific long and short-term objectives are not well defined in the private agreements, the vessel licenses (Kenya and Tanzania) are more explicit especially for Kenya.~~
~~• • SG80 is partially met~~

~~Given that the fishery in all waters of the Indian Ocean are subject to the IOTC which does pass 80, the specific approach to FADs, and the approach of the EU that covers the activities of 2 of the Echebastar vessels, it is concluded that a score of 75 is appropriate. This reflects the gaps identified for Seychelles and the issues with private agreements.~~

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Overall Performance Indicator score	~~75~~ **90**
Condition number (if relevant)	~~7~~ **Closed**

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management

				measures, strategies and/or rules.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Apart from the IOTC compliance committee, a large number of tools have been introduced at the international level to support extensive monitor and surveillance – vessel licensing and registration, VMS, electronic logbooks, 100 % observer coverage (since 2014) and the monitoring of landings. Given the prospect that non-compliant vessels will lose their licence and be considered as IUU fishers, there is more than a reasonable expectation that Spanish and Seychelles flagged vessels will comply with requirements. Simply stated, given the high level of investment and the potential losses stemming from infringements, it is not in the interests of the vessel owners to be non-compliant.
• SG60 is met

The various MCS mechanisms constitute a system. The specific IOTC regulations are reinforced, in the case of the EU vessels, by the adoption of IOTC measures and specific requirements for EU flagged vessels, and, in the case of SFPAs by the explicit definition of MCS requirements in the individual protocols (e.g. daily reporting, entry and exit reports, transhipments and landings, VMS, areas to be fished and observers). Such requirements are also explicit in the private fishing agreements.

The lack of compliance issues over recent years indicates observance of and compliance by UoA vessels and other purse seiners (with one exception – see below).
• SG80 is met

The approach to enforcement, including the involvement of national and international agencies (e.g. SMARTFISH and FISH-I), has been considerably strengthened over recent years. However, weaknesses in individual countries prevent a conclusion that the system is comprehensive and has shown a consistent ability to enforce relevant management measures, strategies and / or rules in the purse seine fleet.
• SG100 is not met

	Sanctions			
b	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Any Echebastar vessel that does not comply with the regulations is open to being listed on the IUU list. The number of vessels on that list prove that it is a sanction that is applied.

The SFPA contain articles related to non-compliance and sanctions (e.g., see Madagascar Section 7).

In the Seychelles, offences and sanctions are covered under the Fisheries Law (2014). While no sanctions have been applied to purse seiners, there is evidence that they have been applied to other fishers (see IOTC-2017-CoC14-08b Add_2[E] Response to 2016 possible infractions from Seychelles under the regional observer programme).

Infractions and sanctions are covered to some degree in the private agreements, but in relation to Echebastar the main issues are covered by IOTC and the requirements of the flag state.
• SG60 is met

SG60 provides evidence that sanctions exist and that they have been applied. The lack of reports of non-compliance (confirmed by stakeholders – Echebastar, Blue Economy, MAF) by the UoA and purse seiners may, at SG80, provide evidence that the sanctions provide effective deterrence.
• SG80 is met

Given that the strengthening of MSC capacity in the Indian Ocean is a work in process and that capacity may vary between countries, it cannot be concluded that the sanctions demonstrably provide an effective deterrence.
• SG100 is not met

C	Compliance			
	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Echebastar reports (stakeholder interview) that any company related issues over recent years have related to form rather than substance e.g., due to internal issues, national authorities may not always have received vessel reports, and changes in policy in individual countries resulting from a change in government. In common with other vessels, Echebastar provides substantial information to scientists, works in conjunction with AZTI and provides data from FADs. The Seychelles authorities acknowledge that Echebastar has been to the fore in cooperating with them. Other fishers work in a similar way e.g., OPAGAC cooperating in identifying the location of derelict FADs. Both OPAGAC and ANABAC are part of the FIP to support sustainable tuna fisheries, including that in the IO. The Echebastar fleet, in common with other EU fleet segments, works without subsidy.

Echebastar informs their captains and crew of their obligations and there is a good practices manual.
• SG60 is met

In addition to the points made in relation to SG60, the lack of any evidence of non-compliance is sufficient evidence to conclude that the fishery responds to this scoring guideline.
• SG80 is met

There is no evidence whatsoever that Echebastar does not comply with management. Recently, there was a potential issue with the Echebastar supply vessel in the Maldivian EEZ but this was related to the need to repatriate a crew member due to a medical emergency (Jauregui' (Echebastar) personal comment). The TXORI ARGI issue (FISH-I) took place in 2012. The work of SMARTFISH and FISH-I has considerably improved MSC capability in the region. Stakeholder comments (AZTI, MAF, Blue Economy) emphasise the degree of cooperation by purse seiners, especially Echebastar, in providing information of importance to the management of the fishery.
• SG100 is met

d	Systematic non-compliance			
	Guide post		There is no evidence of systematic non-compliance.	
	Met?		~~**Yes /**~~ **No**	
Rationale				

There is evidence, based on the information presented above, that there are no systematic non-compliance issues by the client or the two flag States of the fleet included in the UoA in relation to any key area included in the MSC (i.e., data reporting, compliance with applicable fisheries regulations at all levels. there is no sanction by the IOTC or the national authority and these cases are not deemed strong evidence of anything systematic, etc.). Any issue detected to the flag States (e.g., catch overages and reconciliation of nominal YFT catch) have or are currently being addressed through the IOTC process and by the Flag State authorities (such as the Seychelles Fishing Authority and the Spanish fisheries administration ([SGP]).

However, as a result of the objection process to the AGAC fishery, a new condition on PI 3.2.3© was opened (Akroyd et al, 2021). The reason that motivates this new condition is the irregular use of AIS of the industrial tuna fleets in the Indian Ocean. In particular, as it relates to EU vessels and non-compliance with the EU Directive 2002/59/EC (as amended) and Council Regulation (EC) No 1224/2009. AIS is not considered to be a fishery-specific management tool, however it is normally integrated by the different national fishery monitoring centres in the MCS systems applicable to large vessels, primarily for safety purposes. Akroyd et al (2022) investigated this issue and found that the evidence indicates strongly that AIS is turned either 'off' or alternately is in fact operated in 'silent mode' or 'low power' mode, as is now understood to be the established practice. While the switching off or use in a mode other than 'normal', of AIS in itself may be "systematic" and is capable of being justified under the exceptional circumstances of piracy in the western Indian Ocean, the reducing incidence of piracy in the region in very recent years may suggest that a similar increase in AIS reporting could be expected. However, Akroyd et al (2022) also note that since fishing vessels and merchant vessels have different risks in relation to pirates, and different patterns of protection relating to military escorts or warships with different deterrent impacts, this factor was assessed as neutral. They also noted that the individual experience of vessel captains (including those who have experienced piracy directly as well as the indirect impacts), the opportunistic nature of pirates, the reality that piracy has not ceased entirely and the ongoing use of security teams, further limits use of qualitative speculation. However, they also acknowledged that there are no contemporaneous records or evidence through vessel logbooks or other documented means to record the reason for the switching off or use of 'silent mode' resulting in the low rate of AIS reporting for AGAC vessels, and also that the evidence indicates strongly that there are clear and genuine concerns for a vessel and its crew's safety and security through the public display of AIS tracking information which are increased for fishing vessels, and particularly purse seiners(references included in Annex F in Akroyd et al, 2022).

Following the decision of the Independent Adjudicator of the objection process, Akroyd et al (2022) concluded the following: *"It is considered that the lack of clear evidence recording the reason for switching AIS 'off' or to 'silent mode' or 'low power' mode is problematic. (…). Whilst understandable given the extent and real seriousness of the threat, and the guidance of security teams who remain on-board vessels and who have a particular responsibility for maintaining a vessel's security against pirates, together this may mean that the importance of weighing exceptional circumstances to justify turning AIS off or turning it to silent mode in each individual instance at the point in time and location in which that occurs requires to be appraised. This is required to be the focus of and decision of the skipper at each point to be compliant with Article 6a[4]. In the absence of a record giving a clear reason for each occurrence of turning AIS 'off' or to a mode other than 'normal', clearly taken by the Captain cognisant of relevant factors, the degree to which these practices are 'systematic', and whether it constitutes 'systematic non-compliance' with EU and Seychelles requirements for fishing vessels, cannot be determined with confidence. In the absence of clear evidence recording the reason(s) for the decision(s) to either turn AIS off or to another mode, the Assessment Team is unable to determine that there is or is not systematic non-compliance with the requirements or AIS use complying with EU law and in particular Article 6a".*

Following this decision, the team decides that **SG80 is not met,** and a condition is set.
~~The analysis above indicates there is no evidence of systematic non-compliance.~~
~~• SG80 is met~~

References

Akroyd et al (2022)
AZTI 2017. Client Preparation Assessment Report. Echebastar Indian Ocean Purse Seine Skipjack Tuna Fishery
FISH-I (2017) Stop Illegal Fishing Illegal Fishing? Evidence and Analysis. Gaborone, Botswana
MSC 2014 MSC Fisheries Certification –Requirements v2.0
Powers J and P.A.H. Medley. 2016. An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria (Version 4). ISSF Technical Report 2016-19. International Seafood Sustainability Foundation, Washington, D.C., USA

Overall Performance Indicator score	~~85~~ 75
Condition number (if relevant)	~~NA~~ 11

[4] EU Directive 2002/59/EC

5.3 Conditions

5.3.1 Closed Conditions

The following conditions were closed as a result of the current surveillance audit:

- Condition 1 on PI 2.3.3(b)
- Condition 2 on PI 2.4.1(b)
- Condition 5 on PI 2.5.3(b)&(d)
- Condition 6 on PI 3.1.2(b)
- Condition 7 on PI 3.2.2(a)
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The justification for their closure can be found in their corresponding tables in section 5.3.2 (progress against the conditions), while the re-scoring tables can be found in section 5.2 (re-scoring PIs). Also, a summary of the justifications can be found at the executive summary.

5.3.2 Progress against conditions

Table 5.3.2.1. Progress on condition 1 -PI 2.3.3-

Performance Indicator	**2.3.3 ETP species information**
Score	**70**
Justification	**SIb Information is adequate to measure trends and support a strategy to manage impacts on ETP species** More than three years of information is needed to measure trends and support a strategy to manage impacts on ETP species. and ensure that ETP bycatch levels remain at levels consistent with those for 2014-2016.
Condition	At reassessment (2023/2024), the client must demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species.
Condition start	November 2018
Condition deadline	May 2024
Milestones	**Original milestones had November 2020 as Year 2, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, Year 2 has now been postponed to May 2022. The revised milestone dates are as follows:** **Years 1-3**. (Nov 2019, May 2022, May 2023). Echebastar must provide evidence at the 1-4 annual surveillance audits that the amount of processed data available has been significantly improved and that protocols for data processing have been established to assure the provision of the data required in future years. Expected score = 70. **Year 4**. (May 2024) Echebastar must provide evidence to the re-assessment that the processed data available for the period 2014 – 20 is adequate to measure trends and support a strategy to manage impacts of the fishery on ETP species. Expected score = 80.
Progress on Condition (Year 2: 2022)	Due to the timing extension given by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone

		that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 2. The client provides detailed data on observed interactions between the UoA and each ETP species, as well as an estimation of total interactions and survival rates per species for a time period that stretches from 2017 to 2021 (see details in **section 4.2.7.5**). All fishing trips are observed, and despite the pandemic situation faced in recent years, the sampling coverage per set has been maintained above 52% (see details in **section 4.2.7.2**), which is well above the minimum 20% observer coverage which the IOTC is recommending to assess trends even for rare encountered species (IOTC 2020b). The ANABAC/OPAGAC Code of Good Practices is being correctly implemented by Echebastar as confirmed by AZTI during its annual audits (see details in **section 4.2.7.5**). The efficiency of different bycatch reduction devices (BRD) has been tested on board the Echebastar fleet and the results obtained have been used in recent papers (e.g., Murua et al 2022) (see details in **section 4.2.7.5**). Besides, Echebastar has promoted studies on relevant issues such as the post-capture survival rate on silky sharks (see details in **section 4.2.7.5**).
	2021	*The requirement for the first annual audit is clear (i) the data available on catch is sufficient to assess the risk to ETP species and identify trends and (ii) the protocols and practices on data collection must be sufficient to give confidence that robust data will continue to be collected in the future.* *Updated observers' data for 2017 and 2018 has confirmed that ETP species impacted by the UoA are sharks (mainly silky and oceanic whitetip shark), Manta and devil rays and sea turtles (see tables 4.2.5, 4.2.6, 4.2.7 and 4.2.8).* *Emphasis has been placed on improving the efficiency of the observer programme and the quantity and quality of the data. Table 4.2.4 shows the increasing trend on data reported for observed sets, with observed sets raising up to 87% and 90% of the total FAD and FSC sets respectively in 2018. This had also led to better input of the observer data into the system and subsequent analysis with priority given by SFA to Echebastar data (see, in Appendix 7.2.1, confirmation by the SFA in relation to the agreement reached to increase coverage for the certified fleet). In the SFA offices in Seychelles, efforts have been increased in the collection of observer data. Additionally, the vessel skippers have been instructed to collect the information from observers for back up prior to disembarkation, while all vessel crew have been trained by AZTI in relation to the MSC certification including the protocol and importance of data collection (AZTI 2019). The latter is in the context the ANABAC/OPAGAC Code of Good Practices implemented on the certified fleet (ANABAC/OPAGAC 2017) and also part of the ISSF commitments.* *Additional information on the Seychelles purse seine fishery observer program is available at Lucas et al 2017.* *Data shown and discussed in section 4.2.7.1 on the UoA observed catch composition and total estimated catches in 2017 and 2018 prove that information is being collected with an adequate level of detail. Further, this information is available at the Echebastar website: https://echebastar.com/en/echebastar-obtains-msc-certification/msc-up-to-date/2019-annual-surveillance-audit/documents/ (click here for downloading data on 2017, and here for downloading data for 2018). This proves that the client is comprised with transparency in relation to this issue.* *At the time of preparing the Public Certification Report (DeAlteris et al 2018), the availability of data on observed UoA catches and total estimated UoA catches was restricted to 2014, 2015 and 2016. During the current surveillance audit, the client has provided analysed data from 2017 and 2018, while data from 2019 were still under preparation and will be audited in the following surveillance audit. However, during the site visit the client argued that data from observers are quarterly reported to avoid problems in terms of providing data on a regular basis.* *As shown in sections 4.2.7.1.2 and 4.2.7.3, it is possible to start to identify trends in capture. However, given the low % of observed sets in 2014 -2016 data and potential changes in the pattern of the fishing operations since the implementation of the yellowfin tuna quota (See section 4.2.7.1), 3 more years data are required to confirm these and support a strategy.* *As part of the Echebastar Strategic approach (Echebastar 2019b), there are other activities also aimed to improve information.* *IPG 11 (Information is adequate for the assessment of impacts and their management) of the SIOTI action plan (SIOTI 2019) relates to 2.3.3 ETP species information.* *The Year 1 and Year 2 targets for SIOTI were:* *• Y1: Scientific report on the mortality of ETP species after their release from fishing gear, and an analysis of the likely impact of such mortality on Indian Ocean populations.* *• Y2: Study on the impact of purse seine gear on ETP species and likely consequence for Indian Ocean populations and improved vessel-level reporting of ETP interactions.* *The year 2 SIOTI report found that the FIP was on target* *• An OPAGAC FIP supported study in 2018 (IOTC-2018-WPDCS14-26) https://www.iotc.org/sites/default/files/documents/2018/11/IOTC-2018-WPDCS14-26_Rev1.pdf as also reported under IPG4, estimated levels of bycatch and ETP species interactions with purse seine gear relative to other gears in the Indian Ocean. The findings of this study indicate the ETP interactions are lower for purse seine than other gears. However, levels of post-release mortality were not directly estimated, with only existing estimates used in the analysis, which were not available for all gears.* *• SIOTI is in discussions with WWF to support further work on this in 2019, especially given the historical bycatch data provided under IPG9 and 10 and increased levels of observer data reporting in recent years. A major focus of the work will be to improve the estimates of the earlier work, including estimation of uncertainty. The TOR is being drafted and the work will be initiated by bringing scientific expertise to a workshop later in 2019.* *• The OPAGAC study also makes clear recommendations for improved reporting.* *During the site visit, Echebastar representatives confirmed that they are proposing a number of initiatives that were presented to the SIOTI meeting held in Paris on November 4 & 5. These proposed activities are:* *□ Tagging of released sharks*

		Mapping of the differences in the proportion of silky sharks caught by set *Correlation of the silky shark by catch with the total catch per set*
	Year 1 (2019)	*Echebastar presents an annual analysis of the observed and estimated catches of its fleet at its website. Furthermore, ESWG 2021 summarises landing composition between 2006and 2020, and catch effort (number of sets to FADs and FSC per vessel) and observer coverage between 2014 and 2020 (see **section 4.1.7** for more details). Results show that 62% of all sets (FADs and FSCs) performed by the Echebastar fleet between 2014 and 2020 (10,126 sets) were observed (6,285 observed sets). Observer coverage in 2019 remained at levels comparable to 2017 and 2018 (around 80% of all sets were observed, both in FAD and FSC sets). This proportion was reduced to around 50% in 2020 (60% in FAD sets and 35% in FSC sets) due to the restrictions on observers boarding vessels resulting from the COVID-19 pandemic regulations applied in the Seychelles. AZTI confirmed that they were forced to close their office at the Seychelles in March 2020 due to the pandemic. This situation is still affecting in 2021, although it is expected to improve along the year.* *ESWG 2021 also presents observers' data collected between 2016 and 2020 on species composition of the observed catches for sets targeting FADs (table 6 from ESWG 2021). However, estimates for total catches were not included. These estimates are presented on annual basis, but it has been recognized that data presented on an annual basis are still preliminary (that was the case for 2020). For instance, preliminary data for 2020 on FAD sets reports 1 interaction with a whale shark, while reviewed data presented in ESWG 2021 reports 0 interactions with this species on FAD sets but 3 interactions on FSC sets.* *Data on catch composition and interactions with ETP species by the Echebastar fleet compiled in SWG (2021) are in accordance with previous existing information on bycatches presented in Ruiz et al (2018) for the European, and Associated flag, purse-seine tuna fishery in the Indian Ocean for the period 2008-2017.* *Echebastar is implementing all best practices on collecting and reporting information on interactions adopted in the ANABAC/OPAGAC Code of Good Practices as evidenced by the fact that all Echebastar vessels have valid certificates on Section 4 of UNE195006:2016.* *The ESWG is also promoting tagging studies on the silky shark (see **section 4.1.7** for more details), which is, by far, the most impacted ETP species by the certified fleet. Preliminary results were compiled in ESWG (2020) and submitted to the IOTC-WPEB in 2021 (Onandia et al 2021). Tagging will continue in 2021 and final results are expected by the end of 2021. Once completed, these studies help to increase the information available to measure trends and support a strategy to manage impacts.*
Status	The team considers that the measures and actions described above constitute evidence that data available is adequate to measure trends and support a strategy to manage impacts of the UoA on ETP species. Thus, the condition is found to be **ahead of target and CLOSED**, so PI 2.3.3(b) shall be re-scored (see re-scoring table in **section 5.2**)	

Table 5.3.2.2. Progress on condition 2 -PI 2.4.1-

Performance Indicator	**2.4.1 – Habitats outcome**
Score	**75**
Justification	**SIb. VME habitat status. 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.** While there is evidence that it is unlikely that derelict FADs reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm, due to the potential impact over a number of years and lack understanding of the real nature of the issue, it cannot be concluded that this is highly unlikely. More evidence is required.
Condition	By the fourth annual surveillance audit (May 2023), the client must demonstrate that FADs are highly unlikely to reduce structure and function of coral reefs to a point where there would be serious or irreversible harm.
Condition start	November 2018
Condition deadline	May 2023

Milestones	**Original milestones had November 2020 as Year 2, however, after applying the 6-month MSC Derogation due to the pandemic, Year 2 has now been postponed to May 2021. The revised milestone dates are as follows:** **Year 1.** (Nov 2019). Echebastar must provide evidence to the first annual surveillance that a plan has been implemented to ensure that FADs are highly unlikely to reduce structure and function of coral reefs to a point where there would be serious or irreversible harm. Expected score = 75. **Year 2** (May 2021). Echebastar must provide evidence to the second annual surveillance that the plan has been fully implemented with a description of the actions undertaken. Expected score = 75. **Year 3**. (May 2022). Echebastar must provide evidence to the third annual surveillance that actions continue and that results of the activities are being collected and analysed. Expected score = 75. **Year 4**. (May 2023). Echebastar must provide evidence to the fourth annual surveillance to prove that FADs are highly unlikely to reduce structure and function of the coral reefs (VME) habitats with lost FADs to a point where there would be serious or irreversible harm. Expected score = 80.
Progress on Condition (Year 3: 2022)	As in previous years, the client presented evidence that they keep complying with the requirements adopted in Res 19/02 and with the requirements on non-entangling FADs included in UNE195006. Also, the FAD-watch recovery program is being renewed. For more details on these issues see the progress on Condition 4 in **table 5.3.2.4.** Echebastar signed an agreement with AZTI to develop a study aimed at assessing the risk posed by derelict FADs. As a result of this agreement AZTI will complete different activities such as mapping coral communities, analyze FAD drifting, review available information on the structure of reefs, perform a risk assessment to identify areas affected by FAD beaching, analyze the potential impact of derelict FAD on coral communities in the context of other risks, identify measures to reduce potential impacts, review IOTC policy on recovery of lost FADs, and design and implement a study to provide empirical evidence on the nature and extent of damage to corals resulting from lost FADs. The preliminary results are presented in Zudaire et al (2022). This study continues and a second phase of the on-site study to provide empirical evidence on the nature and extent of damage to corals resulting from beached FADs is expected by the end of 2022. For more details on the preliminary results of this study see **section 4.2.7.6.** Despite this study on the risk posed by derelict FADs is still a work in progress, the team decided to re-score this PI based on the rationale and score published in the Public Certification Report of the AGAC fishery published in July 2022 (Akroyd et al 2022). The AGAC fishery is an identical to the Echebastar fishery for the purpose of scoring this PI since it operates in the same manner and in the same areas. The AGAC fleet has also adopted the same code of good practices on board, and it is certified against the UNE195006. The basis used in Akroyd et al (2022) for scoring 80 in the PI 2.4.1(b) is that even if all the operational FADs of the AGAC UoA (4500 FADs) were lost and resulted in beaching events on coral reefs, the total area of coral reefs impacted would be between 0.45 km2 and 2.25 km2 for impacts of 100 m2 and 500 m2 per FAD respectively (estimate of 100m2 from Zudaire et al 2018, and estimate of 500m2 from Banks and Zahairia 2020). In the context of the total area of coral reefs in the Indian Ocean this equates between 0.0007% annually and 0.0014% annually. According to Akroyd et al (2022), such a relatively small area of impact means that it is highly unlikely that the UoA would reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. In the case of the Echebastar fleet, all the operational FADs are 2700 FADs (half of the number of FADs assessed by Akroyd et al, 2022). So, if all those FADs were lost and resulted in beaching events on coral reefs, the total area of coral reefs impacted by the UoA would be between 0.27 and 1.35 km2, which represents a negligible percentage of the total area covered by coral reefs in the Indian Ocean. The total number of operational buoys in the

	case of the Echebastar fleet is lower (3000 FADs). Thus, the PI was re-scored based on the rationale in Akroyd et al (2022).	
	Year 1 (2019)	*A number of actions provide the evidence that a plan has been implemented with the objective of ensuring that FADs are highly unlikely to reduce structure and function of coral reefs to a point where there would be serious or irreversible harm.* *One key issue for Echebastar strategy was the definition of a FAD Management Plan (Echebastar 2019c). Echebastar will review the number of FADs that it operates. Among other measures, it is expected that the reduction of total FAD will reduce the number of lost FADs.* *Echebastar fully complies with IOTC FAD limits. Indeed, in 2016 the company unilaterally reduced the number of FADs it used below the number permitted by the IOTC. The number of FADs and suplly vessels permitted by IOTC has reduced since the assessment.* *In relation to the Echebastar FAD Management Measures, the following actions are defined in relation to number of buoys:* *• All FADs should be deployed and tracked with instrumented buoys, which should be made operational on-board.* *• Until 31 December 2020, Echebastar will respond to IOTC Res 19/02 with a maximum number of 300 operational buoys followed per purse seiner vessel at any one time, with a maximum annual purchase per purse seiner vessel of 500 instrumented buoys.* *• From 1st January 2021, Echebastar will voluntarily reduce the number of operational buoys per purse seiner vessel followed at any one time to 275 with a maximum annual purchase per purse seiner vessel of 475 instrumented buoys.* *• From 1st January 2022, Echebastar will voluntarily reduce the number of operational buoys followed per purse seiner vessel at any one time to 250 with a maximum annual purchase per purse seiner vessel of 450 instrumented buoys.* *Echebastar will construct FADs from bio-degradable materials to reduce the potential risk to corals.* *To reduce the risk of damage from lost FADS, all FADS deployed by Echebastar will be constructed from bio-degradable materials that are presently under study, for its rapid implementation. According to IOTC resolution 19/02, by year 2022 all deployed FADs will be biodegradable FADs.* *Echebastar fully cooperates with the BIOFAD project SC07 "Testing designs and identify options to mitigate impacts of drifting FADs on the Ecosystem –EASME/EMFF/2017/1.3.2.6 - FWC EASME/EMFF/2016/008 Provision of SAF Beyond EU waters". This project seeks to test the use of specific biodegradable materials and designs for the construction of drifting FADs in natural environmental conditions. Options to migigate drifting FADs impacts on the ecosystem will also be identified, and the socio-economic viability of the use of BIO FADs (i.e. non-entangling and biodegradable) in the purse seine tropical tuna fishery will be assessed. AZTI publicly declared (https://echebastar.com/wp-content/uploads/2019/09/AZTI_letter_ECHEBASTAR_participation_BIOFAD_0209201920v2.pdf) that Echebastar vessels has contributed to the project with the activities shown in table below during the period from April 2018 to September 2019. Besides, Echebastar provides the echo-sounder buoys needed (and the data collected by them) to attach to the experimental biodegradable FADs to be deployed in the project. This contribution is an in-kind contribution of Echebastar to the project.* *Progress on this BIOFAD project can be consulted at Zudaire & Murua (2018), and preliminary results have been recently presented (August 22, 2019) to IOTC in Zudaire et al (2019).* *FAD Traceability* *A number of activities are relevant to establish a system to account for lost FADs and reduce the uncertainty about their actual number:* *• Echebastar only deploys FADs with satellite tracking buoys.* *• Echebastar is working with AZTI so that by early 2020, all 2019 FAD purchases, activation, status and recovery will be fully documented and available for inspection.* *• Echebastar has contracted AZTI to develop a data base on the FADs purchased and activated by the company to avoid losses (see Echebastar 2019c, Section 11).* *• As part of the ANABAC/OPAGAC Code of Good Practices (ANABAC/OPAGAC 2017), AZTI is responsable for implementing, compiling and analysing data from the FAD logbook to support a FAD management system for the ANABAC/OPAGAC vessels. AZTI is also responsable to verify the implementation of the good practices on FADs adopted by these vessels. AZTI regularly presents the results of this activities and verification at the Steering Committee for the Code of Conduct, see AZTI (2019) for a detailed account of the meetings held since 2013.* *• The SIOTI action plan for Years 3 and 4 states:* *Y3: All FADs operated by FIP participants are tracked, losses are registered and best practical efforts made for their location and recovery.* *Y4: A review of the FAD reporting system indicates that the loss of FADs is minimised and they are highly unlikely to impact on VMEs; FAD management study results are published* *FAD recovery* *• Echebastar will continue to work with other tuna catching companies and stakeholders in "FAD Watch programme" and seek to work with local stakeholders in other countries to replicate the experience. The FAD Watch project is a collaborative initiative to minimize the impact of FADs in coastal ecosystems. The FAD-Watch project is a first multi-sectorial initiative developed to prevent and mitigate FAD beaching across islands in Seychelles, in which the coastal recovery is applied as a mitigation measure. It is the result of a collaborative work among the Spanish Tuna Purse Seiner fishing representatives (OPAGAC), Island Conservation Society (ICS), Islands Development Company (IDC) and Seychelles Fishing Authority (SFA). The FAD detection system was setup by OPAGAC for 6 buffer areas (Alphonse, Farquhar, Desroches, Poivre, Aride and Silhouette islands), which make possible alerting ICS when FADs crossed buffer areas within 5 and 3 nautical miles of any of these islands. For each intercepted FAD, ICS collected information about the location, habitat type, purse seiner vessel, FAD design, entangled fauna, and fate (removed or not; & disposal method). In order to evaluate the beaching rate and entangling potential of FADs of the target fleet, information was complemented both by buoy tracked data and by data collected on the frame of the voluntary agreement for the application of good practices. More details can be found at (Zudaire et al 2018). In November 2019, a MoA was signed to include the FAD WATCH project as par of the SIOTI action plan (click here to download the MoA: https://echebastar.com/wp-content/uploads/2019/11/SIOTI-FAD-WATCH-MOA-FINAL-DOCUMENT.pdf). This MoA was signed by the SFA, ICS, IDC and SIOTI.*

		• The SIOTI (2019) reports that the FAD Watch programme that locates and intercepts FADs that may become derelict in Seychelles waters was expanded to 42 vessels amongst 5 islands. Other Points • Since 2016, Echebastar tuna fishing fleet has adopted (https://www.echebastar.com/assets/pesca/NON-ENTANGLING-FADS.pdf) the use of the new FAD designs described in the ISSF Guide for Non-Entangling FADs in an effort to reduce shark and/or turtle. More info on the ISSF non-entangling and biodegradable FADs (ISSF, 2019) • Echebastar has contracted AZTI to complete research programmes to determine deployment areas that are highly likely to result in stranding of derelict FADs on coral reefs. To conclude, Echebastar is working on: 1) Reducing the number of FADs (the Company has set more restrictive objectives than the IOTC regulations on this issue); 2) FAD traceability and reduce the risk of FADs damaging corals (BIOFAD, account for lost FADs and reduce the uncertainty about their actual number); 3) FAD recovery program (FAD Watch). All these actions outlined in the Echebastar Strategy & Operational Plan for a Sustainable purse seine Tuna Fishery in the Indian Ocean 2019-2013 (Echebastar 2019a) and detailed in the FAD Management Plan of the Company (Echebastar 2019c). The client presented evidence of the implementation of different actions considered in the FAD Management Plan, but this is still a work in progress.
	Year 2 (2021)	Res 19/02 entered into force in January 2020 (superseding Res 18/08). As required by this CMM, both Seychelles and the EU-Spain, submitted to the Commission annual Management Plans for the use of FADs in 2020 and 2021, which were analyzed by the Commission (IOTC-2020-CoC17-09_Rev1 and IOTC-2021-CoC18-10). Both CPCs have been complying with the limit on number of FADs in use and instrumented buoys to be acquired annually, FAD marking, data reporting and FAD tracking. The Echebastar fleet has followed with all requirements adopted in Res 19/02. Furthermore, Echebastar also presented evidence of the following actions related to FAD management, including research on the impact of lost FADs: 1) Reducing the number of FADs beyond the limits adopted in Res 19/02. For 2021 and 202, the Echebastar FAD Management Plan adopted in 2019 sets more restrictive objectives than the IOTC regulations on this issue. Since January 2021, each certified vessel has a maximum of 275 instrumented operational buoys that may follow at any one time, and the number instrumented buoys that may be acquired annually for each purse seine vessel is set at no more than 475 (Res 19/02 limits are 300 and 500, respectively). In 2022, Echebastar has the commitment to further increase reductions up to 250 instrumented operational buoys at any one time, and 450 instrumented buoys acquired annually. 2) Verifications on the number of FADs in use and acquired instrumented buoys. There are several ways of verification: (i) FAD logbooks are completed by every Echebastar fleet, compiled by AZTI and sent to the flag State to be reported to the IOTC Secretariat; (ii) The instrumented buoy suppliers send daily data on the number of active buoys per vessels and day to AZTI. AZTI compiles this information and reports to the fishing companies and the flag States (so they can later inform the IOTC Secretariat). The auditor could check during the audit the monthly verification report prepared by AZTI. AZTI also collects information on the acquired instrumented buoys to verify the implementation of Res 19/02 in this regard; (iii) Echebastar internally verifies that its more restrictive limits (see bullet above) are followed. During the audit, Echebastar representatives showed how this system is being implemented by the Company. - 3) Non-entangling FADs. Since 2012 Echebastar adopted the ANABAC/OPAGAC Code of Good Practices. As part of monitoring the implementation of the code, for every fishing trip AZTI assesses the percentage of FADs (either set or visited) built following non-entangling designs and materials as outlined in Anex V of Res 19/02 (or previous superseded Resolutions). An annual report is prepared and shared with the fishing companies, including Echebastar. All Echebastar vessels have valid certificates for section 4 of the Standard UNE 195006:2016 on good practices on board, which is audited by AZTI on an annual basis. This Section includes the use of non-entangling FADs. 4) Biodegradable FADs. The project known as BIOFAD 'Testing designs and identify options to mitigate impacts of drifting FADs on the ecosystem' funded by the European Maritime and Fisheries Fund (EMFF) has concluded, and the final report was presented (Zudaire et al, 2020) Echebastar has contributed to this project as detailed in the previous surveillance audit. Among other results, a tentative BIOFAD definition was provided. The assessment of the advantages and disadvantaged of different biodegradable materials and designs was also considered. Further alternative materials were also tested as potential options for future sustainable FAD constructions. The performance and behaviour of BIOFAD was assessed and compare to NEFADs. Finally, feasibility of using new biodegradable materials was assessed to recommend several optimum BIOFAD prototypes. Both the client and AZTI representatives agreed on considering this as a successful project. The Bio-ropes tested during the project are still being used by Echebastar. The fishing companies have incorporated materials and designs tested as part of the BIOFAD project. However, not all the components were developed, for instance AZTI is currently testing BIOFLOATS (Echebastar is involved in these tests). 5) FAD recovery program (FAD Watch). During 2020 Echebastar collaborated with the SFA, so the IDC could recover lost FADs (despite no MoU was signed in 2020). No formal reporting reports could be handed to Echebastar for this surveillance audit, but the IDC reported that some lost FADs were recovered before they became derelict on corals. Finally, the signature of the FADWATCH MOU for year 2 was signed on May 2021. This agreement was signed by SIOTI, OPAGAC, ICS, IDC AND SFA. The geographical scope where this project will be implemented includes 5 islands of Seychelles: Aride, Alphonse, Desroches, Silhoutte and Farquhar. The proposed activities include the following: a. Removal of FADs from reefs and beaches and proper storage by ICS island teams with assistance from IDC. b. Collection of FADs by IDC barge c. Proper disposal and/or recycling of FAD materials and satellite buoys on Mahé d. Continuous data collection by ICS describing the types of FADs and the impact caused e. Preparation of annual technical and financial reports by a steering committee (Annex 1) using the data collected to assess tasks completed and future needs. f. Fishing companies, through a service provider, to make arrangements to supply ICS with alerts (including date and time and buoy ID, service provider, positon coordinates and speed) of probable FAD beaching events as and when a FAD comes within the 3 nautical miles buffer zone.

		g. During the first 3 months of the MOU, fishing companies to provide support for a service provider to assist local partners (ICS, SFA and IDC) for hardware, software and training required for implementation of FAD Watch, relating mainly to communication of FAD positions. *h. ICS, SFA and other local partners in Seychelles to assist in providing suggestions to improve the design of eco-friendly FADs.* *6) Assessing the interactions of lost FADs with corals communities in the Indian Ocean. The client has just signed an agreement with AZTI to develop a study aimed at assessing the risk posed by derelict FADs. AZTI will complete the different phases involving mapping of coral communities, analysis of FAD drift, review of available information on the structure of reefs, risk assessment to identify areas affected by FAD beaching, analysis of the potential impact of derelict FAD on coral communities in the context of other risks, identification and analysis of measure to reduce potential impacts, review of the IOTC policy on recovery of lost FADs, and design and implementation of a study to provide empirical evidence on the nature and extent of damage to corals resulting from lost FADs.* *Furthermore, Echebastar vessels are included in the ISSF PVR register. Compliance with sustainable-fishing practices as defined by ISSF is audited on an annual basis. According to the latest audit results, all Echebastar vessels are following ISSF's best practices on non-entangling FADs and FAD management plans.*
Status	Based on the rationale and scoring for PI 2.4.1(b) provided in Akroyd et al (2022), the condition is found to be **ahead of target and CLOSED**, so PI 2.4.1(b) shall be re-scored (see re-scoring table in **section 5.2**)	

Table 5.3.2.3. Progress on condition 3 -PI 2.4.2- (CLOSED AT 2SA)

This condition was closed at the second surveillance audit held in 2022. See Kirchner and Rios 2021 for more details.

Table 5.3.2.4. Progress on condition 4 -PI 2.4.3-

Performance Indicator	**2.4.3 Habitats information**
Score	**75**
Justification	**SIb. Information adequacy for assessment of impacts. Information is adequate to allow for identification of the main impacts of derelict FADs on coral reefs, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.** While there is good information on the spatial extent of interaction between derelict FADs and coral reefs in the Seychelles, similar data is not available for other countries. A precautionary approach would suggest that the potential for impacts to occur should be further investigated. There is limited information on the spatial extent, timing and location of FAD interactions with coral reefs, and this is not adequate to understand the nature of the impacts of the gear on coral habitat.
Condition	By the re-assessment (2023/2024), the client must provide evidence that information is adequate to allow for identification of the main impacts of derelict FADs on coral reefs, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.
Condition start	November 2018
Condition deadline	May 2024
Milestones	These are linked to Condition 2. **Original milestones had November 2020 as Year 2, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, Year 2 has now been postponed to May 2022. The revised milestone dates are as follows:** **Year 1** (Nov 2019). Echebastar must provide evidence to the first annual surveillance that the partial strategy includes the approach to improving the information base. Expected score = 75.

	Year 2-3 (May 2022-2023). Echebastar must provide evidence to the third and fourth annual surveillance that information is being collected. Expected score = 75. **Year 4.** (May 2024). Echebastar must provide evidence to the re-assessment that the collected information has been analysed with the identification of the main impacts of derelict FADs on coral reefs, and an understanding of the spatial extent and timing of the interactions. Expected score = 80.
Progress on Condition (Year 2: 2022)	Due to the timing extension given by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 2. The client presented evidence that they keep complying with the requirements adopted in Res 19/02. The number of FADs in use and acquired instrumented buoys are being recorded (through FAD logbooks and double checked against the data sent by the instrumented buoys suppliers), compiled by AZTI and then sent to the flag States and to the IOTC Secretariat. In addition, Echebastar keeps its own FAD accountability to ensure that they are complying with their self-imposed FAD limits per vessel adopted in their FAD management plan (i.e., a maximum of 275 instrumented operational buoys at any one time, and a maximum of 475 instrumented buoys that may be acquired annually for each purse seine vessel, while Res 19/02 limits are 300 and 500 respectively). The use of non-entangling FADs by the Echebastar fleet is being audited on an annual basis by AZTI as part of the Standard UNE195006. All Echebastar vessels have a valid statement of conformity on this topic issued by AZTI (valid until December 31, 2022). No news on the use of biodegradable materials have been reported since the previous surveillance audit. Echebastar provided evidence of the continuation of the FAD watch recovery program, which will be now expanded to other islands of the Seychelles archipelago. Finally, Echebastar signed an agreement with AZTI to develop a study aimed at assessing the risk posed by derelict FADs. As a result of this agreement AZTI will complete different activities such as mapping coral communities, analyze FAD drifting, review available information on the structure of reefs, perform a risk assessment to identify areas affected by FAD beaching, analyze the potential impact of derelict FAD on coral communities in the context of other risks, identify measures to reduce potential impacts, review IOTC policy on recovery of lost FADs, and design and implement a study to provide empirical evidence on the nature and extent of damage to corals resulting from lost FADs. The preliminary results are presented in Zudaire et al (2022). This study continues and a second phase of the on-site study to provide empirical evidence on the nature and extent of damage to corals resulting from beached FADs is expected by the end of 2022. For more details on the preliminary results of this study see **section 4.2.7.6.**
	Year 1 (2019)	*The following activities related to Condition 2 and Condition 3 respond to Condition 4.* *FAD Traceability* *A number of activities are relevant to establish a system to account for lost FADs and reduce the uncertainty about their actual number:* • *Echebastar only deploys FADs with satellite tracking buoys.* • *Echebastar is working with AZTI so that by early 2020, all 2019 FAD purchases, activation, status and recovery will be fully documented and available for inspection.* • *Echebastar has contracted AZTI to develop a data base on the FADs purchased and activated by the company to avoid losses (see Echebastar 2019c, Section 11).* • *As part of the ANABAC/OPAGAC Code of Good Practices (ANABAC/OPAGAC 2017), AZTI is responsable for implementing, compiling and analysing data from the FAD logbook to support a FAD management system for the ANABAC/OPAGAC vessels. AZTI is also responsable to verify the implementation of the good practices on FADs adopted by these vessels. AZTI regularly presents the results of this activities and verification at the Steering Committee for the Code of Conduct, see AZTI (2019) for a detailed account of the meetings held since 2013.* • *The SIOTI action plan for Years 3 and 4 states:* *Y3: All FADs operated by FIP participants are tracked, losses are registered and best practical efforts made for their location and recovery.*

		Y4: A review of the FAD reporting system indicates that the loss of FADs is minimised and they are highly unlikely to impact on VMEs; FAD management study results are published *FAD recovery* *• Echebastar will continue to work with other tuna catching companies and stakeholders in "FAD Watch programme" and seek to work with local stakeholders in other countries to replicate the experience. The FAD Watch project is a collaborative initiative to minimize the impact of FADs in coastal ecosystems. The FAD-Watch project is a first multi-sectorial initiative developed to prevent and mitigate FAD beaching across islands in Seychelles, in which the coastal recovery is applied as a mitigation measure. It is the result of a collaborative work among the Spanish Tuna Purse Seiner fishing representatives (OPAGAC), Island Conservation Society (ICS), Islands Development Company (IDC) and Seychelles Fishing Authority (SFA). The FAD detection system was setup by OPAGAC for 6 buffer areas (Alphonse, Farquhar, Desroches, Poivre, Aride and Silhouette islands), which make possible alerting ICS when FADs crossed buffer areas within 5 and 3 nautical miles of any of these islands. For each intercepted FAD, ICS collected information about the location, habitat type, purse seiner vessel, FAD design, entangled fauna, and fate (removed or not; & disposal method). In order to evaluate the beaching rate and entangling potential of FADs of the target fleet, information was complemented both by buoy tracked data and by data collected on the frame of the voluntary agreement for the application of good practices. More details can be found at (Zudaire et al 2018). In November 2019, a MoA was signed to include the FAD WATCH project as par of the SIOTI action plan (click here to download the MoA: https://echebastar.com/wp-content/uploads/2019/11/SIOTI-FAD-WATCH-MOA-FINAL-DOCUMENT.pdf). This MoA was signed by the SFA, ICS, IDC and SIOTI.* *• The SIOTI (2019) reports that the FAD Watch programme that locates and intercepts FADs that may become derelict in Seychelles waters was expanded to 42 vessels amongst 5 islands.* *Further, Echebastar has contracted AZTI to complete research programmes to determine deployment areas that are highly likely to result in stranding of derelict FADs on coral reefs.*
	2021	*As detailed in the progress on Condition 2, the client is following the requirements adopted in Res 19/02 on FAD data collection, reporting and marking. Furthermore, both the FAD tracking system in place and the use of non-entangling FADs are being verified externally (by AZTI). The client actively collaborates with different initiatives and projects aimed at transitioning to the use of biodegradable FADs, and the certified fleet has adopted some of the biodegradable tested materials. The client keeps collaborating with the FADWATCH project. This project aims to prevent and mitigate the beaching and entanglement of FADs in coral reefs in 5 islands of the Seychelles. Finally, a new agreement has been signed with AZTI to assess the risk posed by derelict FADs on coral communities in the Indian Ocean.*
Status	Based on the information presented above, the team found that the client has presented evidence that relevant information to assess the main impacts of derelict FADs on coral reefs is being collected. Thus, the progress on this condition was found to be **ON TARGET.**	

Table 5.3.2.5. Progress on condition 5 – PI 2.5.3-

Performance Indicator	**2.5.3 Ecosystem information**
Score	**75**
Justification	**SIb. Investigation of UoA impacts. Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.** **SId. Information relevance. 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.** The effects of FADs used in the UoA/UoC on the behaviour, migration patterns and feeding of tuna and other key predators (e.g., silky shark and oceanic whitetip shark) is a subject of concern. Dagorn et al (2013) conclude that there is no unequivocal empirical evidence that FADs per se represent an 'ecological trap' that inherently disrupts the ecosystem, although further research should focus on this issue.
Condition	**SIb.** By the re-assessment (May 2024), the client must provide evidence that the main impacts of the FADs used in the UoA/UoC on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail. **SId.** By the re-assessment (May 2024), the client must provide evidence that there is adequate information on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.
Condition start	November 2018
Condition deadline	May 2024
Milestones	**Original milestones had November 2020 as Year 2, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery**

	Conditions Extension, Year 2 has now been postponed to May 2022. The revised milestone dates are as follows: **Year 1.** (Nov 2019). Echebastar must provide evidence to the first annual surveillance that the options to investigate the potential impact of the FADs used in the UoA/UoC on the ecosystem have been identified and the preferred option for investigation has been implemented. Expected score = 75. **Year 2.** (May 2022). Echebastar must provide evidence to the third annual surveillance that the preferred option for investigation continues to be implemented. Expected score = 75. **Year 3.** (May 2023). Echebastar must provide evidence to the fourth annual surveillance of the preliminary results from the preferred option for investigation. Expected score = 75. **Year 4.** (May 2024). Echebastar must provide evidence to the re-assessment that main impacts of the FADs used in the UoA/UoC on key ecosystem elements can be inferred, and some have been investigated in detail. Expected score = 80.	
Progress on Condition (Year 2: 2022)	Due to the timing extension giveb by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 2. The comprehensive document prepared last year by Juan-Jordá (2021), was again reviewed and discussed during the current surveillance audit. Besides, the Public Certification Report of the AGAC fishery (Akroyd et al, 2022) was published finally in July (the FDR was already published, together with final determination of the objection procedure, before the site visit took place). Akroyd et al (2022), when assessing the AGAC fleet scores 80 in PI 2.5.3 (b). At the same time scores only 60 in SI(a), but Akroyd et al (2022) did not take into account Juan-Jordá (2021). Thus, the team decided to re-score the entire PI 2.5.3 based on the work prepared by Juan-Jordá (2021), and also the rationale and score published in Akroyd et al (2022).	
	Year 1 (2019)	*The Year 1 milestone is explicit that "(…) options to investigate the potential impact of FADs…have been identified and…implemented." It is understood that the scope for independent action by Echebastar is limited and it has therefore chosen to work with SIOTI to investigate and progress this area. The SIOTI FIP Action Plan review (Year 2) considered options to investigate the potential impact of FADs on the ecosystem and developed a preferred option to proceed (SIOTI 2019). Specifically, the production of a working paper on Ecosystem Approach to Fisheries Management (EAFM) to the IOTC WP on Ecosystems and Bycatch (WPEB), to include consideration of FADs and potential impacts on the ecosystem and means of mitigation, management and investigation. The working paper (Juan-Jordá, 2019) was commissioned in April, 2019, and was presented in October, 2019 (see: https://echebastar.com/wp-content/uploads/2019/11/Support-for-the-development-of-an-ecosystem-approach-to-fisheries-management-for-Indian-Ocean-fisheries.pdf). The working paper identifies key information gaps in enabling an ecosystem approach to tuna fishery management in the Indian Ocean and includes a review of the key risk areas associated potentially with FAD use. According to Juan-Jordá (2019), the ecological impacts of fisheries in marine ecosystems can be broadly categorized in 4 types of impacts:* *(1) Impacts on the individual targeted species* *(2) Impacts on the individual non-targeted species including ETP species* *(3) Impacts on habitats of ecological significance* *(4) Impact on the structure and function of marine ecosystems* *This condition was considered at length during the site visit and the FIP and commissioned working paper were the subject of detailed review. The FIP mentions "ecological trap" only in relation to PI2.4, not PI2.5 to which this condition applies. With respect to PI 2.5 and potential impacts on the structure and function of ecosystems, the FIP refers explicitly to the commissioned working paper under PI2.5. The paper outlines the key areas of impact by purse seine fisheries, effectively as relate to all MSC P2 PISG. It describes in detail many PI2.4 matters (e.g., use of biodegradable FADs and mitigation of FAD beaching on coral reefs). The paper notes (p29) that testing whether FADs affect the behaviour and large-scale movements of tunas requires data that are not currently available. It considers what types of data and research would be needed to progress understanding but particularly management. It is notable that amongst any detailed considerations of science and management, the paper also recommends (p49) that "MSC Fishery Standard P2.4 Habitats and P2.4 Ecosystems need to be clarified for the context of tuna fisheries – Engage with the MSC to clarify better the MSC Fishery Standard and Guidance in relation to what type of fishery impacts need to be reviewed under the component of Habitats (P2.4) and the component of Ecosystem (P2.5) in the context of tuna fisheries."*

	2021	*A new analysis of the interaction of the purse seine tuna fishery in the Indian Ocean with the ecosystem as defined by the MSC standard for sustainable fisheries (Juan-Jordá, 2021). This study covers different topics, including:* *(i) A comprehensive review of MSC PI 2.5 (fishery impacts on the marine ecosystems),* *(j) A description of the key elements of marine ecosystems and the ecological impacts from purse seine fishing,* *(k) Examines scoring rationales for PI 2.5 of 13 MSC assessments of purse seine tuna fisheries.* *(l) Past and on-going research across the different oceans to provide evidence on the potential ecosystem impacts from purse seine fisheries on the structure and function of marine ecosystems* *(m) Assessment of whether there is adequate information on the impacts of the Echebastar fishery on individual key ecosystem elements to allow some of the main consequences to be inferred.* *In relation to topic (l- past and on-going research…), Juan-Jorda (2021) considers the following:* - *The ecological impacts of fishery removals of top predators via the alteration of trophic relationships on the structure and function of the marine ecosystem have been relatively well investigated and understood in the EPO and WPO, while the opposite is the case for the AO and IO.* - *The ecological impacts of fishery removals of species (either top predators or other species in the foodweb) via the truncation of size composition or via the alteration of diversity on the structure and function of marine ecosystem have not been investigated in detail and remain poorly understood in all the oceans, with few exceptions.* - *The effect of large scale climatic and oceanographic physical forcing, including climate change, on ecosystem productivity and the dynamics of tunas have been relatively well investigated and some aspects are well understood, yet it remains to connect this pool of knowledge with operational fisheries management.* - *The ecological impact of FAD use via selective fishing on the genetic, biology and ecology of the targeted tropical tunas has been increasingly studied, yet there remains major gaps in knowledge.* - *There has been considerable research (experimental tagging studies, and studies using fisher's echosounder buoy data) examining the effects of FADs (mostly presence of dFADs) on the behaviour, movement patterns of tunas and their consequences on the biology of the species (e.g., growth). More studies are required, however, to understand better the effects of increasing number of dFADs and FAD densities on the behaviour, movement patterns of tunas.* - *Comparatively the ecological impact of FAD use on the genetic, biology and ecology of the non-targeted tunas (e.g. sharks) remains poorly known, yet it is an expanding field of research.* *Based on the conclusions presented above the author advices SIOTI on different options to support basic ecosystem research to better understand and quantify the different ecological impacts of purse seune fisheries on the structure and function of marine ecosystems and inform the implementation of the Ecological Approach to Fisheries Management (EAFM).* *In relation to topic (m- assessment of whether there is adequate information on the impacts of the Echebastar fishery…), Juan -Jorda (2021) considers the following:* *"The report highlights how the lack of solid research and ecosystem modelling (trophic-based or size-based ecosystem models) for the Indian Ocean (IO) prevents detailed investigation of the impact of biomass removals of all fisheries combined (or the relative removals by Echebastar) on the ecosystem structure and function, and to assess if these effects are causing serious or irreversible harm in the marine ecosystem in the IO.* *Accordingly, informed understanding of the pelagic food web dynamics and the impact of fishing must be derived from the Pacific Ocean (PO) where most of the ecosystem modelling in the context of tuna fisheries has been carried out.* *The lack of specific ecosystem indicators and ecosystem models in the IO makes it difficult to simulate and infer the main consequences of the impacts of the Echebastar fishery on the ecosystem. This means there is no hard evidence that it is highly unlikely to disrupt the key elements of the ecosystem.* *Considerable research has been completed to understand how natural environmental variability and climate change affect the dynamics of top predatory species such as tunas in the IO. More research and ecosystem modelling are needed however to evaluate different environmental and climate scenarios, in combination with different fishing scenarios, and their effect on the dynamics of top predatory species. This would allow the main consequences of environmental changes and fishing on the ecosystem to be inferred.* *The report also highlights there have been an increasing number of experimental studies investigating the effects of dFADs on pelagic species behaviour and movement patterns in the PO and IO. There remains limited understanding on (i) the influence of dFADs on the residency of tunas and other non-tuna species, and (ii) how the increased number of dFADs may affect the school sizes of tunas and other species.* *Accordingly, there remain conflicting interpretations and results on the behavioural impacts of dFADs (and the different densities of dFADs) on tunas and related species and potential consequences on their biology. This lack of understanding makes it difficult to infer all the main consequences of the impact of dFAD use on tuna species, and even more so on non-tuna species such as sharks for which research is even more limited.* *In perspective, as the Echebastar fishery only accounts for a small proportion (about 12 %) of the dFADs deployed in the IO, it may be inferred that it is highly unlikely to disrupt the behaviour, movements patterns and condition of pelagic species to a point where there would be a serious irreversible hard. Yet there is no hard evidence of this".* *The study considers 3 potential ecosystem impacts (actually 4, but the ecological impact of fishing via the introduction of microplastic pollution in the food web was not considered for the assessment):*

- *The ecological impacts of fishery removals of top predators on the structure and function of the marine ecosystems*
- *The effect of natural environmental variability (including climate change) on ecosystem productivity and tuna dynamics.*
- *The ecological impacts of FAD use on the genetic, biology and ecology of species (tunas and non-tunas).*

The table below presents a summary of available information and research on ecosystem impacts (Juan-Jordá, 2021):

Type of ecosystem impacts relevant to tropical purse seine fisheries	Ecosystem impacts with relevant information and research	
	IO	Other equatorial oceans
Ecological impacts of fishery removals of top predators via the alteration of trophic relationships on the structure & function of the marine ecosystem	Not investigated in detail and poorly understood	**EPO & WPO**: Relatively well investigated and understood. **Atlantic**: Not investigated in detail and poorly understood
Ecological impacts of fishery removals of species (top predators / other species in the foodweb) via the truncation of size composition on the structure & function of marine ecosystem.		**North Pacific Ocean**: Some size-based ecosystem models have been developed and investigated in some detail. **EPO, WPO & Atlantic Ocean:** Not investigated in detail and poorly understood.
Ecological impacts of fishery removals of species (top predators/r other species in the foodweb) via the alteration of diversity on the structure and function of marine ecosystem.		**EPO & WPO**: Some aspects investigated. **Atlantic**: Not investigated in detail and poorly understood
Effect of large scale climatic and oceanographic physical forcing (natural environmental variability) on ecosystem productivity and tuna dynamics	Relatively well investigated with some aspects understood.	**WPO & EPO**: Relatively well investigated and understood.
Effects of climate change on ecosystem productivity & tuna dynamics		
Ecological impact of FAD use via selective fishing on the genetic, biology & ecology of tunas	• Some elements are well investigated and relatively well understood. • There has been considerable research (experimental tagging studies, and studies using fisher's echosounder buoy data) examining the effects of dFADs (mostly presence of dFADs) on the behaviour, movement patterns of tunas and their consequences on the biology of the species (e.g. growth). • More studies are required to understand better the effects of increasing number of dFADs and FAD densities on the behaviour, movement patterns of tunas.	
Ecological impact of FAD use via selective fishing on the genetic, biology & ecology of non-tunas	• Research (experimental tagging studies, and studies using fisher's echosounder buoy data) examining the effects of dFADs (mostly presence of dFADs) on the behaviour, movement patterns of non-tuna species, especially ETP species such as sharks, and their consequences on the biology of the species (e.g. growth)are relatively scarce. • More studies are required to understand better the effects of increasing number of dFADs and FAD densities on the behaviour, movement patterns of non-tuna species.	
Ecological impact of fishing via the introduction of microplastic pollution into the food web	Not assessed.	

Finally, Juan-Jordá (2021) also includes a shadow scoring for PI 2.5.1 and PI 2.5.3 for the Echebastar fishery, considering the 3 potential ecosystem impacts detailed above as scoring elements. Despite the study acknowledges information gaps in relation to research on ecosystem impacts (see paragraphs quoted above and table shown above), it also presents rationales on how Echebastar fishery could score 80 for PI 2.5.3 (and PI 2.5.1).

On the other hand, scores on PI 2.5 for the three overlapping purse seine tuna fisheries are very similar and they all have a condition set on PI2.5.3. However, when reviewing scoring rationales for the three purse seine overlapping fisheries (Echebastar, AGAC and CFTO) it comes clear that different key ecosystem elements were identified by the different teams. The CFTO fishery has just finished its assessment in June this year, while the PCDR for the AGAC fishery has also been published this June. A harmonization process on how to assess PI 2.5 should be triggered once AGAC finishes its process, since it is not considered advisable to restructure the evaluation of the PI 2.5 at this stage of the assessment process. This process shall take into consideration the study performed by Juan-Jordá (2021), including the 9 potential ecosystem impacts that may be considered under PI 2.5 and the four-step guideline to facilitate PI2.5 assessments of tuna purse seine fisheries.

Furthermore, Juan-Jordá (2021) also identifies five potential interactions and cross cutting issues between P2 Pis. Therefore, it could be advisable to engage with the MSC to clarify better the MSC Fishery Standard and Guidance in relation to what type of fishery impacts need to be reviewed under the component of Habitats (P2.4) and the component of Ecosystem (P2.5) in the context of tuna fisheries, as already recommended in Juan-Jordá (2019).

Status	Based on the work prepared by Juan-Jordá (2021) and also considering that Akroyd et al (2022) scored 80 for PI 2.5.3(b)&(c), the condition is found to be **ahead of target and CLOSED**, so PI 2.5.3 shall be re-scored (see re-scoring table in **section 5.2**)

Table 5.3.2.6. Progress on condition 6 -PI 3.1.2-

Performance Indicator	**3.1.2 – Consultation, roles and responsibilities**
Score	**75**
Justification	**Sib.- Consultation processes. 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.** Evidence (Welch & Kerrigan (2015), Standing (2016), stakeholder interviews – SFBOA, SFA, MAF & Blue Economy) indicates the limited input of local stakeholders in the Seychelles decision making process. Where local stakeholders have expressed views, it is not clear how these have been taken into account. At the site visit, It was reported that meetings between the Minister and stakeholders are not minuted. The lack of a mechanism to indicate if and how stakeholder information is used in the management system impacts transparency on how Seychelles fishery managers obtain and consider information and local knowledge.
Condition	By the fourth annual surveillance audit, the management system in the Seychelles includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.
Condition start	November 2018
Condition deadline	May 2023
Milestones	**Original milestones had November 2020 as Year 2, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, Year 2 has now been postponed to May 2022. The revised milestone dates are as follows:** **Year 1**. (November 2019). Echebastar will provide evidence to the audit team in the first annual surveillance audit that the options to improve the consultation process in the management of the Seychelles tuna fisheries have been discussed. Expected score = 75 **Year 2.** (May 2022). Echebastar will provide evidence to the audit team in the third annual surveillance audit that the consultation process for tuna management in the Seychelles has met regularly with stakeholders and a formal record of those meetings as made available to all stakeholders is provided to the team. Expected score = 75. **Year 3**. (May 2023). Echebastar will provide evidence to the audit team in the fourth annual surveillance audit that the management system for tuna management in the Seychelles has demonstrated consideration of the information received from the consultation process. Expected score = 80
Progress on Condition (Year 2: 2022)	Due to the timing extension given by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 2. As in previous audits, the representatives of the Ministry of Fisheries and Blue Economy and the SFA confirmed multi-stakeholder meetings are organized to address key issues (i.e., discussions on the quota allocation, preparation of the IOTC meetings, prior to submissions of proposals to the IOTC…). Besides, one to one meetings under request are organized with specific stakeholders. According to the information gathered, the Ministry circulates in advance the documents to be discussed, and no decisions are taken during the meetings. In case of disagreement, the Ministry analyses the situation and takes a decision, but there is no formal procedure for reporting decisions.

The Seychelles became the first country to submit its report to the Fisheries Transparency Initiative (FiTI) in 2021 and covering calendar year 2019 (FiTI, 2021a). The second annual report covering calendar year 2020 has already been published (FiTI, 2021b). The Seychelles' next FiTI report covering calendar year 2021 is due by the end of 2022. These reports are prepared by an ad-hoc multi-stakeholder group (the Seychelles National Multi-stakeholder Group).

The FiTI is a global multi-stakeholder partnership that defines for the information that national authorities must publish on the marine fisheries sector. By making fisheries management more transparent and inclusive, the FiTI promotes informed public debates on fisheries policies and supports the long-term contribution of the sector to national economies and the well-being of citizens and businesses that depend on a healthy marine environment. Thus, FiTI is a global partnership that seeks to increase transparency and participation for a more sustainable management of marine fisheries. The diversity of different stakeholders (ensuring equal participation from government, companies and civil society) is a central feature of how the FiTI works, for national implementations as well as international governance. The FiTI is a voluntary initiative; however, once a country has decided to participate, mandatory requirements must be followed.

The FiTI International Board has not validated Seychelles against the FiTI Standard yet. However, the FiTI International Board has tasked the FiTI International Secretariat to launch the validation process in accordance with the FiTI Standard (section D.1) for Seychelles; time frame: April 2020 until December 2021 [Decision ID: BM-14_2021_D-04]. It is currently expected that the validation will be completed by October 2022 (https://www.fiti.global/seychelles).

The latest FiTI report shows that Seychelles has already completed 11 out of the 34 recommendations set in the first report to improve transparency, while the implementation of another 7 is currently in progress. The report highlights that both the Ministry and the SFA have made significant progress in terms of increasing the public availability of information on Seychelles' fisheries sector (via government sites). A range of information which was either not published at all or only published in FiTI (2021a) is now publicly available such as:

- All laws, regulation, policy documents and management plans,
- The major international fisheries treaties to which Seychelles is a party
- A summary of fisheries tenure arrangements for each of Seychelles' fisheries
- All foreign fishing access agreements not containing confidentiality clauses
- All evaluations of fishing agreements undertaken over the past two years.
- A summary of the status of fish stocks in Seychelles and a schedule of future stock assessments up to year 2024
- A large-scale vessel registry and the names of licence holders for all categories
- Licence payment details for all large-scale fisheries vessels
- Updated data of 2019 recorded catches and fishing effort from the industrial longline fishery
- Catch and landing data from the sea cucumber and lobster fishery for the 2019/20 and 2020/21 seasons
- A list of vessels apprehended for IUU fishing in Seychelles' EEZ in 2020, along with the outcome of relevant court cases
- A list of ODA-funded projects relating to marine conservation being implemented by the Ministry of Agriculture, Climate Change and Environment in 2020, including information on any evaluations undertaken or planned.
- The total value of fuel and ice subsidies provided to the small-scale fisheries sector in 2020
- The fishing licence payments made by small-scale fishing vessels

The following list includes the information which is required by the FiTI standard that remains unpublished:

- The publication of two private foreign fishing access agreements, due to confidentiality provisions. These agreements are those allowing Chinese and Taiwanese industrial longliners to fish in Seychelles' waters.
- Incomplete catch, landing, transsphiment, discards and fishing effort data for the industrial longline for the year 2020.
- An official statement on whether an informal fisheries sector exists in Seychelles.
- Information on the provision of subsidies to Seychelles' large-scale fisheries sector, if any.
- An official summary description of national labour standard laws that apply to national and foreign workers employed in Seychelles' fisheries sector (both at sea and in the post-harvest sector

Most of the negative remarks on transparency are related to tuna fisheries are addressed to the industrial longline fishery. The only negative remark related to the industrial purse seine fishery is that data on fish discard is not disaggregated (as explained in section. As already explained in **section 4.2.3,** during the meeting held with SFA representatives they acknowledged this concern, but they also informed that they have noticed a significant improvement in data reporting of bycatch for the year 2021. For the purposes of the MSC audits, the catch composition is calculated based on the observer's data, so this negative remark was not considered relevant for scoring purposes.

Besides, the recently published Public Certification Report of the AGAC fishery (Akroyd et al 2022) scores 80 in this PI. The AGAC fishery is identical to Echebastar for the purpose of scoring this PI, since it is a fleet comprised by industrial purse seiners flagged by Spain and Seychelles.

Year 1 (2019)	*The Government of Seychelles has recently published the 'Seychelles Fisheries Sector Policy And Strategy 2019' (MFAg 2019a). This document states that: "The development of this Ploicy is a result of stakeholder consultations, literature review and internal departmental consultations. (…) The Policy was validated through a national stakeholder workshop which took plan on the 4th and 5th March 2019 and submitted to the Cabinet of Ministers for Government approval".* *"The participatory approach to management of fisheries" is among the different challenges identified by the Policy. This challenge is defined as follows: "Despite a growth in the number of fishery-related associations, there is a lack of collective bargaining, coordination and cohesion to effect change that will directly benefit fishers, improve sustainability and business growth".* *The overall goal of the Policy is: "To provide effective, efficient, transparent and accountable service delivery through a participatory approach to ensure long-term sustainable fisheries and aquaculture management and conservation so that the sector continues to play a key role in the sustainable development of the country and the socio-economic well-being of the Seychellois nation".* *Also, some of the objectives set are directly related to participatory and consultation processes:* *- Manage fisheries resources through ecosystem-based approaches and ensure that policies, legislations and infrastructure development are aligned towards achieving sustainability, taking into account climate change, international commitments and global developments;* *- Foster optimum utilisation of fisheries and aquaculture resources to ensure ecological and socioeconomic sustainability in resource-use and domestic developments, while recognising traditional norms;* *- Promote the principles of visibility, transparency, participation and inclusivity in decision-making processes which will enable the industry to develop to its full potential within a supportive regulatory framework* *This sector Policy is structured around 10 Policy objectives (PO), each of which is underpinned by more specific strategic actions and policy directives.* *Two of the defined elements of Policy 1 (Good governance and institutional strengthening) are:* *• Engage with formal and informal resource groups at the government and community level to foster stakeholder engagement in the policy making and implementation;* *• Consult with non-governmental organisations and the fishing industry on new management measures and developments and support the development of associations, cooperatives and federations;* *Three of the defined elements of Policy 2 (Sustainable management of fisheries and climate resilience) are:* *• Encourage fisheries sector stakeholders to better represent themselves and participate meaningfully in co-management through stronger associations, cooperatives and federation into an apex national organization;* *• Mainstream effective fisheries licensing and limited-entry within management plans in a progressive manner with close consultation and agreement of the relevant stakeholders;* *• Establish mechanisms that encourage fisheries statisticians, researchers, and managers to publicly engage with fishers and other stakeholders to explain their findings and advice.* *Arising from the strategy, Seychelles has prepared a 'Fisheries Comprehensive Plan' (MFAg, 2019b)* *One of the four guiding principles for the plan is:* *• A shared partnership approach that will create smart partnerships at all levels (national and organisational), where Government still provides policy leadership. This partnership should encompass individuals, groups, communities, civil society, the private sector, local and central Government, as part of an overall participatory approach;* *The Plan is a detailed presentation of many actions that are programmed to take place in order to meet the MFAg (2019a). However, the only specific reference to stakeholders is under 8. Fishery Association.* *• Encourage the establishment a national structure to increase unity and cooperation in the fisheries sector among the associations that will play an active role in advancing the interests of the industry at national and international level. The structure should also aim to preserve and promote the collective interests of the different associations in Seychelles.*

		Following conformation of the Plan the next step to be taken is the passing of a new Fisheries Law. The drafting is a work in process which (according to notes handed by the client) includes: *• 5l the interests of artisanal fishers shall be taken into account, including their participation in management of their respective fisheries;* *• 5n an understanding of and broad and accountable participation by stakeholders in the conservation, management, development and sustainable use of fisheries resources shall be promoted to the extent practicable, including the principles of visibility, transparency, participation and inclusivity in the decision-making process; and* *• 8 (2) The CEO may cause to be prepared Fisheries Management Plans at national or local levels for any fishery or fisheries within the scope of this Act, and shall do so for any fishery designated as a priority in accordance with subsection (1), and in doing so shall ensure that consultations with stakeholders are undertaken.* *The SFA representative interviewed during the site visit (see Appendix 7.2.1 for more details) confirmed that a new fisheries consultation body was set up in 2019 at the Seychelles: the National Fisheries Committee. This is a consultation body comprised by different sectors, such as finance, environment, blue economy, trade, fisheries, etc. The role of this committee is to provide guidance on fisheries policy matters.* *However, the team could not get any other details in relation to this multi-stakeholder advisory council (composition, activity/meetings, minutes…).* *The implementation of activities aimed to achieve the goals established at the Policy (MFAg, 2019a) and Plan (MFAg, 2019b) will be assessed in the following surveillance audits, including the activity of the newly created National Fisheries Committee.*
	2021	*It is expected that a National Tuna Management and Development Plan starts in July/August 2021 (see below progress on Condition 7). As confirmed by the SFA representative interviewed during the audit, this consultancy will involve stakeholder consultations, in accordance with the Seychelles Fisheries Sector Policy and Strategy 2019 and the Fisheries Comprehensive Plan.* *The representatives of the Ministry of Fisheries and Blue Economy and the SFA confirmed that for most of he important meeting (i.e. discussions on the quota allocation, preparation of the IOTC meetings…) the Ministry organizes multi-stakeholder meetings. As an example, the representative of the Ministry of Fisheries shared with the team the emails exchanged with part of the fishing industry (Spanish industrial purse seine owners) for preparing the Special Session of the IOTC held on March 8-11, 2021. The representative interviewed confirmed may different stakeholders are involved (.e.g canning factories, fishing sector…). According to the information shared during the interview, so far the Ministry had organized 2 meeting this year: one prior to the Special Session of the IOTC and another for the submission of proposals. Besides, one to one meetings under request are organized with specific stakeholders. According to the information shared, the Ministry circulates the documents to be discussed in advance, and no decisions are taken during the meetings. In case of disagreement, the Ministry analyses the situation and takes a decision, but there is no formal procedure for reporting decisions. The minutes of these meetings are not public.* *It is noticeable that in March 2021, the Seychelles has become the first country to submit its report to the Fisheries Transparency Initiative (FiTI). The FiTI is a global partnership that seeks to increase transparency and participation for a more sustainable management of marine fisheries. The diversity of different stakeholders (ensuring equal participation from government, companies and civil society) is a central feature of how the FiTI works, for national implementations as well as international governance. The FiTI is a voluntary initiative; however, once a country has decided to participate, mandatory requirements must be followed. The Seychelles first report to the FiTI is available online (click here to download it). The report was prepared by an ad-hoc multi-stakeholder group (the Seychelles National Multi-stakeholder Group, this groups was already mentioned in the previous surveillance report). The FiTI report highlights several opportunities for improvement (see section 4.1.3 for more details). The Seychelles National multi-stakeholder Group has determined 34 recommendations on how to further strengthen fisheries transparency in the country.* *The implementation of the recommendations includeed in the first FiTI report which are applicable to the certified fishery, together with the implementation of the activities aimed to achieve the goals established at the Seychelles Fisheries Sector Policy and Strategy 2019 and the Fisheries Comprehensive Plan will be assessed in the following surveillance audits, including the consultation process to be undertaken as part of the development of the National Tuna Management and Development Plan.*
Status	Based on the improvements showed by Seychelles in the FiTI report (and its imminent validation with the FiTI standard), the lack of negative comments related to the industrial purse seine tuna fishery, and also considering that score provided to the AGAC fleet in Akroyd et al (2022), **the condition is found to be ahead of target and CLOSED, so PI 3.1.2(b) shall be re-scored (see re-scoring table in section 5.2)**	

Table 5.3.2.7. Progress on condition 7 -PI 3.2.1-

Performance Indicator	**3.2.1 – Fishery-specific objectives**
Score	**75**
Justification	**SIa Objectives. 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** There are no explicit short and long-term objectives for the Seychelles skipjack tuna fishery.

Condition	By the fourth annual surveillance audit, 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.
Condition start	November 2018
Condition deadline	May 2023
Milestones	**Original milestones had November 2020 as Year 2, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, Year 2 has now been postponed to May 2022. The revised milestone dates are as follows:** **Year 1**. (November 2019). Echebastar will provide evidence to the audit team in the first annual surveillance audit that–there has been consideration on the process of the establishment of the potential of short and long-term objectives for the Seychelles skipjack tuna fishery in IOTC. Expected score = 75. **Year 2**. (May 2022). Echebastar will provide evidence to the audit team in the third annual surveillance audit on the progress of the establishment of explicit short and long-term objectives for the Seychelles skipjack tuna fishery within the management system for the national purse fishery for skipjack tuna. Expected outcome: 75 **Year 3.** (May 2023). Echebastar will provide evidence to the audit team in the fourth annual surveillance audit that short and long-term objectives have been defined and are explicit within the Seychelles management system for the skipjack fishery. Expected score = 80
Progress on Condition (Year 2: 2022)	Due to the timing extension given by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 2. The National Tuna management and development plan is being funded by the World Bank Third South West Indian Ocean fisheries governance and shared growth project (SWIOfish3). During the interviews held with the representatives of the Ministry of Fisheries of Seychelles and the SFA, it was confirmed the expression of interest has been finalised and the evaluation committee could not come to a general consensus. Therefore, the committee is planning to meet in Mid-July to discuss further. According to the Ministry representative, the process to develop the MP will start within 3 months, as soon as the right candidate is chosen, and the consultancy will last for 15 months. However, it was confirmed that this MP will be focused on the semi-industrial longline fleet, which is a 100% local fishery, since they want to develop its short range domestic fresh tuna fishery but currently it is not subject to a proper plan. Hence, the objective of the National Tuna management and development plan is to address this and come up with strategy and a possible transition plan. On the other hand, they consider that the regulatory framework for the industrial purse seine fishery is already developed by the IOTC. Despite the development of the National Tuna Management and Development Plan is still a work in progress, the team decided to re-score this PI based on the rationale and score published in the Public Certification Report of the AGAC fishery published in July 2022 (Akroyd et al 2022). The AGAC fishery is identical to Echebastar for the purpose of scoring this PI, since it is a fleet comprised by industrial purse seiners flagged by Spain and Seychelles. The AGAC fleet has also adopted the same code of good practices on board, and it is certified against the UNE195006. The basis used in Akroyd et al (2022) for scoring 80 in the PI 3.2.1(a) is that IOTC CMMs applicable to the industrial purse seine tuna fishery are the core regulatory framework for this fishery, and that this regulatory framework is sufficient to score 90. This was also the case for the CFTO fishery. These scores are based on the applicable IOTC regulatory framework, and they do not include considerations about the private agreements signed by Seychelles. The team agrees with the approach, in particular when all agreements

	applicable to the Echebastar fishery are signed among IOTC CPCs. Thus, the PI was re-scored based on the rationale in Akroyd et al (2022).	
	Year 1 (2019)	*The Government of Seychelles recently published the 'Seychelles Fisheries Sector Policy And Strategy 2019' (MFAg 2019). The Policy defines a number of objectives including:* • *Manage fisheries resources through ecosystem-based approaches and ensure that policies, legislations and infrastructure development are aligned towards achieving sustainability, taking into account climate change, international commitments and global developments;* • *Foster optimum utilisation of fisheries and aquaculture resources to ensure ecological and socioeconomic sustainability in resource-use and domestic developments, while recognising traditional norms;* *Policy 1: Good governance and institutional strengthening includes:* • *Promote fisheries management and aquaculture development based on the Ecosystems Approach to Fisheries, the Ecosystems Approach to Aquaculture, the FAO Code of Conduct on Responsible Fishing, the FAO voluntary instrument for Securing Sustainable Small-Scale Fisheries and the guidelines laid down therein, as well as the FAO Technical Guidelines for Aquaculture Development, as well as the relevant provisions of the SADC/IOC Protocol on Fisheries;* • *Promote and support the adoption of global BMPs so that the industry is ecologically sustainable and becomes internationally competitive;* *Policy 2: Sustainable management of fisheries and climate resilience includes* • *Manage all fisheries subsectors with a view to incorporate eco-labelling and certification so as to ensure stock sustainability and subsector economic viability;* • *Consider national and international climate-change research findings within resource assessments and incorporate appropriate adaptation measures within fisheries and aquaculture regulation to increase resilience to climate change;* • *Undertake an assessment of the vulnerability of the fisheries sector to climate change and adaptation measures that may be possible;* • *Encourage the development of a select set of long-term indicators that would monitor the climate change impacts within the fisheries sector;* *Policy 6: Seychellois stake holding in the industrial fisheries sector includes:* *The industrial fisheries sector is to be developed in a gradual, cooperative and collaborative manner to increase local partnership for the increasing good of all Seychellois, and partners. Opportunities throughout the industrial fishing sector value-chain shall be equitably accessed and provisions made to encourage more local participation and greater local stake holding. The Government will promote an enabling environment to increase stake holding and pave the way for interventions that will achieve fully inclusive Seychellois participation. To address Seychellois stake holding in the sector, the Government will undertake the following strategies:* • *Prioritize the issue of tuna industrial fishing licences to those operations incorporating joint venture approaches;* • *Evaluate the possibility to allocate industrial fisheries rights to Seychellois nationals in a bid to promote resource ownership and participation in the industry;* • *Fix minimum levels of local participation for different segments of the fisheries value-chain;* • *Establish funding sources to support local entrepreneurs within the industrial sector;* • *Review the responsibilities of Seychelles-flagged vessels and encourage flagging with greater national benefits;* • *Encourage shore-based facilities by Seychellois;* • *Establish an appropriate legal framework for joint venture partnership with local companies;* • *Undertake a review of the access of foreign fishing vessels to Seychelles waters in collaboration with operating partners so as to increase both the national and operating partners' benefits;* *All the Policy goals reflected above can be considered either for PI3.1.1 or, some of them, as long-term objectives for PI3.2.1. However, the Fisheries Act (2014) introduces the concept of Fishery Management Plans (FMP), and there is no FMP for the tropical tunas fisheries in the Seychelles. According to the client, the SFA is committed to the preparation of an FMP for the tuna fishery, and recent progress on developing new Policies (MFAg 2019a) and Plans (MFAg 2019b) shows a proactive attitude on behalf the MFAg.*
	2021	*The National Tuna management and development plan is being funded by the World Bank Third South West Indian Ocean fisheries governance and shared growth project (SWIOfish3). During the interview held with the SFA representative, it was confirmed the SFA is currently finalizing the Termes of Reference for this Consultancy which is expected to be ready by end of June. The planned start date for this consultancy is July/August 2021. This is a long term consultancy which will involve extensive stakeholders consultations, and given the situation regarding the pandemic, this may be a problem.* *As a coastal state, Seychelles provides licenses to foreign fleets to access its EEZ, as well as having a national registered industrial fleet. In parallel, Seychelles is also developing a short range domestic fresh tuna fishery. However, all these actions are not subject to a proper plan, hence the objective of the National Tuna management and development plan is to address this and come up with strategy and a possible transition plan.* *The closing date for the SWIOfish3 is June 30, 2023. This date is consistent with the new condition deadline: May 2023.*
Status	Based on the information presented above, and considering that Akroyd et al (2022) scored 80 for PI 3.2.1, the condition is found to be **ahead of target and CLOSED**, so PI 3.2.1 shall be re-scored (see re-scoring table in **section 5.2**)	

Table 5.3.2.8. Progress on condition 8 -PI 3.2.2- (CLOSED AT 2SA)

This condition was closed at the second surveillance audit held in 2022. See Kirchner and Rios 2021 for more details.

Table 5.3.2.9. Progress on condition 9 -PI 1.2.1-

Performance Indicator	**PI 1.2.1 Harvest strategy**
Score	**70**
Justification	See re-scoring table for PI 1.2.1 on section 5.4 (table 5.4.1) in 1st surveillance report.
Condition	By the 2nd year of the Re-certification cycle (anticipated to be in May 2026), the client must demonstrate that the harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80 (i.e., it is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY).
Condition start	February 2020
Condition deadline	May 2026 (due to the 6-month MSC Derogation due the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, the deadline was postponed from November 2023 to May 2026).
Milestones	**Original milestones had February 2021 as Year 1, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, Year 1 has now been postponed to August 2022. The revised milestone dates are as follows**: Year 1 (2022). By the 3rd surveillance audit, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on ensuring adoption of appropriate measures consistent with scientific advice and responsive to the state of the stock such that management objectives reflected at PI1.1.1 are met. Expected score 75. Year 2 (2023). By the 4th surveillance audit, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on ensuring adoption of appropriate measures consistent with scientific advice and responsive to the state of the stock such that management objectives reflected at PI1.1.1 are met. Expected score 75. Year 3 (2023/2024). During the Re-assessment, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on ensuring adoption of appropriate measures consistent with scientific advice and responsive to the state of the stock such that management objectives reflected at PI1.1.1 are met. Expected score 75. Year 4 (2025): By the 1st year of Re-certification cycle, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on ensuring adoption of appropriate measures consistent with scientific advice and responsive to the state of the stock such that management objectives reflected at PI1.1.1 are met. Expected score 75. Year 5 (2026): By the 2nd year of Re-certification cycle, Echebastar must provide evidence that the harvest strategy for skipjack tuna in the Indian ocean 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. Evidence will relate to stock status and PI 1.1.1 requirements and to IOTC decision-making in response to advice. Expected score 80.
Progress on Condition (Year 1: 2022)	Due to the timing extension given by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 1. During the site visit the client presented his activities carried out in close collaboration with SIOTI. Review of the SIOTI action plan highlights the activities and progress (Table 1).

Table 1 – SIOTI Action Plan: PI 1.2.1

<table>
<tr><th>Standard requirement</th><th>Actions</th><th>Timescale / milestones</th><th>Progress / outcome</th></tr>
<tr><td>3. 1.2.1 Harvest strategy
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. IPG 2

Action lead:
IOTC
Action partners:
PMT, FIP industry partners FIP country partners, ISSF
Stakeholders:
Other coastal / Flag states</td><td>Action 3a: Design of an explicit harvest control strategy for YFT, BET and SKJ.
Action 3b. Formal evaluation procedure for harvest strategies put in place.</td><td>Y5: Harvest control strategies evaluated to assess evidence that they are achieving their objectives.

<table><tr><th>Y</th><th>Activity</th><th>Status</th></tr><tr><td>1</td><td>2a</td><td>Ongoing</td></tr><tr><td>1</td><td>2b</td><td>Ongoing</td></tr><tr><td>1</td><td>2c</td><td>Completed</td></tr><tr><td>1</td><td>2d</td><td>Completed</td></tr><tr><td>1</td><td>2e</td><td>Completed</td></tr><tr><td>1</td><td>2f</td><td>Completed</td></tr><tr><td>1</td><td>2g</td><td>Completed</td></tr><tr><td>1</td><td>2h</td><td>Completed</td></tr><tr><td>2</td><td>2i</td><td>Completed</td></tr><tr><td>3</td><td>2j</td><td>Completed</td></tr><tr><td>4</td><td>2k</td><td>Ongoing</td></tr></table>
YFT: Behind schedule (Y5 ≥80, <60)
BET: On schedule (Y5 60-79, 60-79)

SKJ: Behind schedule (Y5 ≥80, 60-79) Harmonised with Echebastar (70 after rescoring)</td><td>- Progress made
o YFT: In 2021, the IOTC working parties on methods (IOTC-2021-WPM12-R) and tropical tunas (IOTC-2021-WPTT23-R) noted that delays in completing the management procedure for YFT had been encountered due to uncertainties over the stock assessment model, which underpins the operating model. The Scientific Committee (SC), held in December 2021 (IOTC–SC24 2021), recognised improved confidence in the YFT stock assessment model. This should accelerate progress on the harvest strategy, noting that Resolution 21/01 'On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence' tasked the SC and working parties to prioritise the completion of the management procedure for yellowfin (IOTC Circular 2021-31).
o SKJ: The IOTC Commission did not receive CMM proposals concerning management procedures at their 2021 session, though a revised harvest control rule for skipjack was adopted (IOTC-2021-S25-R). it is noted that Echebaster and CFTO have agreed to score this at 70 for SKJ, with a condition (Echebaster C9) to reach SG 80 by May 2026.
o BET: Following Resolution 16/09 establishing a Technical Committee on Management Procedures, IOTC adopted CMM 22/03 On a Management Procedure for bigeye tuna in the IOTC area of competence at its 26th Session in May 2022. IOTC Circular 2022-35 2022
o All species: Following significant delays in 2020 caused by the pandemic, progress is again being made on developing management procedures for skipjack and bigeye, with the latter MSE process more advanced (IOTC-2021-WPM12-R).
o As reported in the year 4 annual update, SIOTI are planning to commission work on examine the potential and mechanisms for multispecies catch limits to be included in harvest strategy development for Indian Ocean tropical tunas. This work will be through collaboration with AZTI, who in 2021 were leading research on multispecies catch limits for tropical tunas in the Atlantic and will now examine if similar approaches can be adopted for the Indian Ocean. Work due to begin early in 2022. Service agreement with AZTI in preparation.
o The work on multispecies catch limits with AZTI started in February 2022. The first draft of the technical report was submitted to the PMT and a paper prepared for the next meeting of the IOTC WPM.
o At the request of Echebastar, SIOTI also commissioned work with Fishtech (Diffey, S., Sauer & I. Payne) to examine the potential for a range of harvest control tools informed by socio-economic importance of the fishery for coastal states. This draft report was not available at the time of benchmarking (April 2022).</td></tr>
<tr><td></td><td></td><td></td><td>- Status
o YFT: YFT HS is behind schedule due to ongoing technical matters that remain to be solved.
o BET: A Management Procedure for bigeye tuna in the IOTC area of competence was adopted by the Commission at its 26th Session which was held in Seychelles from 16 to 20 May 2022 (see 1.2.2 next).
o SKJ: Harmonised with Echebaster at 70.
- Relevant documentation
o IOTC Circular 2022-35. 2022 Resolution 22/03 On a Management Procedure for bigeye tuna in the IOTC area of competence. Pp 17-20
o IOTC–WPTT23 2021. Report of the 23rd Session of the IOTC Working Party on Tropical Tunas. Online, 25 – 30 October 2021. IOTC–2021–WPTT23–R[E]: 59 pp.
o IOTC–WPM12 2021. Report of the 12th Session of the IOTC Working Party on Methods. Online 18-20 October 2021. IOTC–2021–WPM12–R[E]: 39 pp.
o IOTC–SC24 2021. Report of the 24th Session of the IOTC Scientific Committee. Online, 6 – 11 December 2021. IOTC–2021–SC24–R[E]: 226 pp.
o IOTC 2021. Report of the 25th Session of the Indian Ocean Tuna Commission. Held by videoconference 7–11 June 2021. IOTC–2021–S25–R[E]: 92pp.
o Crespo, J.P. (2020). Three year Audit of SIOTI. Report to FisheryProgress. 51 pp.</td></tr>
<tr><td>3. 1.2.1 Harvest strategy
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</td><td>a. Design of an explicit harvest control strategy for YFT, BET and SKJ.
b. Formal evaluation procedure for harvest strategies put in place.</td><td>Y6: Status update (May 2023)
Provide evidence that, independently or jointly with industry groups, SIOTI has worked with relevant management authorities to press for IOTC action on ensuring adoption of appropriate measures consistent with scientific advice and responsive to the state of the stock such that management objectives reflected at PI1.1.1 are met.
YFT: Target (Y6 60-79 actual)
BET: Target (Y6 60-79 actual)
SKJ: Target (Y6 60-79 actual) Harmonised with Echebastar (75 by March 2023), condition 9 timeline May 2026</td><td>To be provided in May 2023

1. Support AZTI with Indian Ocean focus on multi-species work. Maybe continue beyond Y6 and into the new FIP. Costing – similar to EUR 40K (over 2 semesters) as an assumption.

2. Support ISSF and others on harvest strategy development within the region. Costing – EUR 15K.

3. Support the Seychelles' development of a national tuna management strategy and how this is coherent with IOTC HS and HCRs. No budget from SIOTI.

4. Support other related country tuna HS / HCR development and implementation e.g. Mauritius. May also extend beyond Y6 into new FIP. In kind support.</td></tr>
</table>

SIOTI commissioned a consultancy on "Harvest Control Rules for the Indian Ocean Skipjack Fishery" in 2020 (Merino et al., 2020). During 2022, Echebastar continued collaborating with SIOTI and a study related to management strategy evaluation was implemented by Gorka Merino of AZTI. This led to the draft report on April 30 "Study on Options for Integrating Multispecies Catch Limits in Harvest Strategies for Indian Ocean Tropical Tunas" (Merino et al., 2022). Both studies have been developed also in the framework of IOTC Working Party on Tropical Tunas (WPTT)

The IOTC-WPTT web page (WPTT; https://iotc.org/science/wp/working-party-tropical-tunas-wptt) provides the evidence of the range of activities of this WP of relevance to this condition. Thus, it may be concluded implicitly that Echebastar is working with IOTC in cooperation with its SIOTI partners.

Morevoer, Fishtech Management Consultants prepared a "A REVIEW OF THE OPTIONS FOR HARVEST CONTROL TOOLS FOR INDIAN OCEAN TUNA FISHERIES AND RECOMMENDATIONS FOR CONSIDERATION BY SIOTI" (Sauer, W. and Bova, C. 2022.).

	Echebastar has participated in all SIOTI meetings where this issue has been discussed and contributed to the definition of the 2022/23 SIOTI work plan. Echebastar consultants also observed IOTC Commission meetings and the special session.	
	2021	*As a result of the audit the team got evidence that the client has implemented the following actions:* *1. Echebastar participated in the IOTC meetings of November and February specifically to deal with the harvest strategy for tunas.* *2. In preparing for SS4 Echebastar presented its point of view to SIOTI in an effort to get a common position between the producer and processor members but it did not prove possible to achieve a consensus.* *3. In addition, Echebastar has been in regular contact with the Maldives and IPNLF.* *4. Through ANABAC, contact has been made with the Government of Spain and the EU. 5. Worked with SIOTI in developing two parts of its 2021 work plan.* *5. Prepared draft ToR for consideration by SIOTI (AZTI-SIOTI, 2020): Harvest Control Rules for the Indian Ocean Skipjack Fishery with subsequent report (.com/wp-content/uploads/2021/05/Final-ReportIO_SKJ_HCR.pdf) Current score for this PISG was awarded at the previous surveillance audit on the basis of recent catches exceeding the catch limit generated by the HCR, but the latest information on stock status shows that whilst overcatch is still an issue that should be addressed, it is now better reflected in the scoring of PI 1.2.2 Sic and PI 3.2.2 Sib. The assessment team believes that existing information presented in IOCT (2020) and Fu (2020), together with the latest actions at IOTC level (e.g. activity developed by the TCAC during 2020 and 2021, new Res 21/03…see progress on Condition 10 for more details) indicates that it is appropriate to consider that PISG80 of PI 1.2.1 is met. This would be on the basis that currently the stock is on target; SSB2019 was estimated to be of 1.13 SSBTGT (0.98– 1.28). The stock is not overfished and overfishing is not taking place. This assessment includes catch data covering the period 1950-2019, meaning that recent overages occurred in 2018 and 2019 were considered. Over the history of the fishery, biomass has been well above and the fishing mortality has been well below the established limit reference points. Based on the results of the stock assessment of skipjack tuna in 2017, the Commission, following Resolution 16/02, adopted an annual catch limit of 470,029 tonnes for the years 2018 to 2020. The harvest strategy, as in monitoring (IOTC, 2015b), stock assessment (IOTC,2020) and a HCR (Res 16/02, to be superseded by Res 21/03), as well as management measures, as in a TAC (Res 16/02), are in place and it was mathematically tested that this strategy would be responsive to the state of the stock indicating that the elements of the harvest strategy actually work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.* *However, this score must agree with scores provided by the overlapping fisheries, and recent conversations with the Maldives team (performing their surveillance audit while this report is being prepared) confirmed that they disagree on considering that this score can be upgraded to 80. This was also decision the decision adopted by the CFTO team, as a result the lowest score was maintained by all teams and the condition remains open.*
Progress status	Based on the activities carried out by the client in close collaboration with SIOTI, the condition is found to be **ON target**	

Table 5.3.2.10. Progress on condition 10 -PI 1.2.2-

Performance Indicator	**PI 1.2.2. Harvest control rules and tools**
Score	**75**

Justification	See re-scoring table for PI 1.2.2 on section 5.4 (table 5.4.2) in 1st surveillance report
Condition	By the 2nd year of the Re-certification cycle (anticipated to be in May 2026), the client must demonstrate that available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.
Condition start	February 2020
Condition deadline	May 2026 (due to the 6-month MSC Derogation due the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, the deadline was postponed from November 2023 to May 2026).
Milestones	**Original milestones had February 2021 as Year 1, however, after applying the 6-month MSC Derogation due to the pandemic and the 1-year MSC Derogation 6 on Covid-19 Fishery Conditions Extension, Year 1 has now been postponed to August 2022. The revised milestone dates are as follows**: Year 1 (2022). By the 3rd surveillance audit, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on implementing measures that are effective in ensuring catch limits for skipjack tuna set using the HCR adopted in IOTC Res16/02 (or any successor) are not exceeded. Expected score 70. Year 2 (2023). By the 4th surveillance audit, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on implementing measures that are effective in ensuring catch limits for skipjack tuna set using the HCR adopted in IOTC Res16/02 (or any successor) are not exceeded. Expected score 70. Year 3 (2023/2024). During the Re-assessment, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on implementing measures that are effective in ensuring catch limits for skipjack tuna set using the HCR adopted in IOTC Res16/02 (or any successor) are not exceeded. Expected score 70. Year 4 (2025): By the 1st year of Re-certification cycle, Echebastar must provide evidence that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on implementing measures that are effective in ensuring catch limits for skipjack tuna set using the HCR adopted in IOTC Res16/02 (or any successor) are not exceeded. Expected score 70. Year 5 (2026): By the 2nd year of Re-certification cycle, Echebastar must provide evidence that available evidence indicates that the tools in use to ensure catch limits for skipjack tuna set using the HCR are appropriate and effective in achieving the exploitation levels required under the HCR set in IOTC Res 16/02 (or any successor). Expected score 80.
Progress on Condition (Year 1: 2022)	Due to the timing extension given by the derogations issued by the MSC due to the pandemic, the progress of the conditions is evaluated this year against the same milestone that was already evaluated in the previous surveillance audit carried out in May 2021. In this case the progress is assessed against the milestone for year 1. During the site visit the client presented his activities carried out in close collaboration with SIOTI. Review of the SIOTI action plan highlights the activities and progress (Table 2).

Table 2 - SIOTI Action Plan: PI 1.2.2

4. 1.2.2 Harvest control rules and tools There are well defined and effective harvest control rules (HCRs) in place. By Year 5 harvest control rules for all three target species fisheries are in place and evidence suggests that they are effective in reducing exploitation levels where necessary. ***IPG 3*** ***Action lead:*** *IOTC* ***Action partners:*** *PMT* ***Stakeholders:***	**Action 4a**: Design and implementation of well-defined and explicit harvest control rules for YFT, BET and SKJ according to the harvest control strategies developed in IPG 2 to ensure that the exploitation rates are reduced as limit reference points are approached and that the stock fluctuates around a target level consistent with (or above) MSY. **Action 4b**: HCRs are determined to be robust to main uncertainties. **Action 4c**: HCR tools are determined to be effective in achieving the exploitation levels under the HCRs.	**Y5**: Formal evidence is provided to demonstrate the HCR tools are appropriate and effective in reducing exploitation levels where necessary. Y / Activity / Status 1 / 3a / Completed 1 / 3b / Completed 1 / 3c / Completed 2 / 3d / Completed 3 / 3e / Completed 4 / 3f / Ongoing 5 / None **YFT: Behind schedule (Y5 60-79, <60)** **BET: Behind schedule (Y5 60-79, <60)** **SKJ: On schedule (Y5 60-79, 60-79) Harmonised with Echebastar**	**(Y7 ≥80, actual tbc)** - **Progress made** o SIOTI submitted a position paper to the 24th session of the Commission in November 2020 that stressed the urgency of progressing with harvest control rule development for YFT and BET and the need for improvement to the HCR and HS for SKJ (**IOTC-2020-S24-INF09**) o **YFT & BET:** Harvest control rules are yet to be adopted for bigeye and yellowfin. While the latter is subject to a rebuilding strategy, as amended by the Commission in 2021 (**IOTC-Res 21/01**), the former is subject to overfishing but lacks specific management control. o **SKJ:** Catches of skipjack have declined in recent years from a peak in 2018. However, catches in 2020 still exceeded the catch limit set by the HCR. The limit for 2021-2023 has increased due to higher stock productivity. The 25th Session of IOTC adopted a revised skipjack HCR, which strengthens the management response if catches exceed those specified by the catch limit and if the stock falls below the threshold level (**IOTC Circular 2021-31**). However, these harvest rules have yet to be demonstrated to be effective in reducing fishing effort and mortality. o Related work on multispecies catch limits ongoing with AZTI will allow for examination of current and alternative HCRs - **Status** o **YFT**: There is no evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation (Crespo, 2020). o **BET**: Two candidate management Procedures have been proposed to IOTC for consideration (**Hillary *et al*, 2022**) following adoption of Resolutions 12/01, 15/10 and 16/09, to develop a robust Management Procedure to guide management advice, as proposed by Australia (**IOTC-2022-S26-PropG[E]**). **As q consequence**, a recent Resolution 22/03 on a management procedure for bigeye tuna in the IOTC area of competence (May 2022) provides the basis for setting and allocating TACs from 2024, as well as their subsequent review. o **SKJ**: The catches of skipjack tuna continue tobe higher than the agreed harvest control rule. There is not available evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs. Therefore, 1.2.2c would fail at the SG80. - **Relevant documentation** o **Hillary R., A. Preece, A. Williams & P. Jumppanen P (2022)** Bigeye Tuna Management Procedure for adoption. IOTC-2022-TCMP05-## o **IOTC-2022-S26-PropG[E]** on a Management Procedure for Bigeye Tuna in the IOTC Area of Competence. Submitted by: Australia o **IOTC Circular 2021-31.** Conservation and Management Measures adopted by the IOTC at its 25th Session. Issued 21 June 2021. o **IOTC-2020-S24-INF09. SIOTI Position Paper for the 24th Session of the Commission.**
4. 1.2.2 Harvest control rules and tools There are well defined and effective harvest control rules (HCRs) in place. Harvest control rules for all three target species fisheries are in place and evidence suggests that they are effective in reducing exploitation levels where necessary.	Demonstrate that the harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80 (i.e., it is highly likely that the stock is above the PRI and is at or fluctuating around a level consistent with MSY).	**Y6: Status update (May 2023)** Provide evidence that, independently or jointly with industry groups, SIOTI has worked with relevant management authorities to press for IOTC action on implementing measures that are effective in ensuring catch limits for YFT / BET / SKJ adopted by IOTC are not exceeded. **YFT: Target (Y6 60-79 actual)** **BET: Target (Y6 60-79 actual)** **SKJ: Target (Y6 60-79 actual) Harmonised with Echebastar (70 by March 2023), Condition 10 timeline May 2026**	**To be provided in May 2023** 1. Continue to support Management Procedure development and embedding into CMMs for all three species. No cost implications to SIOTI 2. **SKJ HCR refinement.** Could be developed on the basis of the Fishtech report (options for management options / harvest control rules based on socio-economic contribution and their impacts at country level) in June 2022 e.g. quota allocation. Could be a Position Paper (need to find suitable forum for presentation). May look at longer-terms needs into FIP. To be costed in detail if any recommendations are to be supported. May be expensive, so maybe need to allocated EUR 40K – 50K for more than one country.

SIOTI commissioned a consultancy on management strategy evaluation by Fishtech Management Consultants. This led to the final report in June “A Review of The Options For Harvest Control Tools for Indian Ocean Tuna Fisheries and Recommendations for Consideration by SIOTI” (Merino et al., 2022), that was presented in IOTC framework.
Therefore, this is an evidence that Echebastar has worked with relevant management authorities to press for IOTC action on implementing measures that are effective in ensuring that HCRs for skipjack tuna are working.

2021	*As a result of the audit the team got evidence that the client has implemented the following actions:* *1. Echebastar participated in the IOTC meetings of November and February specifically to deal with the harvest strategy for tunas.* *2. In preparing for SS4 Echebastar presented its point of view to SIOTI in an effort to get a common position between the producer and processor members but it did not prove possible to achieve a consensus.* *3. In addition, Echebastar has been in regular contact with the Maldives and IPNLF.* *4. Through ANABAC, contact has been made with the Government of Spain and the EU. 5. Worked with SIOTI in developing two parts of its 2021 work plan.* *5. Prepared draft ToR for consideration by SIOTI (AZTI-SIOTI, 2020): Harvest Control Rules for the Indian Ocean Skipjack Fishery with subsequent report (https://echebastar.com/wp-content/uploads/2021/05/Final-ReportIO_SKJ_HCR.pdf)*

		There is an increasing trend in catches above the catch limit generated by the Harvest Control Rule (470,029 t) over the past 4 years, therefore additional management measures should ideally be considered. At its 24th Session (2020), the Commission noted that total catches of skipjack in 2018 (607,701 t) were 30% higher than the catch limit generated by the Harvest Control Rule (470,029 t) and agreed that it should consider addressing deficiencies relating to the harvest control rule for skipjack tuna, in particular, paragraph 11 of Resolution 16/02, (IOTC, 2021a). IOTC has not as yet being able to manage the catches according to the HCR, however during a meeting held in June 2021 by the Technical Committee on Allocation Criteria, various aspects of quota allocation were discussed. In as such, members did support the on-going IOTC practice of factoring in past over-catch in establishing future catch limits and agreed that this concept of adjustment should be reflected in the allocation regime that is currently under discussion (IOTC, 2021b). *In addition, the IOTC recognizes the need to ensure that catch limits calculated applying the HCR are respected. A specific discussion on how to allocate the catch limits of the SKJ took place during 2020 and 2021 (EU and Maldives proposals can be consulted). During the latest Session of the Commission held in June this year (S25) a new CMM on the SKJ HCR was adopted (Res 21/03) (IOTC, 2021c) superseding Res 16/02. Res 21/03 acknowledges this need and opens the door to future specific CMMs tackling this matter, despite no specific pre-agreed measures were included. The assessment team understand that this does not merit a re-scoring on PI1.2.2(c), since no pre-agreed actions were agreed, but it can be argued as evidence that the harvest strategy is responsive.* *Also, resolution 21/01 on an interim plan for rebuilding the Indian ocean yellowfin tuna stock in the IOTC area of competence will also serve as a limiting measurement for the skipjack catches, as these species are often caught together (IOTC, 2021c).*
Progress status	Based on the activities carried out by the client in close collaboration with SIOTI, the condition is found to be **on target**	

Table 5.3.2.11. Progress on Condition 11 -PI 3.2.2-

Performance Indicator	**3.2.2 Decision-making processes** **Scoring issue b (SG80):** 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.
Score	**75**
Justification	*Extract:* An important example for the fishery has been the timely introduction of an annual catch limit for skipjack derived from the HCR (Res. 16/02) fixed according to the recommendation of the Scientific Committee (SC) and communicated to all CPC for the years 2018-2020. However, the catch limit set exceeded by 30% in 2018, and by 16% in 2019. In 2020, the new skipjack stock assessment found the stock biomass in a good state, and the Scientific Committee noted that “the recent catches that exceeded the (previously-set) limits established for the period 2018-2020, could have been sustained by favourable environmental conditions”. Therefore, the team considers the catch overages to be an important rather than a serious issue. However, the SC concluded that “the Commission needs to ensure that catches of skipjack tuna during this period (2021 – 2023) do not exceed the agreed limit” (IOTC, 2020). Until this is done, for example through the implementation of a CPC catch allocation key, the IOTC decision-making processes do not respond to this other important issue, SG80 is no met for IOTC
Condition	By the first annual surveillance audit following recertification (anticipated to be in 2026), the client fishery should demonstrate that at IOTC level, decision-making processes regarding

	skipjack stock management respond to important issues, specifically to skipjack catches in excess of the annual catch limit corresponding to the HCR, in a transparent, timely and adaptive manner. This could be done by implementing the harvest strategy set out in Resolution 16/02 and in Condition 1, or by some other means as appropriate.
Condition start	2021
Condition deadline	2026
Milestones	Years 1 – 4 (2022 – 2025): The client must provide evidence at that, independently or jointly with industry groups, it has worked with relevant management authorities to press for IOTC action on responding to the issue of total catches in excess of the agreed Catch Limit, by progressing with the harvest strategy (as per Conditions on PI1.2.1 and PI 1.2.2) or some other evidence (Score: 75). Year 5 (2026): The client fishery should provide evidence that regarding the skipjack stock management, IOTC decision-making processes have responded to the possibility of catches in excess of the set total annual catch by implementing the harvest strategy, or by some other suitable means. (Score: 80). Note: condition timeline harmonised with milestones for 1.2.1 and 1.2.2 conditions
Progress on condition (Year 1: 2022)	Since the previous surveillance audit, Echebastar has participated in all SIOTI meetings where the issue of how achieve an effective implementation of the SKJ catch limits has been discussed and contributed to the definition of the 2022/23 SIOTI work plan. Members of the ESWG (Jauregui and Scott) observed IOTC Commission meetings and the special session. During 2022 Echebastar continued collaborating with SIOTI and a study related to management strategy evaluation was implemented by Gorka Merino of AZTI. This led to the draft report on April 30 “Study on Options for Integrating Multispecies Catch Limits in Harvest Strategies for Indian Ocean Tropical Tunas” (Merino et al, 2022). Furthermore, SIOTI also commissioned a consultancy on management strategy evaluation by Fishtech Management Consultants. This led to the final report in June “A Review of The Options For Harvest Control Tools (HCTs) for Indian Ocean Tuna Fisheries and Recommendations for Consideration by SIOTI” (Sauer and Bova, 2022). This document reviews the existing HCTs and HCRs for tuna fisheries in the IOTC, and explores options for fisheries management in the region. The final chapter includes some recommendations for HCTs for the skipjack in the Indian Ocean. It shall also be noted that indirect effects of limiting yellowfin catches (Res. 19/01) may also help limit exploitation on skipjack, as the decreasing trend of the total SKJ catches since 2020 may indicate. Finally, the IOTC implemented a specific Work Plan on allocation of fishing opportunities and a Technical Committee (TCAC) keeps working on this issue (see: https://www.iotc.org/sites/default/files/documents/2014/02/IOTC-2013-TCAC02-PropAE.pdf).
Progress status	Based on the information presented above, the team found that the client has presented evidence that it has worked with relevant management authorities to press for IOTC action on responding to the issue of total catches in excess of the agreed Catch Limit. Thus, the progress on this condition was found to be **ON TARGET.**

5.3.3 New conditions

As a result of the current surveillance audit, one new condition is set:

Table 5.3.3.1. New condition 12 -PI 3.2.3-

Performance Indicator	**3.2.3. Compliance and enforcement - SI(d) Systematic Non-Compliance**
Score	*75*
Justification	As a result of the objection process to the AGAC fishery, a new condition on PI 3.2.3(d) was opened (Akroyd et al, 2022). The reason that motivates this new condition is the irregular use of AIS of the industrial tuna fleets in the Indian Ocean. In particular, as it relates to EU vessels and non-compliance with the EU Directive 2002/59/EC (as amended) and Council Regulation (EC) No 1224/2009. AIS is not considered to be a fishery-specific management tool, however it is normally integrated by the different national fishery monitoring centres in the MCS systems applicable to large vessels, primarily for safety purposes. Akroyd et al (2022) investigated this issue and found that the evidence indicates strongly that AIS is turned either 'off' or alternately is in fact operated in 'silent mode' or 'low power' mode, as is now understood to be the established practice. While the switching off, or use in a mode other than 'normal', of AIS in itself may be "systematic" and is capable of being justified under the exceptional circumstances of piracy in the western Indian Ocean, the reducing incidence of piracy in the region in very recent years may suggest that a similar increase in AIS reporting could be expected. However, Akroyd et al (2022) also note that since fishing vessels and merchant vessels have different risks in relation to pirates, and different patterns of protection relating to military escorts or warships with different deterrent impacts, this factor was assessed as neutral. They also noted that the individual experience of vessel captains (including those who have experienced piracy directly as well as the indirect impacts), the opportunistic nature of pirates, the reality that piracy has not ceased entirely and the ongoing use of security teams, further limits use of qualitative speculation. However, they also acknowledged that there are no contemporaneous records or evidence through vessel logbooks or other documented means to record the reason for the switching off or use of 'silent mode' resulting in the low rate of AIS reporting for AGAC vessels, and also that the evidence indicates strongly that there are clear and genuine concerns for a vessel and its crew's safety and security through the public display of AIS tracking information which are increased for fishing vessels, and particularly purse seiners (references included in Annex F in Akroyd et al, 2022). Following the decision of the Independent Adjudicator of the objection process, Akroyd et al (2022) concluded the following: *"It is considered that the lack of clear evidence recording the reason for switching AIS 'off' or to 'silent mode' or 'low power' mode is problematic. (…). Whilst understandable given the extent and real seriousness of the threat, and the guidance of security teams who remain on-board vessels and who have a particular responsibility for maintaining a vessel's security against pirates, together this may mean that the importance of weighing exceptional circumstances to justify turning AIS off or turning it to silent mode in each individual instance at the point in time and location in which that occurs requires to be appraised. This is required to be the focus of and decision of the skipper at each point to be compliant with Article 6a. In the absence of a record giving a clear reason for each occurrence of turning AIS 'off' or to a mode other than 'normal', clearly taken by the Captain cognisant of relevant factors, the degree to which these practices are 'systematic', and whether it constitutes 'systematic non-compliance' with EU and Seychelles requirements for fishing vessels, cannot be determined with confidence. In the absence of clear evidence recording the reason(s) for the decision(s) to either turn AIS off or to another mode, the Assessment Team is unable to determine that there is or is not systematic non-compliance with the requirements or AIS use complying with EU law and in particular Article 6a".*
Condition	By 2026, demonstrate that "There is no evidence of systematic non-compliance."

Condition start	2022
Condition deadline	*2026* *This condition was opened as a result of harmonisation activities with the overlapping AGAC IO fishery carried out in 2022 during the 3rd surveillance audit. Exceptional circumstances will apply to this condition as the milestones are aligned with those set for the AGAC IO-fishery (Akroyd et al, 2022), therefore the condition deadline is longer than the period of certification. The fishery will be facing the 4th surveillance audit and recertification by 2023, while the deadline for this condition is 2026.*
Milestones	**Year 1 (2023)**: (Interim score = 75) Provide evidence that vessels have maintained VMS coverage in a manner that is compliant with operational requirements. Also, the client is to present a plan that is designed to demonstrate Echebastar's vessel use of AIS is compliant with relevant operational requirements, including, where appropriate, by taking account of 'exceptional circumstances' for not maintaining an operational AIS. **Year 2 (2024)**: (Interim score = 75) Provide evidence that vessels have maintained VMS and AIS coverage in a manner that is compliant with relevant operational requirements. With regards to AIS use, this will include taking into account exceptional circumstances. The client to provide evidence that the plan to demonstrate Echebastar's vessel use of AIS is compliant with operational requirements is in place. **Year 3 (2025)**: (Interim score = 75) Provide evidence that vessels have maintained VMS and AIS coverage in a manner that is compliant with operational requirements. With regards to AIS use, this will include taking account of exceptional circumstances. The client to provide evidence that the plan to demonstrate Echebastar's vessel use of AIS is compliant with operational requirements is collecting data as required. **Year 4 (2026)**: (Expected score = 80) Provide evidence that there is no systematic non-compliance with respect to the Echebastar fleets use of VMS and AIS
Verification with other entities	*NA*
Carry over condition ☐	*NA*
Related condition ☐	*NA*

5.4 Client Action Plan

5.4.1 Client action for NEW condition 12 on PI 3.2.3

Below is presented the CAP submitted by the client:

Echebastar fully complies with the applicable regulations. Our vessels never turn off the AIS for commercial reasons. We disagree with the implicit view of the AGAC IA that any non-use of AIS may compromise the safety of the vessel and crew; it is concern for their safety and security that leads to the AIS being switched off. Vessel use of VMS is obligatory, and we will present evidence from monitoring agencies of Echebastar compliance. Regarding AIS we will review the current situation and develop and implement an approach that provides evidence on the reasons for any of our vessels switching off the AIS, and quarterly reporting will inform stakeholders on the use of AIS by each of our vessels.

MILESTONE	ACTION	ROLES AND RESPONSIBILTIES	OUTPUTS
Year 1 (2023): (Interim score = 75) Provide evidence that vessels have maintained VMS coverage in a manner that is compliant with operational requirements. Also, the client is to present a plan that is designed to demonstrate Echebastar vessel use of AIS is compliant with relevant operational requirements, including, where appropriate, by taking account of 'exceptional circumstances' for not maintaining an operational AIS	This condition relates to two issues; firstly the use of VMS and (ii) the use of AIS. The requirements for the use of VMS are precise and if for any reason the VMS on a vessel is not switched on the skipper will be immediately contacted by the on-shore monitoring agency and may be required to return to port. AIS is not required as a tool of fishery management and typically has been turned off when the vessel skipper perceives there is a risk of piracy placing the boat and it's crew is in danger from hijack. On that basis, - Echebastar will request formal certification on the operation of VMS on the 8 company vessels - Year 1 Echebastar will: (I) Prepare a detailed paper that examines the use of VMS and AIS on each of its vessels in recent years and identifies the sources of information and verification. (2) Define an approach to ensure that all occasions when the AIS is not in use are fully justified and supported by evidence. (3) Implement the approach (4) Provide transparency Echebastar data on the usage of AIS with a brief analysis of the reasons why the AIS may have been turned off will be	Echebastar ESWG Vessel captains VMS monitoring centres.	1. Official confirmation of Echebastar compliance with VMS requirements for presentation to the fourth annual surveillance audit and the recertification assessment. 2. At the fourth annual surveillance audit present the detailed paper and defined approach on the use of AIS and the extent that it has been implemented. 3. At recertification present evidence that use of AIS by each of the 8 Echebastar vessels is fully documented.

	available to stakeholders on request.		
Year 2 (2024): (Interim score = 75) Provide evidence that vessels have maintained VMS and AIS coverage in a manner that is compliant with relevant operational requirements. With regards to AIS use, this will include taking into account exceptional circumstances. The client to provide evidence that the plan to demonstrate Echebastar vessel use of AIS is compliant with operational requirements is in place.	The approach as described will be maintained should the condition not have been previously closed.	As above	As above
Year 3 (2025): (Interim score = 75) Provide evidence that vessels have maintained VMS and AIS coverage in a manner that is compliant with operational requirements. With regards to AIS use, this will include taking account of exceptional circumstances. The client to provide evidence that the plan to demonstrate Echebastar vessel use of AIS is compliant with operational requirements is collecting data as required.	The approach as described will be maintained should the condition not have been previously closed.	As above	As above
Year 4 (2026): (Expected score = 80) Provide evidence that there is no systematic non-compliance with respect to the Echebastar fleets use of VMS and AIS	The approach as described will be maintained should the condition not have been previously closed.	As above	As above

6 Appendices

6.1 Evaluation processes and techniques

6.1.1 Site visits

The third annual surveillance audit for the first period of certification was conducted on-site at the Echebastar headquarters in Bermeo (Spain) between June 27-29, 2022.

Both members of the assessment team participated in all meetings listed in **Table 6.1.1.1**. In the case of Giuseppe Scarcella, he participated remotely due to personal circumstances that prevented him from travelling. In the case of the Seychelles authorities video calls were organised. All meetings were held according to schedule, but the one with Nicol Elizabeth (CEO of the SFA), which initially was scheduled for June 29, but that due to scheduling problems was postponed to day July 1. Thus, the 1st of July is considered as the last day of the site visit.

Table 6.1.1.1. Details of the meetings held during the remote visit for the 2SA of the Echebastar fishery

Date	Venue	Time (CEST)	Company/ Institution	Attendees
Monday 27	Echebastar HQ	15:30-17:45	Echebastar	Jose Luis Jauregui, Marga Andrés, Ane Iriondo, Ian Scott, Pablo Gonzalez -Echebastar MSC WG-
Tuesday 28	Video call	9:00-9:45	Ministry of Fisheries and Blue Economy	Phillippe Michaud (consultant to the Ministry and FiTI National lead)
	Echebastar HQ	10:00-13:00 15:00-17:00	Echebastar HQ	Jose Luis Jauregui, Marga Andrés, Ane Iriondo, Ian Scott, Pablo Gonzalez -Echebastar MSC WG-
Wednesday 29	Echebastar HQ	9:30-11:30	AZTI	Josu Santiago (remotely), Ane Iriondo, Jon Ruiz, Gorka Merino, Jefferson Murua, Marga Andrés, Maitane Grande,
	Echebastar HQ	11:30-12:00	Internal team meeting	BV assessment team
	Echebastar HQ	12:00-13:00	Echebastar	Jose Luis Jauregui, Marga Andrés, Ane Iriondo, Ian Scott, Pablo Gonzalez -Echebastar MSC WG-
Friday 01	Video call	10:00-10:45	SFA	Nichol Elizabeth, Johnny Louys, Roddy Allisop

6.1.2 Stakeholder participation

The site visit for the surveillance audit was announced at the MSC website on May 26, 2022. In addition, the notification of the surveillance audit was sent to a list of stakeholders identified during the initial assessment and reviewed before current surveillance audit. This list included different contacts from management institutions, research institutions, NGOs and CABs from overlapping fisheries.

Furthermore, the team with the assistance of the client elaborated a list of key stakeholders to be interviewed and were contacted via email and telephone to ensure their participation and arrange the meetings. The list of institutions and people finally interviewed during the site visit is detailed in **Table 6.1.1.1**.

6.2 Stakeholder input

6.2.1 Inputs received during the site visit

The main stakeholder input was the information collected during the meetings held at the site visit and the documents sent by the stakeholders as a result of the requests made by the team during those meetings. Besides, ISSF sent comments to Bureau Veritas following the announcement of the surveillance audit of the fishery, this document and the responses provided by the team are presented below.

Table 6.2.1 presents the main topics discussed with the different stakeholders during the different meetings. All relevant information collected on updates or modifications affecting the fishery is summarized in **section 4.2** of the current report, while harmonisation activities with overlapping fisheries are presented in **Appendix 6.4**. All documents used for the assessment are listed in **Section 7** (References).

Table 6.2.1. Details of the main topics discussed during the remote visit carried out as part of the current surveillance audit

Stakeholder	Topics discussed
Client	Review on updates (if any) regarding: (i) certified fleet and client group; (ii) traceability; (iii) impacts of the pandemic during 2020 and 2021 (e.g. observer program); (iv) regulatory framework at all levels, summary of outcomes 26th IOTC Session: new Resolutions adopted; (v) harmonization needs: status and progress of overlapping fisheries; (vi) review of UoA's catches and sets; (vii) updates regarding stock status and assessments of tropical tunas; implications of the new YFT assessment; (viii) presentation and discussion on the actions developed by Echebastar to accomplish conditions set in the initial assessment
Ministry of Fisheries of Seychelles	- General feedback on the performance of the certified fleet - Participation of the Ministry of Fisheries in the IOTC in 2022. - Updates on the 'Seychelles Fisheries Sector Policy and Strategy' and the 'Fisheries Comprehensive Plan' included goals to increase consultation and participation of stakeholders in the fisheries management. - Progress regarding FiTI initiative - Other relevant modification in relation to the regulatory framework and/or management authorities in Seychelles
Seychelles Fishing Authority	- General feedback on the performance of the certified fleet - Number of sea and port inspections, infringements, and sanctions to the certified Seychellois vessels in 2019, 2020 and 2021 - Any relevant modification in relation to the regulatory framework and/or management authorities in Seychelles? - Status of the National Tuna Management Plan - T3 for monitoring YFT quota consumption, how is it calculated
AZTI	- Update on AZTI's participation in IOTC-SC during 2021-22. - Status of the main discussions within the WPTT, expectations for 2022 - Discussion on the status of SKJ and BET, and recent stock assessments for YFT - Activities performed by AZTI related to the implementation on the OPAGAC & ANABAC code of good practices - Implementation of the observer program on board the certified fleet: monitoring, results... - Outputs from the Echebastar FAD management plan - Final results of the study on the post-release survival rate of silky sharks (performed with miniPATs). - Updates on the study of lost FADs with coral communities in the IO - Updates on Biofloats - Results of the EMS

6.2.2 Inputs received prior to the site visit

As explained in the previous section, ISSF sent comments to Bureau Veritas following the announcement of the surveillance audit of the fishery. Apart from the ISSF's comments, no other stakeholder inputs were received by email using the template provided by MSC.

General comments

General comments	Evidence or references	CAB response to stakeholder input	CAB Response Code
Fishery description and FAD operations ISSF provided input on this topic recommending Echebastar to provide more details on their FAD operations. We acknowledge the fishery implements a comprehensive FAD strategy and is in compliance with ISSF conservation measures. However, we believe detailed information on FAD operations is very important to characterize the fishery and it would be desirable to include it on the next surveillance reports.	None provided	The reports provide information on the different actions implemented to comply with the FAD regulations (both at IOTC level and also those adopted through the ANABAC/AGAC Code of Practices and/or at Echebastar level). Azti is commissioned to compile the information from the vessels and buoys suppliers and send it to the flag States and the IOTC Secretariat. As described in the report these actions are all audited by AZTI as part of the implementation of code of good practices. The level of information generated is huge and deals with many different topics. As described in the report these actions are all audited by AZTI as part of the implementation of code of good practices, and all the vessels have valid Statements of conformity. During the interviewed AZTI confirmed that everything is being implemented correctly and that there are no concerns related to compliance of the Echebastar fleet in this regard. Besides, all Echebastar vessels are in the ISSF PVR list. According to the results of the last audit the Echebastar fleet are following ISSF's best practices on non-entangling FADs and FAD management plans. MRAG is auditing these vessels to make sure that they are complying with the ISSF's requirement to be included in the PVR list. Our understanding is that or the purpose of the surveillance report, there is no need to present detailed information on the different issues related to the FAD management.	Not accepted (information for PI score has not changed)

HS advocacy actions ISSF would like to present a set of updated HS advocacy recommendations for Echebastar to consider including in their CAP. Some of these action might already being implemented by the fishery. 1) Publicly support the high-level appeals for RFMOs developed by global NGOs that are participants in the NGO Tuna Forum. In 2022, companies will have the opportunity to engage in other direct RFMO advocacy tactics to demonstrate market support for specific tuna sustainability asks. NGO participants in the NGO Tuna Forum will be reaching out to market partners with these opportunities in the coming months. 2) Continue to advocate for accelerated progress on the adoption and implementation of Harvest Strategies through IOTC, such as through continued direct engagement with national delegations to IOTC or through alignment initiatives with other MSC-certified or MSC-aspiring fisheries which also advocate for harvest strategies and HCR for Indian Ocean tuna stocks. 3) Urge the delegations of EU-Spain and Seychelles and of all other parties associated with Echebastar at IOTC to take a strong public position on advancing harvest strategies as part of the deliberations IOTC will undertake in-person and virtually this year, including by making proposals for the development of harvest strategies including harvest control rules. In particular, in 2022, advocate for IOTC to: -Accelerate action on developing comprehensive, precautionary Management Procedures, adopt a bigeye tuna management procedure and agree on permanent Limit and Target Reference Points for tropical and temperate tunas, particularly yellowfin. -Conduct Management Strategy Evaluations (MSE) for albacore, skipjack and yellowfin tuna stocks.	- https://ngotunaforum.org/global-tuna-advocacy-appeal/ - https://iss-foundation.org/what-we-do/influence/position-statements	All recommendations listed here are commendable. Without a doubt, ISSF has a way of getting them to Echebastar beyond what is reflected in this report. Echebastar already collaborates in this sense through SIOTI.	Not accepted (information for PI score has not changed)
Condition 2.4.2 on FAD management strategy for impacts on VMEs. That condition was closed at last years SA. The FAD watch project is being referred to as part of the rationale to close the condition, but the reports still fail to provide metrics for it or explain if the project has quantitative objectives and milestones. Also, the fishery should provide evidence of the magnitude of their involvement. We reiterate our request that more information on these elements should be provided. We also find inconsistent that the condition on Habitats Management has been closed, while Habitats information stills not completed. Adequate information is required to confirm that appropiate management is in place. We would appreciate if the CAB could provide more clarity on these 2 conditions.	None provided	A new regulation on FAD management was adopted since the previous surveillance audit (Res 19/02), and the two flag states (Spain and Seychelles) submmitted to the Commission their FAD management plans. There is evidence that Echebastar is implementing this actions correctly, no concerns have been raised or identify in this regard. There is no requirement for quantitative information to score 80 in SI(a). Besides, this score is aligned with the score provided in the overlapping AGAC fishery, which just recently went through an objection period and published the PCR this July. In particular, tscore for PI 2.4.2 was objected and that objection was dismissed.	Not accepted (information for PI score has not changed)

6.3 Revised surveillance program

The surveillance level determined in the PCR was 6 (4 on-site surveillance audits). However, due to the Covid-19 health crisis (preventing travel) and the MSC Derogation 6 on Covid-19 Fishery Conditions Extension, the CAB conducted the second surveillance as a remote audit. In addition, the number of auditors (as explained in the first Surveillance audit report) was brought down from 3 (as indicated in the PCR) to 2.

No further modifications to the surveillance level and type are proposed for future surveillance audits. It is expected that subsequent surveillance audits will take place close to the anniversary date of the fishery.

See tables below for the scheduled surveillance program.

Table 6.3.1. Fishery surveillance program

Surveillance level	Year 1	Year 2	Year 3	Year 4
Level 4	Off-site surveillance audit	Off-site surveillance audit *(due to the pandemic)*	On-site surveillance audit	On-site surveillance audit & re-certification site visit

Table 6.3.2. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
4	May, 2023	May 2023	NA

Table 6.3.3. Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
4	On-site	3 auditor on-site	No amendment since the PCR since the site visit of the last surveillance audit will be joined with the site visit for the re-assessment of the fishery.

6.4 Harmonised fishery assessments

The MSC Fisheries Certification Process v2.2 (FCP) sets out procedures for ensuring consistency of outcomes in overlapping fisheries (see Annex PB of the FCP). The intention of this process is to maintain the integrity of MSC fishery assessments. To assess the harmonisation requirements per PI, the team applied the table GPB1 in FCP2.2.

MSC overlapping fisheries have been identified as fisheries targeting tropical tunas and operating in the Indian Ocean. MSC Fisheries with overlapping UoAs are detailed below in **Table 6.4.1** and the relevant PIs requiring harmonisation are detailed. A summary of the information supporting the decision of which PIs are subject to harmonisation is presented in **Table 6.4.2**.

To ensure that harmonisation discussions were completed before the publication of this report, a variation to postpone for 2 months the submission of this surveillance report was requested to MSC, and it was granted by the 20th of September (both, the variation request and the MSC response can be found at the following link: https://fisheries.msc.org/en/fisheries/echebastar-indian-ocean-purse-seine-skipjack-tuna/@@assessments).

Table 6.4.1- Overlapping fisheries: status and PIs to harmonise. Source: MSC website consulted on 05/07/2022

Fishery name (& CAB)	Certification status and latest report available	PIs to harmonise
Maldives pole & line skipjack tuna	Certified since 2012 (Global Trust Certification, Ltd.) *Latest report published: Surveillance report (15 November 2022)*	**P1**: All PIs **P2**: 2.1.1a (main components), 2.2.1a (main components), 2.3.1a (limits), **P3**: all at IOTC level of jurisdiction
CFTO Indian Ocean Purse Seine skipjack Fishery	Certified in June 2021 (Control Union) *Latest report published: Public Certification Report (02 June 2021)*	**P1**: All PIs **P2**: 2.1.1a (main components), 2.2.1a (main components), 2.3.1a (limits), 2.4.1b (VME recognition), 2.4.2a, c (at SG100). *Apart from those PISGs, the scores and rationales of other PIs might be considered applicable, but it is not considered that they should be compulsorily harmonized.* **P3**: all at IOTC level of jurisdiction and also some considerations on the EU level of jurisdiction.
AGAC four oceans integral purse seine tropical tuna fishery	Certified in July 2022 (Lloyds Register) *Latest report published: Public Certification Report (06 July 2022)*	**P1**: All PIs **P2**: 2.1.1a (main components), 2.2.1a (main components), 2.3.1a (limits), 2.4.1b (VME recognition), 2.4.2a, c (at SG100). *Apart from those PISGs, the scores and rationales of other PIs might be considered applicable, but it is not considered that they should be compulsorily harmonized.* **P3:** All at IOTC level of jurisdiction and also at EU-Spain and Seychelles' levels of jurisdiction.

Table 6.4.2.- Overlapping fisheries: supporting information

Supporting information
P1: The target stock is the same, hence harmonisation on all PIs is required.
P2: Apart from using the harmonisation requirements listed in Table GPB1 in FCP 2.2., P2-PIs were assessed in respect to Table provided in the MSC directions for harmonisation between overlapping fisheries (see https://mscportal.force.com/interpret/s/article/What-are-the-MSC-requirements-on-harmonisation-multiple-questions-1527586957701).
P3: The international component of the management system (IOTC) is the same so must be harmonised. The national components vary between the 4 overlapping fisheries.

Was either FCP v2.2 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	PB 1.3.4.5 was applied in relation to PI 1.2.1(a), PI 1.2.2(c) and PI 3.2.3(d)
Date of harmonisation meeting	Exchange of emails between September 1 and October 25,2022. Also, a remote meeting between BV and CU was held on October 24th ,2022 to specifically deal with PI 3.2.3.

If applicable, describe the meeting outcome

An exchange of emails between the 3 CABs and teams involved in the assessments of the 3 overlapping fisheries listed in table 6.4.1 took place between September 1st and October 25th 2022. The BV team expressed the following arguments in favour of PI 1.2.1(a), PI 1.2.2(c) and 3.2.3(d) scoring 80:

- **PI 1.2.1:** the current HC has probed to maintain the stock in good conditions and has avoided overfishing; and a quota allocation system in place is not a requisite for scoring 80 (there are many examples).
- **PI 1.2.2:** The latest stock assessment (Fu, 2020) confirms that E is below E_{MSY}, and according to GSA2.5 this can be taken as evidence that HCR is effective, in particular in the case of the IO-SKJ which has been maintained above SSB_{MSY} and below F_{MSY} in recent years.
- **PI 3.2.3:** The Echebastar fishery does not consider the AIS as part of the fisheries management system. VMS is the key tool in this case, and there are no issues related to non-compliance in relation to VMS.

In relation to PI 1.2.1 and 1.2.2, the other teams considered that re-scoring was no justified since there is no new information since the conditions were set (7.28.15.1).

In relation to PI 3.2.3, this condition was set based on the final decision of the Independent Adjudicator for the objection process of the AGAC fishery. Since this was a recent decision adopted as part of an objection process, the CAB responsible for the AGAC fishery refused to modify the score and rationale published in their PCR. Then, in October a remote meeting between BV (CAB in charge of assessing the Echebastar fishery) and CU (the CAB assessing the CFTO fishery) was held to deal with the issue of PI 3.2.3. In that meeting the team assessing the CFTO fishery communicated that they will also open a condition on PI 3.2.3 based on the fact that the French administration was investigating the use of the AIS in the French purse seiners operating in the Indian Ocean. Thus, it was decided to set the condition to all overlapping purse seine tuna fisheries. Besides, during that call the CFTO team also communicated that the French Administration had sanctioned the French fleet because of breaching the 10% tolerance margin on the catch estimates reported in the prior notification. In turn, the team assessing the Echebastar fishery conveyed that no findings related to systematic non-compliance of the prior notification had been communicated by the Spanish Administration. However, the BV team noted this fact and committed to look at it in detail during the next surveillance audit (since this finding was only communicated by CU in October).

The scores awarded by the different MSC overlapping fisheries to the PIs subject to harmonisation are presented in **Table 6.4.3**, and any differences in scoring are explained in **Table 6.4.4**.

Table 6.4.3- Overview of PI scores for overlapping fisheries with explanation for those PIs where there are material differences in outcome. (*) Not harmonised for P2-habitat components as completely different fishery (pole and line versus purse seine)

PIs	**Maldives**	**Echebastar**	**AGAC**	**CFTO**	**Rationale for scoring differences**
1.1.1	100	100	100	100	N/A
1.2.1	70	70	70	70	N/A
1.2.2	75	75	75	75	N/A
1.2.3	80	80	80	80	N/A

1.2.4	95	90	90	95	This non-material difference is based on the consideration on whether the stock assessment is being externally reviewed, SG(e).
2.1.1(a)	YFT-80 BET-80	YFT-80 BET-80	YFT-80 BET-80	YFT-80 BET-80	N/A
2.2.1(a)	No main secondary species are impacted by the Echebastar fishery, so harmonisation for this P2-component is not triggered.				N/A
2.3.1(a)	None of the assessments have limits; cumulative impacts not triggered.				N/A
2.4.1(b)	Coral reefs as VMEs recognised among all fisheries that have dFAD components.				N/A
2.4.2(a)	(*)	Harmonisation of scoring at SG100 not triggered (SG100 not met for any of the overlapping fisheries)			N/A
2.4.2(c)	(*)	Harmonisation of scoring at SG100 not triggered (SG100 not met for any of the overlapping fisheries)			N/A
3.1.1	90	80	80	80	Maldives-specific difference
3.1.2	95	80	95	85	Non-material scoring differences based in most of the cases in flag/gear specific differences.
3.1.3	80	100	100	100	Maldives-specific differences
3.2.1	80	90	90	80	This non-material difference is based on different interpretations when scoring SG100 for the only SI in thi PI.
3.2.2	75	75	75	75	N/A
3.2.3	75	75	75	80	In the case of Maldives the condition is based on specific condition on SId because of systematic non-compliance on Maldives artisanal vessels logbook completion. The condition in the case of the AGAC and Echebastar fishery is related to the use of the AIS. The team assessing the CFTO fishery confirmed that they will also set a condition on this PI based on the use of the AIS and also based on sanctions recently imposed to the French fleet for breaching the 10%

					tolerance margin allowed in the prior notifications.
3.2.4	80	80	90	80	AGAC considers that the IOTC management system is subject to regular internal and external review, while all the other fisheries also take into consideration private agreements, so SG100 for SI(b) is not met.

Table 6.4.4- rationale for scoring differences

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.2 Annex PB1.3.6)
There are no material differences in the scoring of the PIs listed in **Table 6.4.3** (considering that CFTO confirmed that they will also score PI 3.2.3 below 80).
If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination
No exceptional circumstances apply

7 References

All IOTC CMMs can be found and downloaded here: https://www.iotc.org/cmms

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