Food and Agriculture Organization of the United Nations

Indian Ocean Tuna Commission
Commission des Thons de l'Ocean Indien
iotc ctoi

IOTC-2022-CoC19-10 Add1[E]

COLLECTION OF DRIFTING FISH AGGREGATING DEVICES MANAGEMENT PLANS

Prepared by: IOTC Secretariat, 23 April, 2022

PURPOSE

The purpose of this document is to assist the IOTC Compliance Committee in conducting its analyses of the FADs management plans, as required in paragraph 13 of the Resolution 19/02:

> *"The Management Plans shall be analysed by the IOTC Compliance Committee."*

BACKGROUND

At its 23rd Session, the Commission adopted Resolution 19/02 *Procedures on a fish aggregating devices (FADs) management plan*.

The paragraph 2 describes the application of Resolution 19/02:

> *"This Resolution shall apply to **CPCs having purse seine vessels and fishing on Drifting Fish Aggregating Devices (DFADs), equipped with instrumented buoys** for the purpose of aggregating target tuna species, in the IOTC area of competence. Only purse seiners and associated supply or support vessels are allowed to deploy DFADs in the IOTC Area of Competence."*

REPORTING REQUIREMENT

This document contains the FAD management plans made available to the Commission in accordance with paragraph 12 of IOTC Resolution 19/02:

> *"**CPCs having vessels flying their flag and fishing on FADs shall submit, to the Commission, on an annual basis, Management Plans for the use of FADs.** Due to their specificity in terms of users, type of boat/vessel involved, fishing method and gear used and materials used in their construction, the Management Plans and Reporting Requirements for Drifting FADs (DFAD) and Anchored FADs (AFAD) shall be addressed separately for the purposes of this Resolution. The Plans shall at a minimum follow the Guidelines for Preparation for FAD Management Plans by each CPC as provided for DFADs in Annex I and AFADs in Annex II."*

IMPLEMENTATION OF THE DRIFTING FISH AGGREGATING DEVICES (FADS) MANAGEMENT PLAN REQUIREMENT

The following CPCs have purse seine vessels registered in the IOTC Record of Authorised Vessels (RAV): Australia, European Union (France, Italy and Spain), Indonesia, Iran (Islamic Rep. of), Japan, Korea (Rep. of), Mauritius, Philippines, Seychelles and Tanzania.

From the 10[1] CPCs having purse seine vessels registered in the IOTC Record of Authorised Vessels, six CPCs have provided a DFAD management plan for the year 2022.

Six DFAD management plans were provided in the 2021/2022 intersessional period (European Union for France & Spain, 17/03/2022), Japan (16/03/2022), the Republic of Korea (17/03/2022), Mauritius

[1] Corresponding to 12 flag States, European Union PS fleet flagged to France, Italy and Spain.

(17/03/2022) and Seychelles (17/03/2022). Iran has informed the IOTC Secretariat that its plan submitted in 2021, is also valid for the year 2022.

Australia, Indonesia and the Philippines have indicated that their vessels are not finishing on DFADs or are not operating in the IOTC Area.

At the time of preparing this document, no DFAD managements plan has been received for EU-ITA and Tanzania.Current DFAD management plans available to the Commission are presented in Annex 1. Dates of submissions, including previous submissions, are summarised in the Table 1.

Table 1: Submission history of DFAD management plans (2013 to 2022).

Reception of DFAD PLANS	EU			IDN	IRN	JPN	KEN	KOR	MUS	SYC	TZA
	FRA	ITA	ESP								
2013	N/S		N/S	N/S	N/S	25/12	N/A	31/12	N/S	N/S	N/A
2014	N/S		15/01	N/S	26/01	26/12	N/A	N/S	14/03	N/S	N/A
2015	N/S		N/S	12/01	N/S	N/S	N/A	N/S	N/S	27/04	N/A
2016	11/03		11/03	N/S	N/S	N/S	N/A	16/03	N/S	N/S	N/A
2017	13/04		19/04	N/S	N/S	10/04	N/A	21/03	N/S	N/S	N/A
2018	19/01		14/03	N/S	N/S	05/07	N/A	16/03	14/11	N/S	N/A
2019	20/05		20/05	N/A	14/04	2018	N/A	09/04	2018	N/S	N/A
2020	01/04		01/04	N/A	N/S	03/04	31/07	01/04	01/04	21/08	N/A
2021	08/04		08/04	N/A	13/04/21	07/04	N/S[A]	08/04	08/04	N/S	N/A
2022	17/03	N/S	17/03	N/A		16/03	N/A	17/03	17/03	17/03	N/S

N/A	Not applicable	N/S	Not submitted	N/S[A]	Submitted in 2020, plan overlapping 2020/2021

Note:

European Union: No 2022 DFAD plan submitted for Italy.

Indonesia: Has 160 PS vessels with authorisation period going to 2022 / 2023 on the RAV.

Has declared in the implementation report, IOTC-2022-CoC19-IR09 , ''*Not applicable – No PS vessels on the IOTC RAV in 2022*'' and has declared in, IOTC-2022-CoC19-CR09, ''*IDN PS in the RAV do not fish on DFADs*''.

Iran (Islamic Rep. of): Has PS vessels with authorisation period opened in the RAV.

Has declared in the implementation report, IOTC-2022-CoC19-IR10 , ''*The 2021 FADs management plan is valid for 2022, also*''.

Note: Extract of letter from Iran, 11 August 2021, refers to submission of Catch Statistics for 2020:

> Resolution 19/02: In 2020 five purse seiner vessels (Hawourl, Hawour2, Hawour3, Baluch and Parsian Shila) were active. But in 2020 those purse seiner vessels were active only in the Oman Sea (EEZ Islamic Republic of Iran) due to the sanctions and related difficulties for access satellite base FADS data. Therefore no FADs has been used by fishing vessels.

Kenya: Had 6 PS vessels on the RAV in 2021 (deleted 11.09.2021). No PS vessels on the RAV in 2022.

Tanzania: Has registered one PS with authorisation from 03/03/2021 to 03/03/2023 in the RAV. No DFAD management plan submitted for the year 2022.

PROGRESS REPORT ON THE IMPLEMENTATION OF DFAD MANAGEMENT PLANS

IOTC Resolution 19/02, paragraph 16, request CPCs to provide a report on the progress of the management plan:

> *"CPCs shall submit to the Commission, 60 days before the Annual Meeting, a report on the progress of the management plans of FADs, including, if necessary, reviews of the initially submitted Management Plans, and including reviews of the application of the principles set out in Annex III."*

From the CPCs that have provided a DFADs management plan:

- In 2017, five CPCs have provided a report on the progress of implementation of their 2016 DFAD management plan.
- In 2018, seven CPCs provided a report on the progress of implementation of their 2017 DFAD management plan.
- In 2019, five CPCs have provided a report on the progress of implementation of their 2018 DFAD management plan.
- In 2020, four CPCs have provided a report on the progress of implementation of the 2019 DFAD management plan.
- In 2021, seven CPCs have provided a report on the progress of implementation of their 2020 DFAD management plan.
- In 2022, five CPCs have provided a report on the progress of implementation of their 2021 DFAD management plan. These are summarised in the Table 2.

Table 2: Submission history of progress report of implementation of the DFAD management plans (2017 to 2022).

Reception of progress report on DFAD MGT PLANS	EU		IDN	IRN	JPN	KEN	KOR	MUS	SYC
	(FRA, ITA)	(ESP)							
2017	22/03	22 /03	17 /03	N/S	15/03	N/A	21/03	17 /03	N/S
2018	15/03	15/03	16/03	15/03	16/03	N/A	16/03	16/03	12/04
2019	N/S	N/S	N/A	14/04	01/04	N/A	09//04	10/04	09/04
2020	N/S	01/04	N/A	N/S	01/04	N/A	01/04	21 August	N/S
2021	30 /04	08 /04	N/A	28 /04	07/04	28/04	08/04	09 /04	01/04
2022	17/03	17/03	N/A	N/A	16/03	N/S	17/03	17/03	N/S

Note:

Submitted

European Union / Japan / Korea (Rep. of) / Mauritius: Had submitted 2021 DFAD plans, progress reports submitted on the 2021 DFAD plan.

N/A	Not applicable

Indonesia: has declared that it operated only anchored FADs and no FADs management plan submitted, for 2021 (IOTC-2022-CoC19-CQ09).

Iran (Islamic Rep. of): Has submitted a 2021 DFAD plan, but no FADs are being used (IOTC-2022-CoC19-CQ10).

N/S	Not submitted

Kenya: has submitted the DFAD plan on 31 July 2020, the plan is applicable from August 2020 to August 2021. Kenya has requested deletion from the RAV the purse seiners under its flag in September 2021. No progress report submitted by Kenya on the 2021 DFAD plan.

Seychelles: has submitted a DFAD plan on 20 August 2020, the plan is applicable from 08/2020 to 08/2021. No progress report submitted on the 2021 DFAD plan.

Annex 1

Collection of 2022 DFADs management plans

CPC	Date received
European Union (FRA)	17.03.2022
European Union (ITA)	Not submitted
European Union (ESP)	17.03.2022
Iran	13.04.2021
Japan	16.03.2022
Korea	17.03.20221
Mauritius	17.03.2022
Seychelles	17.03.2022
Tanzania	Not submitted

European Union (France) 2022 DFADs Management Plan

Received 17.03.2022

NATIONAL FAD MANAGEMENT PLAN IN THE INDIAN OCEAN FOR 2022

Section I - Management measures

Article 1 - References

- **IOTC Resolution 21/01** on an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence
- **IOTC Resolution 19/01** on an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence
- **IOTC Resolution 19/02** procedures on a Fish Aggregating Devices (FADs) management plan
- **IOTC 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
- **IOTC Resolution 17/05** on the conservation of sharks caught in association with fisheries managed by IOTC
- **IOTC Resolution 16/08** On the use of aircrafts and unmanned aerial vehicles as fishing aids.
- **FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations** adopted at the Twenty-sixth Session of the Committee on Fisheries (COFI), held in March 2005.
- **CECOFAD Recommendations** on data collection on floating objects
- **ISSF Recommendations** on categories of FAD with entanglement risks

Article 2 – Scope

2.1 Vessels covered by the French FAD Management Plan in the Indian Ocean

This FAD Management Plan (FAD-MP) applies to all tuna purse seiners registered in a French port, operating within the waters of the Indian Ocean in 2022.

This Management Plan also applies to French-flagged support vessels used as part of the tropical tuna purse seine fisheries.

The list of these vessels is included in Table 1.

Tableau 1: Vessels covered by the French FAD-MP in the Indian Ocean

Vessel name	Vessel type	PS vessel assisted by the tender vessel
AVEL VAD	Purse seiner	
CAP SAINTE MARIE	Purse seiner	
BERNICA	Purse seiner	
CAP SAINT VINCENT	Purse seiner	
DOLOMIEU	Purse seiner	
DRENNEC	Purse seiner	
FRANCHE-TERRE	Purse seiner	
GLENAN	Purse seiner	
JANVIER-LOUIS RAPHAËL	Tender vessel	DOLOMIEU, FRANCHE-TERRE
JEAN-LOUIS RAPHAËL II	Tender vessel	BERNICA
KERSAINT	Tender vessel	AVEL VAD, CAP SAINTE MARIE, CAP SAINT VINCENT, GLENAN, TALENDUIC, TREVIGNON + TORRE ITALIA (Italian flag)
GLENAN	Purse seiner	
TALENDUIC	Purse seiner	
TREVIGNON	Purse seiner	

2.2 Devices covered by the French FAD Management Plan in the Indian Ocean

This Management Plan only applies to drifting FADs and their instrumented buoys that are deployed and used by tuna purse seiners and their associated tender vessels.

Article 3 – Definitions

Fishing activity: means any operation related to searching for fish, setting, deploying, towing or hauling a fishing gear, taking catch on board, transhipping, retaining on-board, processing on-board, transferring and landing fish and fisheries products.

Instrumented beacon/buoy: means an electronic device designed for FAD tracking and monitoring. The buoy should be clearly marked with a unique reference number allowing identification of its owner and equipped with a satellite tracking system to monitor its position.

Active Beacon: means a beacon whose satellite communication service has been initialized by the buoy supplier company at the request of the vessel owner or manager. At this stage, the beacon is not transmitting positions or additional data such as echo-sounder estimates of the biomass underneath.

Buoy in stock: means an instrumented buoy acquired by the owner which has not been made operational. For the purposes of this Management Plan, any buoy present on-board the vessel to which it belongs is considered to be “in stock”.

Operational buoy: a buoy is considered to be operational when it has been activated on the satellite system (active beacon), switched on (when active and switched on, the beacon is “transmitting”) and deployed at sea.

Shared buoy: means a buoy whose data (positions and echo-sounder signal) are transmitted to two vessels at least (purse seiners or tender vessels) sharing the buoy. The contribution of a shared buoy to the number of operational buoys from a specific purse seiner equals to 1/number of purse seiners sharing the buoy.

Deactivation of a buoy: means the act of cancelling satellite communications service, which is done by the buoy supplier company at the request of the vessel owner or operator, the purse seiner or its associated

tender vessel. A deactivated buoy can be reactivated only when physically present on board the purse-seine vessel to which it belongs or its tender vessel.

Fish Aggregating Device (FAD): As determined by Resolution 19/02, a FAD means a permanent, semi-permanent or temporary object, structure or device of any material, man-made or natural, which is deployed and/or tracked, for the purpose of aggregating target tuna species for consequent capture. Article 5 of this Management Plan complements and elaborates on this definition.

Drifting Fish Aggregating Devices (DFADs): means a FAD not tethered to the bottom of the ocean. Typically, a DFAD has a floating structure (such as a bamboo or metal raft with buoyancy provided by buoys, corks, etc.) and a submerged structure (made of old netting, canvass, ropes, etc.). Its design should avoid the use of mesh net in an effort to reduce shark and sea turtle entanglement.

Buoy providers: means any company providing buoys intended for DFAD tracking.

Fishing Vessel: means any vessel equipped for the commercial harvesting of aquatic living resources.

Support/tender vessel: means a vessel that provides assistance to other fishing vessels. Support vessels do not have gear on-board. In respect of tropical purse seiners, tender vessels are used to deploy FADs and beacons, transfer other vessels' beacons onto FADs encountered at sea or inform their associated purse seiner about the presence of fish.

Number of operational buoys per vessel at any one time: is the sum of the number of operational buoys belonging to the vessel plus the number of shared buoys (managed by a purse seiner or tender vessel) divided by the number of purse seiners using these shared buoys.

Buoy owner: As determined by Resolution 19/02, any legal or natural person, entity or branch, who is paying for the communication service for the buoy associated with a FAD, and/or who is authorized to receive information from the satellite buoy (position, echo-sounder data), as well as to request its activation and/or deactivation.

Reactivation: the act of re-enabling satellite communications services by the buoy supplier company at the request of the buoy owner or manager. Just like buoy activations, a buoy can be reactivated only when physically present on board the purse-seine vessel or its tender vessel. Moreover, buoy reactivation shall only be possible once it has been brought back to port, either by the vessel to which it belongs or another vessel authorized to do so.

Article 4 – Objectives of the French FAD-MP

The French FAD-MP has three objectives:

4.1 Improving our understanding of the impacts of FADs

Increased knowledge on the use of FADs and their instrumented buoys will result in a better assessment of their potential impacts and the development of the most appropriate management measures.

The methods to monitor the use of FADs and their instrumented buoys are described in Section II.

4.2 Limitations on the use of FADs and their instrumented buoys

For the French fleet, limiting the use of FADs is considered the most effective management measure to reduce their negative impacts.

The conditions in which their use may be limited and the methods used to monitor the number of operational buoys are described in Section III.

4.3 Reducing the impacts of FAD on the ecosystem

Apart from reducing the potential impacts resulting from the limitation on the number of FADs, additional measures are required to reduce the impacts of FADs on the ecosystem including: (1) bycatches and incidental catches of endangered species; (2) ghost fishing of endangered species such as turtles and sharks; and (3) pollution and beaching events due to lost FADs.

The solutions implemented to reduce the impacts and the tools used to monitor compliance are described in Section IV.

Section II – Measures to improve our understanding of the use of FADs and their impacts

Article 5 – Monitoring the activities with floating objects and their instrumented buoys

5.1 Types of activities with floating objects and their instrumented buoys

Monitoring the activities with FOBs and their instrumented buoys follows a dual objective:

(i) assessing the contribution of these devices to the tuna seine fishing effort to assess the impact of this fishing mode on tropical tuna stocks.
(ii) assessing the contribution of FADs to changes in and/or disruptions to the ecosystems in which they are used.

Some definitions consistent with these scientific objectives have been developed in the framework of the European project CECOFAD. They are included in Table 2.

These definitions distinguish between *FADs in the strict meaning of the term* (objects/structures/devices specifically deployed at sea by purse seiners or tender vessels for the purpose of aggregating tropical tunas) and *logs* (other types of objects/structures of natural origin such as a wood log or of anthropogenic origin such as plastic debris that may aggregate fish).

Table 2. Types of FOBs (CECOFAD classification)

Type	Material	Code	Name	Example(s)
FAD	Natural and/or man-made	DFAD	Drifting FAD	Drifting bamboo raft
	Natural and/or man-made	AFAD	Anchored FAD	Anchored floating platform
LOG	Man-made	FALOG	Artificial log resulting from human activity	Nets hawser
	Natural and/or man-made	HALOG	Artificial log resulting from other human activities	Wooden board Plastic debris
	Natural	ANLOG	Natural log of animal origin	Carcass, whale shark
	Natural	VNLOG	Natural log of plant origin	Tree trunk, Algae

These definitions also explicitly distinguish between the activities with FADs and the activities with their instrumented beacons in order to facilitate reporting by vessels. They are included in Table 3. Several consecutive activities may be carried out on the same FOB and each one should be listed in the logbook.

Table 3: Types of activities with FOBs and their instrumented beacons (CECOFAD classification).

Type	Activity	Description
FOB	Deployment	New FAD deployed at sea. By definition, logs are not deployed.
	Strengthening	Consolidation of a FOB to strengthen buoyancy.
	Visit	Visit (without fishing) of a FOB, inter alia to assess the quantity of aggregated biomass underneath.
	Fishing	Fishing set on a FOB.
	Retrieval	Recovery of a FOB by the vessel(s) to which it belongs.
	End of service life	Discontinuing the use of FOBs that are damaged or drifting outside the active fishing area. Abandonment of FADs without a beacon, even if damaged, shall be prohibited.
	Loss	Discontinuing FOB tracking by a vessel other than the one(s) to which it belongs.
BUOY	Deployment	Deployment of a buoy onto a FOB. This activity is also called FOB "tagging".
	Transfer	Replacing a beacon attached to a FOB belonging to another vessel (replacing the beacon by the vessel's own beacon).
	Visit	Mere visit of a FOB with a beacon attached to it.
	Retrieval	Retrieving a beacon on a FOB drifting at sea. Abandonment of FADs at sea without a beacon shall be prohibited and recovery of logs which pose a risk for pollution shall be encouraged.
	End of transmission	Intentionally and remotely stopping the buoy transmission at the request of the vessel or armament.
	Loss	Unintentionally stopping the buoy transmission in the event of a technical failure of the beacon or another vessel taking ownership of the FOB.

5.2 Reporting activities with FOBs and their instrumented buoys

Fishing vessel or supply vessel masters shall record the activities with FOBs and their instrumented buoys on the logbook as per the categories described in Tables 2 and 3.

For each activity, the required data are as follows:

- Vessel (name and registration number)
- Date (DD/MM/YYYY)
- Position (latitude, longitude in degrees and minutes)
- Type of FOB as defined in Table 2
- Type of FAD, if any. Article 17 sets out the allowable FAD dimensions and materials (floating part and underwater structure) required for the French fleet
- Size/meshed material at the surface of the floating part and underwater structure
- Type of activity or sequence of activities on FOB as defined in Table 3

- Type of buoy (brand and model) and ID or, if unavailable, ownership
- For buoy transfer, type of buoy and ID or, if unavailable, ownership of the retrieved and deployed buoys
- Type of activity or sequence of activities on FOB as defined in Table 3

This information will be reported to the Secretariat according to the prescribed format in the Form 3-FA.

Apart from the above information, fishing vessel masters shall also record the following data on the logbook for each FOB or free-school set:

- Tons caught per species (target tuna species versus bycatch)
- Discard quantities, if any, in accordance with applicable discard requirements provided for in IOTC Resolutions 17/04 and 17/05
- Reasons for discards, if any (species, size, fish considered unfit for human consumption).

Annex II details the logbook structure used by the French purse seiners and their tender vessels in 2022.

Article 6 – FAD identification and marking

Any FAD deployed at sea by French tuna purse seiners or tender vessels is identified by its associated buoy serial number. It should be clearly visible without having to remove the buoy, be designed to withstand long stay at sea and remain legible throughout the buoy service life.

Article 7 – FAD without a beacon

Deployment or abandonment of FAD at sea without a beacon shall be prohibited.

Article 8 – Ban on HF buoys

To ensure an independent monitoring of operational buoys and reduce FAD losses associated with buoys whose position cannot be remotely determined, only those buoys transmitting positions via GPS are permitted. HF buoys shall be prohibited.

Article 9 – FAD ownership

The vessel owner or manager whose buoy is attached to the FOB is the owner thereof even if the vessel itself did not deploy the FOB at sea.

Article 10 – Use of lights on FADs

Use of (underwater or aerial) lights on FADs or their instrumented buoys shall be prohibited.

Article 11 – Visible distance and radar reflectors

To avoid FAD losses due to another vessel taking ownership of it, which would result in French purse seiners and their associated tender vessels deploying more FADs, French purse seiners and their associated tender vessels are not required to make their FADs more visible. Therefore, they are not required, inter alia, to equip them with radar reflectors.

Section III – Measures on the limitations on the use of FADs and instrumented buoys

Article 12 – Limitation on the number of operational buoys and in stock

Pursuant to IOC Resolution 19/02:

The French Management Plan sets the maximum number of operational buoys per purse seine vessel at 300 and the maximum number of available buoys per purse seine vessel at 500 (operational and/or in stock) at any one time. The number of instrumented buoys that may be acquired annually for each purse seine vessel is set at no more than 500.

French purse seiners and tender vessels shall ensure not to exceed these limits when deploying FADs and their instrumented buoys. In the event of repeated overshooting, the vessel shall be notified and deployment shall be controlled by French armament.

Article 13 – Monitoring of the number of operational buoys

Buoy supplier companies shall send a monthly detailed reporting, no later than three weeks after the end of each month, on the operational buoys used per vessel and day according to the reporting format in Table 4.

Table 4: Operational buoy monthly reporting.

Date	Operational buoys	Activations	Deactivations
2019/01/01			
2019/01/02			
2019/01/03			
…			
2019/01/30			
2019/01/31			

This reporting shall be derived from each buoy supplier company operational system which shall certify that the reported data are consistent with the activation/deactivation reports provided by the central server system.

Operational buoys are those transmitting (one position over the last 24 hours at least) and drifting (speed above 0 knot and below 6 knots).

Shared buoys among several purse seiners are divided by the number of purse seiner receiving data from the buoy (position, echo-sounder estimates).

As IOTC Res. 19/02 provides for the monitoring of operational buoys for purse seiners, no buoy shall be assigned to a supply vessel in this monitoring. Any buoy activated and deployed at sea by supply vessels shall be accounted for in the operational buoy monthly reports from one purse seiner at least.

The same methodology will be used to report operational buoys through Form 3-BU. These forms will be provided to the Secretariat no later than 3 months following the relevant month.

Article 14- Monitoring of the total number of buoys

Purse seiners and tender vessels shall report the number of buoys in stock at the beginning and end of each fishing trip. They shall also report each buoy deployment date, as required under Article 5.1, in order to provide a daily monitoring of the number of buoys in stock.

Tableau 5: Reporting format for buoys in stock

Vessel	Date of departure	Date of return	Buoy ID	Delivery date	Deployment date	Date of retrieval in port
X	01/01/2020	15/02/2020	MI00001	30/12/2019	03/01/2019	NA
X	01/01/2020	15/02/2020	MI00002	30/12/2019	04/01/2019	NA
X	01/01/2020	15/02/2020	Thalos001	NA	07/01/2019	NA
X	01/01/2020	15/02/2020	Thalos002	NA	10/01/2019	NA
X	01/01/2020	15/02/2020	SatLink001	NA	15/01/2019	NA
X	01/01/2020	15/02/2020	SatLink002	NA	NA	28/12/2019

The total number of buoys from a specific vessel shall be counted daily, as follows:

$$N = Operational + in\ stock_{\text{PS vessel}} + in\ stock_{\text{tender}}$$

Buoys in stock from supply vessels intended to be shared among several purse seiners following activation, switching on and deployment shall be counted as 1/*number of purse seiners sharing the buoy.*

Article 15 – Ban on remotely activated buoys

In order to avoid buoys being temporarily deactivated or reactivated and hence not counted as operational buoys, vessels, vessel owners or managers shall be prohibited from remotely activating or reactivating buoys. A buoy shall be activated or reactivated only when physically present on board the vessel or tender vessel via the buoy supplier company software.

Figure 1 shows the unique operating sequence permitted in this framework

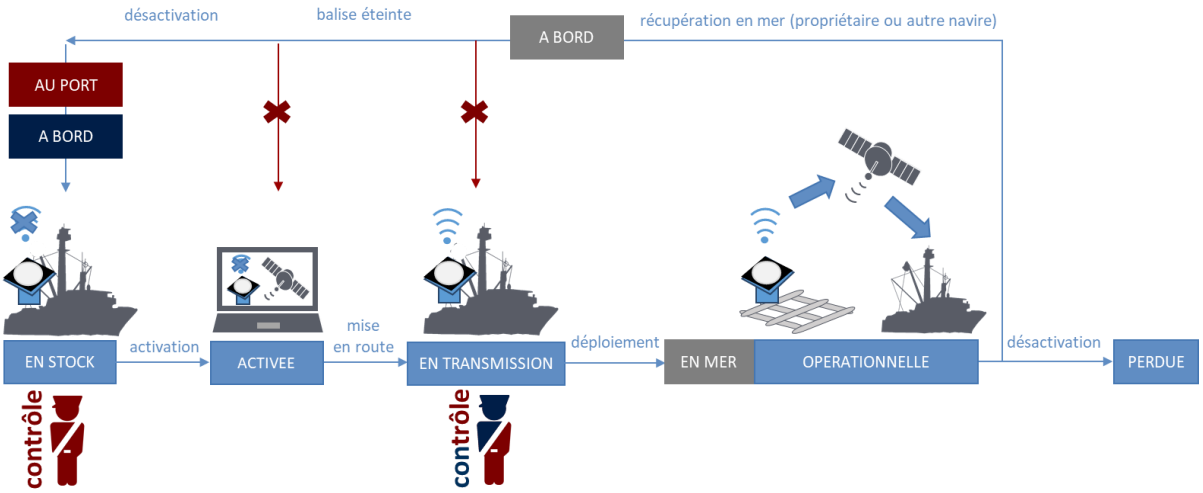

Figure 1: Buoy operating sequence permitted in the framework of the French FAD-MP

The distance between the vessel and the buoy when first transmitting following an activation or reactivation shall be verified based on the information provided by buoy suppliers as defined in Table 6.

Table 6. Reporting format for buoy activation.

Information	Purpose/Description	Format
Buoy ID	Same as logbook	
Buoy serial number	ID provided by the supplier	
Vessel having ownership	Vessel which activated the buoy	
Vessel to which a buoy has been assigned	Vessel (s) monitoring the buoy	
Tender vessel	Buoys activated by a supply vessel	
Activation date	First use of a buoy	UTC
Vessel position at activation	Latitude and longitude	Decimal deg.
First transmission date		UTC
Buoy position at first transmission	Latitude and longitude	Decimal deg.
Vessel position at first transmission	Latitude and longitude	Decimal deg.
Deactivation date	Cessation of use	UTC
Buoy position at last transmission		UTC
Vessel position at last transmission		Decimal deg.

Vessel positions reported by the buoy supplier company shall be obtained through the supplier software antenna. The accuracy of the reporting shall be cross-referenced with VMS data.

Article 16 – Ban on buoy reactivation outside ports

Pursuant to Resolution 19/02, reactivation of a buoy shall only be possible once it has been brought back to port, either by the vessel to which it belongs or by another vessel.

It is thus possible to activate the buoy at two different dates when in port (see examples in Figure 2). This shall be crosschecked with the data provided by the master of the vessel (Table 5) and the buoy suppliers (Table 6).

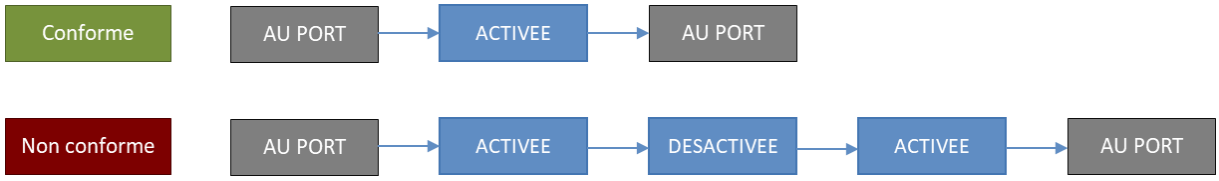

Figure 2: Examples of sequence of use and consistency with Resolution 19/02

Article 17 – Requirements for tender vessels and other measures in support of the management of the number of FADs

Tender vessels shall be allowed to manage FADs provided that:

- they are registered on the relevant IOTC records
- they do not use (underwater or aerial) lights for the purpose of aggregating fish
- they provide support to two designated purse seiners at least which are not associated with another supply vessel.

Fishing vessels and tender vessels shall be prohibited from using aircrafts, helicopters and/or unmanned aerial vehicles.

Finally, this Management Plan does not provide for closed periods or areas specific to the deployment of or fishing on floating objects. The provisions set forth under IOTC Resolution 19/02, within the framework of Fisheries Agreements or Marine Protected Areas apply both to sets on floating objects and on free schools.

Section IV – Measures to reduce the impacts of FADs on the ecosystem

Article 18 – Non-entangling FADs

Pursuant to Resolution 19/02, no French FAD constructed and/or deployed by French purse seiners or tender vessels shall have meshed-material, whether wounded or open meshing. The use of netting panels, sheets or bundles, even if covered with non-meshed material, shall be prohibited.

The following information shall be automatically recorded on the logbook when deploying FADs at sea:

- Use of meshed-material on the floating structure
- Use of meshed material on the submerged structure

When any activity is carried out on a FOB, FAD or log, meshing and meshing size on the floating structure and, if possible, on the submerged structure should be assessed in the logbook. The replacement of high entanglement risks components (mesh>6.5 cm) by non-entangling components (no netting) shall be encouraged.

Article 19 – FAD material and dimensions

Figures 3 and 4 show allowable FAD materials and dimensions required for the French fleet in 2022. Table 7 lists the types of FADs that may be encountered at sea (French FADs or FADs built by other fleets).

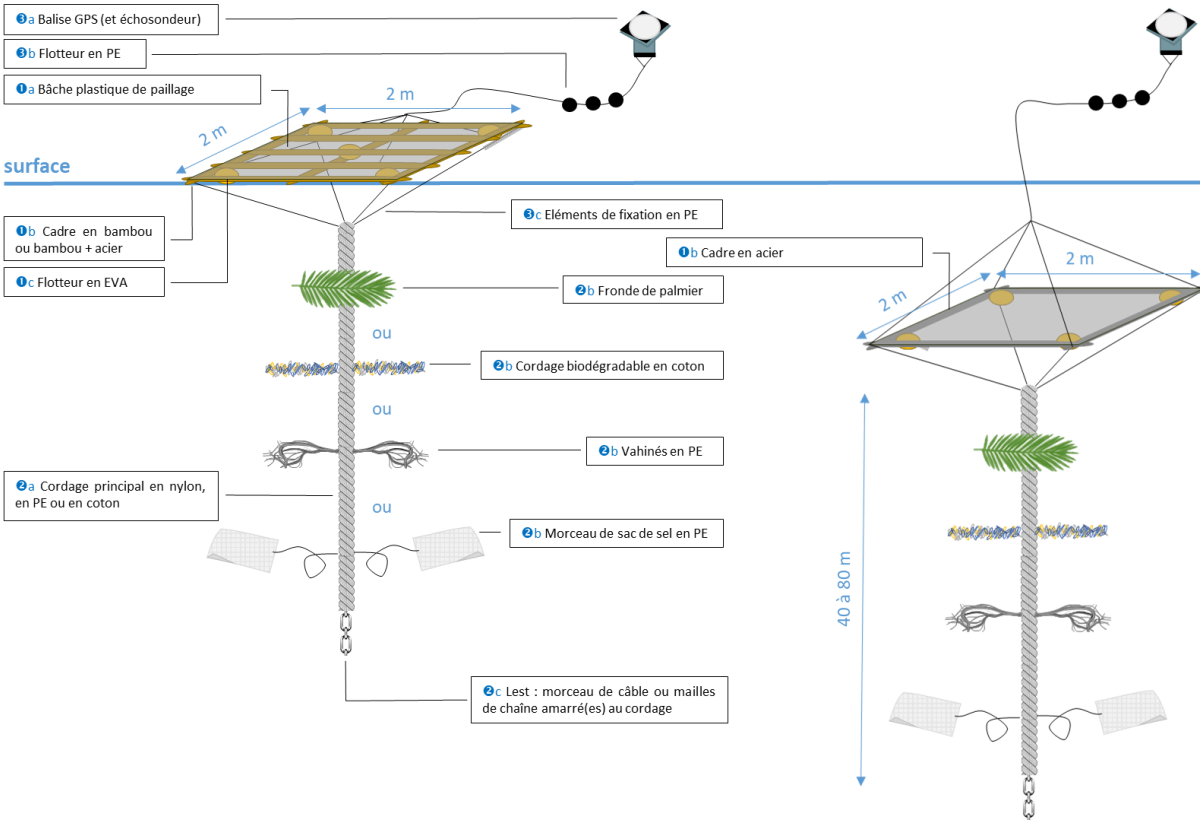

Figure 3. Structure of French FADs: floating (left) and submerged (right) raft type.

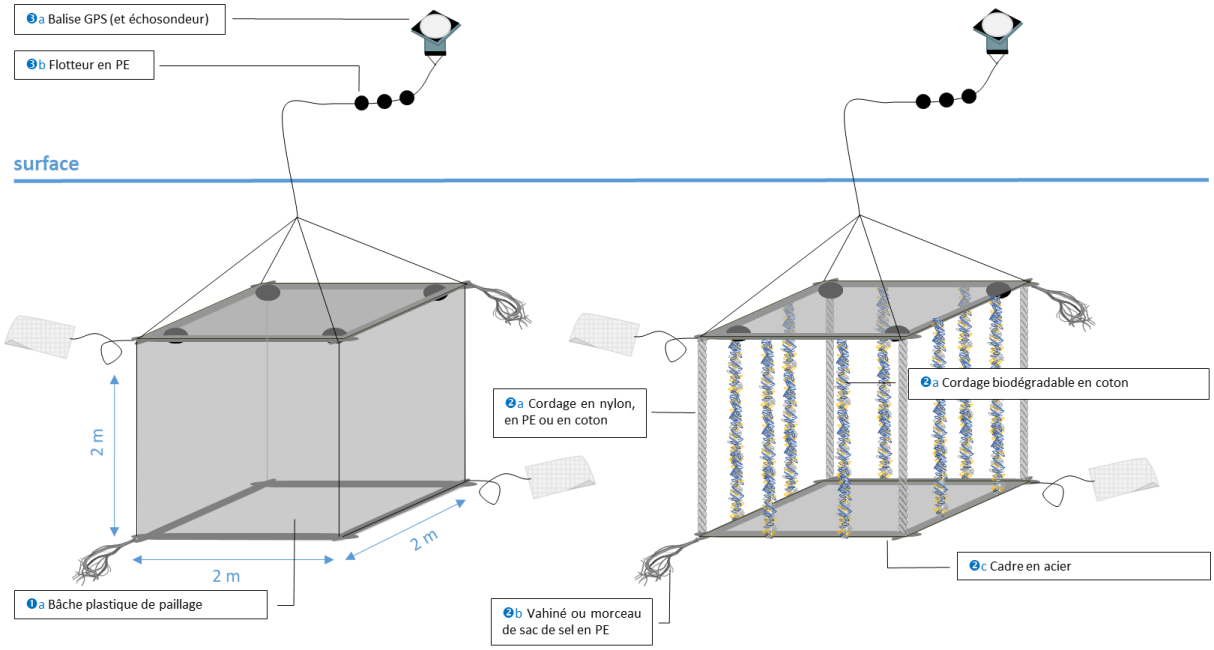

Figure 4. Structure of French FADs: canvass (left) and ropes (right) cage type.

Tableau 7: Types of FADs encountered in the Indian Ocean.

	Visibility at the surface		**Main structure**				
			Form		**Material**		
	Floating	Stealthy	Raft	Cage	Bamboo	Metal	Plastic
French floating FAD, bamboo	✓	×	✓	×	✓	×	✓
French floating FAD, metal	✓	×	✓	×	×	✓	✓
French floating FAD, bamboo-metal	✓	×	✓	×	✓	✓	✓
French FAD, stealthy	×	✓	✓	×	×	✓	✓
French FAD, cage	×	✓	×	✓	×	✓	✓
Spanish floating FAD, bamboo	✓	×	✓	×	✓	×	✓
Spanish floating FAD, metal	✓	×	✓	×	×	✓	✓
Spanish floating FAD, bamboo-metal	✓	×	✓	×	✓	✓	✓
Spanish floating FAD, plastic	✓	×	✓	×	×	×	✓
Spanish FAD, stealthy	×	✓	×	✓	p	✓	✓
Spanish FAD, cage	×	✓	×	✓	p	✓	✓
Corean FAD	✓	×	✓	×	✓	p	✓

✓ : the FAD is designed according to this structure or its main structure (raft or cage) is made with this material / × : the FAD is not designed according to this structure or its main structure is not made with this material / p : the DCP might use this material

The feasibility of replacing synthetic materials with biodegradable materials will continue to be assessed in 2022. Slight changes in the FAD structure illustrated in Figures 2 and 3 could therefore be considered.

When carrying out any activity on a FAD, the masters of the fishing vessels or tender vessels shall record the type of FAD on the logbook. As the structure and materials may differ among the tropical tuna purse seiners in the Indian Ocean, the possible types of FADs are described in Table 5.

Article 20 – Biodegradable FADs

Pursuant to Resolution 19/02, all non-biodegradable materials used in the construction of FADs shall be replaced by biodegradable materials by 2022.

Biodegradable materials are defined as:

- degrading under FAD normal operating conditions (temperature, salinity etc)
- without risk of toxicity for the marine environment (no microparticle or hazardous substance produced from its degradation)
- providing a FAD service life up to 8-10 months.

In 2022, research on biodegradable materials meeting these requirements will continue. Depending on the progress achieved, a progress report on work undertaken by ORTHONGEL will be submitted to the IOTC Working Party on Ecosystems and Bycatch.

Article 21 – FAD recovery

French purse seiners and tender vessels will participate into the "Fad Watch" program in the framework of the Fisheries Improvement Project (FIP) implemented by SIOTI. This program aims at reducing FAD beaching events in the Seychelles EEZ.

Moreover, positions of all instrumented buoys used by French purse seiners and tender vessels will continue to be reported to the Institut de Recherche pour le Développement (IRD). These positions will facilitate research on FAD beaching risks depending on their deployment area and contribute to FAD recovery campaigns.

Article 22 - Incidental bycatch reduction and utilisation policy

The provisions for a limitation on number of FADs (Section III articles) will help to reduce bycatches.

In accordance with IOTC Resolution 19/05, major bycatch species are retained on board and traded as far as possible.

Annexe I: Compliance of French FAD Management Plan with IOTC Resolution 19/02, Annex II

Required information	**Relevant article in the MP**
Objective	4
vessel-types and support and tender vessels	2.1
DFAD numbers and DFADs beacon numbers to be deployed	12
reporting procedures for DFAD deployment	5
incidental bycatch reduction and utilisation policy	22
consideration of interaction with other gear types	2
plans for monitoring and retrieval of lost DFADs	6, 7, 21
statement or policy on "DFAD ownership"	7
institutional responsibilities	
application processes for DFAD and /or DFAD beacons deployment approval	12
obligations of vessel owners and masters in respect of DFAD and /or DFAD beacons deployment and use	5
DFAD and/or DFADs beacons replacement policy	5
reporting obligations	5.1, 16, 18, 19
DFAD design characteristics (a description)	19
DFAD markings and identifiers, including DFADs beacons	6, 7
- lighting requirements	10
radar reflectors	11
visible distance	11
radio buoys (requirement for serial numbers)	8
satellite transceivers (requirement for serial numbers)	5
Details of any closed areas or periods e.g. territorial waters, shipping lanes, proximity to artisanal fisheries, etc	17
Applicable period for the DFAD–MP	2.1
Means for monitoring and reviewing implementation of the DFAD–MP	5.1, 13, 14, 15, 16, 18, 19, 20
DFAD logbook template	5

Annexe I : Logbook structure used by French purse seiners and tender vessels in 2022

DATE	HEURE	LATITUDE chaque calée ou à midi	LONGITUDE chaque calée ou à midi	ZEE	T°C mer	VENT	CALEE	CAPTURE ESTIMEE (en tonnes)
						VIENTO	LANCE	ESTIMATION DE LA CAPTURA (en toneladas)
						WIND	FISHING SET	ESTIMATED CATCH (metric tons)
FECHA	HORA	LATITUDE cada lance o mediada	LONGITUD cada lance o mediada	ZEE	T°C mar	Direction / Direccion / Direction Degrés / Grados / Degrees	Vitesse / Velocidad / Speed Nœuds / Nudos / Knots	Portante / Positivo / Successful
DATE	TIME	LATITUDE each set or at midday	LONGITUD each set or at midday	EEZ	T°C sea			Nulle / Nullo / Nil

Type de calée / Lance typo / Fishing set type	1				2		3				4		5			6		
	ALBACORE				LISTAO		PATUDO				GERMON		AUTRES ESPECES			REJETS		
	RABIL				LISTADO		PATUDO				ALBACORA		OTRAS ESPECIES			DESCARTES		
	YELLOWFIN				SKIPJACK		BIGEYE				ALBACORE		OTHER SPECIES			DISCARDS		
	YFT +10		YFT-10		SKJ		BET +10		BET - 10		ALB		OTH			DSC		
	Taille	Capture	Taille	Capture	Taille	Capture	Taille	Capture	Taille	Capture	Taille	Capture	Espèce	Taille	Capture	Espèce	Taille	Capture
	Talla	Captura	Talla	Captura	Talla	Captura	Talla	Captura	Talla	Captura	Talla	Captura	Especie	Talla	Captura	Especie	Talla	Captura
	Size	Catch	Size	Catch	Size	Catch	Size	Catch	Size	Catch	Size	Catch	Species	Size	Catch	Species	Size	Catch

ASSOCIATION	OBJET FLOTTANT	BOUEE INSTRUMENTEE	COMMENTAIRES
ASSOCIACION	OBJETO	BOYA	COMMENTARIOS
ASSOCIATION	FLOATING OBJECT	INSTRUMENTED BUOY	COMMENTS

Banc Libre / Banco Libre / Free School	Objet flottant / Objeto / FOB	Balise / Balisa / Beacon	Baliseur / Barco de appoyo Support vessel	Requin baleine / Tiburon ballena Whale shark	Baleine / Ballena / Whale	Oiseaux / Aves / Birds

ACTIVITE SUR L'OBJET	TYPE D'OBJET	TYPE DE DCP DERIVANT	RISQUE DE MAILLAGE / RIESGO DE ENMALLAMIENTO	ENTANGLING RISK	
ACTIVIDAD SOBRE EL OBJETO	TIPO DE OBJETO	TIPO DE DCP		En surface Parte superficial Surface	Sous la surface Parte sumergida Underwater
FOB ACTIVITY	FOB TYPE	DFAD TYPE			

ACTIVITE SUR LA BOUEE	BOUEE DÉJÀ PRESENTE / BOYA ANTIGUA		BOUEE DEPLOYEE / BOYA NUEVA	
ACTIVIDAD SOBRE LA BOYA	BUOY ALREADY ON THE FOB		DEPLOYED BUOY	
BUOY ACTIVITY	TYPE / TIPO	NUMERO	TYPE / TIPO	NUMERO
	TYPE	ID	TYPE	ID

Problèmes divers
Détails sur les prises accessoires
Taille du banc
Autres associations
Autres remarques

European Union (Italy) 2022 DFADs Management Plan

Not submitted

European Union (Spain) DFADs Management Plan

Received on 17.03.2022

(COURTESY TRANSLATION)

MANAGEMENT PLAN FOR FISH AGGREGATING DEVICES (FAD) - 2022

1. Basis and background of this plan

The current legislation in force covers the following provisions that justify the elaboration of this management Plan for fishing aggregating devices utilized by the
Spanish purse seiner fleet targeting tropical tunas:

- The 1995 United Nations Stock Agreement has as the main goal the assuring of long term conservation and sustainable exploitation of the stocks of highly migratory species.
- FAO code of good practices, with regard to fishing investigation, sets the obligation of the reliable data collection which enables the due stock assessment just like the implementation of studios on fishing gear selectivity and its environmental impact and to promote the results of the investigation as the basis to establish the management objectives.
  FAO code of conduct points out that "fishing gear should be marked according to national legislation to identify the owner of the gear. The requirements of this marking should have into account uniform marking systems and internationally acknowledged."
  Lastly, and following the FAO Code, "the States should cooperate in the perfection and implementing of operative fishing technologies, materials and methods to minimize the loss of fishing gear and its effect as ghost fishing".
- EU Regulation 1380/2013, 20th Dec 2002, on the Common Fisheries Policy, points out as the main target is the sustainable exploitation of living aquatic and aquaculture resources in the context of sustainable development, having into account environmental, economic and social aspects in a balanced fashion. This regulation modifies EC Regulations 1954/2003 and 1224/2009, and repeals Regulations 2371/2002 and 639/2004, as well as Council Decision 2004/585.
- Law 3/2001, of Maritime Fisheries, sets amongst its goals, in article 3 the safeguard of the responsible fisheries resources exploitation, encouraging its development and adopting all necessary measures to protect, preserve and regenerate the said resources and their ecosystems and promote the fisheries and oceanographic research.

The experience from the first FAD plan in Spain of 2010, as well as the new international provisions, has led to the current revision of the Plan.

2. Scope of application of the present plan

The present plan is aimed at Spanish-flagged freezer tuna purse seiners operating in the Indian, Atlantic and Pacific Ocean, targeting tropical tuna as well as Spanish
Flagged supply vessels supporting the mentioned purse seiner vessels.

The Secretary General for Fisheries is the authority that ensures the implementation of this plan.

3. Objectives

The objectives of this plan are the followings:

- 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.

4. Definitions

IATTC: *"For the purposes of this Resolution, the term "Fish-Aggregating Device" (FAD) means anchored, drifting, floating or submerged objects deployed and/or tracked by vessels, including through the use of radio and/or satellite buoys, for the purpose of aggregating target tuna species for purse-seine fishing operations." (19-01)*

WPCFC:
At the 16º Annual Commission in 2019, the CPC could not agree a definition of FAD.

IOTC:
"Fish Aggregating Device (FAD) means a permanent, semi-permanent or temporary object, structure or device of any material, man-made or natural, which is deployed and/or tracked, for the purpose of aggregating target tuna species for consequent capture." (19/02)

ICCAT:

i. *"Floating object (FOB): Any natural or artificial floating (i.e. surface or subsurface) object with no capability of moving on its own. FADs are those FOBs that are man-made and intentionally deployed and/or tracked. Logs are those FOBs that are accidently lost from anthropic and natural sources."*

ii. *"Fish-Aggregating device (FAD): Permanent, semi-permanent or temporary object, structure or device of any material, man-made or natural, which is deployed and/or tracked, and used to aggregate fish for subsequent capture. FADs can either be anchored (aFADs) or drifting (dFADs)."*

5. Obligations under the RFMOS regarding FAD.

Tuna RFMO have adopted the following provisions:

WCPFC:

- Conservation and Management Measure for bigeye, skipjack and yellowfin tuna (CMM 2021-01). It includes provisions on FADs.
- Conservation and Management Measure on the application of high seas (CMM 2009-02) which sets out the specifications regarding FAD closure.
- Conservation and Management Measure on data buoys (CMM 2009-05)

- Conservation and Management Measure on cetaceans (CMM 2011-03)

IOTC:

- Resolution 19/02, on FAD management Plan.
- Resolution 21/01, on a yellowfin stock recovery plan in the Indian Ocean.
- Resolution 18/04, on BIOFAD experimental project.
- Resolution 15/02, on the recording of statistical data. Sets the obligation of reporting number of FADs by quarter, including position, type and other information.
- Resolution 15/09 that sets a Working Group on FADs
- Resolution13/04, on the conservation of cetaceans.
- Resolution 13/05, on the conservation of whale sharks.

IATTC:

- Resolution C19-01, on FAD provisions.
- Resolution C-21-04, regarding Tuna conservation in the EPO 2022-2024.

ICCAT:

- Recommendation 21-01, replacing Recommendation 19-02on a multi-annual conservation and management programme for tropical tunasRecommendation 16-02, regarding a Working Group on FAD.

6. Identification of FADs

Each buoy shall have a sequence of characters serving as an identifier for each device to be used. This sequence shall not vary during the device's lifespan.
Operators may choose the identification system, with the only prerequisite that it be individual and unique for each FAD.
Depending on the results obtained through the implementation of the present plan, in the future—if it is considered appropriate—a single

7. Register and information-sharing regarding FADs: Inventory and Specific Activity Register (FAD logbook). Records in fishing logbooks.

Operators will send to the General Secretariat of Fisheries information on the operational FADs and buoys associated with their corresponding identification through a template called (Annex I).
The information contained in the said template for each FAD is grouped by fishing vessel, respecting the format and instructions for completing them.
On the other hand, the operation on FADS is recorded in the corresponding section of the vessel's electronic fishing logbook.

8. Monitoring of FADs

As far as possible, vessels must record monitoring information for each FAD, which has a satellite beacon, based on its assigned number. Moreover, efforts should be made to record information obtained from other beacons (e.g. visual, radio).
There shall be no obligation to communicate the recorded information. However, such information may be requested in order for the designated scientific personnel to conduct

specific studies or in order to carry out monitoring activities. This information may be requested, prior approval by the operators for its use.

9. Measures to prevent loss of FADs

Vessel operators shall prevent, as far as possible, loss of FADs at sea.
In the event of a loss or of the impossibility of hauling in a FAD (areas or seasons closed to fishing), operators must record, in the Specific Activity Register, its last known date and position.

10. Measures to mitigate the catch of juvenile tuna and non-target species

From June, 30, 2015 on all activity on entangling FADs is forbidden.
The use of methods that reduce juvenile catches and associated species is encouraged in order to get cleaner catches.
The parties involved in this plan may propose pilot actions in order to advance in some of the aspects described.

11.- FAD fishing regulation.

FADs will be activated exclusively on board of the vessels.

11. Specific closures on fishing with FADs

- **WCPFC:**

  - Temporary closure:

    Since last February 6, 2018, fishing on FAD between July 1 and September 30 is prohibited for all purse seiners fishing in the EEZ or high seas. In addition, for the high seas three additional months of closure are fixed (between April and May or, November and December for all the purse seiners fishing).
    The prohibition referred to includes:
    - Hauls cannot be made in 1 nautical mile around the FAD.
    - It is forbidden to catch concentrated fish under a boat or move this fish, including the use of lights and mist to attract it.
    - FADs and beacons can only be withdrawn, with prior authorization, provided they are kept on board until the landing or the end of the closure and no haul is made within 7 days or within 50 nautical miles around the point of departure.
    - In addition, in relation to the previous section, two vessels cannot cooperate to avoid this measure by prohibiting hauls of any ship in a nautical mile around the FAD withdrawal point in the following 24 hours.

    In order to comply with the Recommendation, each vessels must submit the available information on satellite tracking of all FADs and beacons on a weekly basis during the closure period.

  - Limitation of the number of buoys:

No more than 350 FADs can be deployed with active instrumented buoys, (clearly identified and equipped with a tracking system).
For the follow-up of this measure, each vessel operating in the WCPFC area shall send a certificate from the buoy supplier company that collects the number of active buoys per vessel.

- **CIAT:**

Whale shark sets are prohibited.

- Temporary closure:

72 days closure is established, and it applies since 00:00 hours on July 29 to 24:00 hours on October 8, or, since from 00:00 hours on November 9 until 24:00 hours on January 19 of the following year.
For 2022, Spain will ensure that purse-seine vessels flying its flag that fished during any of the years 2017, 2018 and 2019 and have caught on average more than 1,200 metric tons of bigeye tuna in floating-object or unassociated sets during that period, shall, in addition, observe an extended closure of 8 additional days.
Vessel owners will declare the selected period before June 1st, communicating those vessels which have to observe additional days.

During that period the VMS system has to be switched on. If the vessel has to move from the indicated port it will have to request for a permission indicating the purpose, route, destiny port and dates.

- Spatial closure:

In addition, purse seiners are not allowed to fish from 00:00 hours on October 9 to 24:00 hours on November 8 within the area of 96º and 110º W and between 4ºN and 3ºS, "corralito".
During this period, only innocent passage will be authorized with the appropriate request.

- Limitation of the number of buoys:

No more than 400 FADs per vessel can be deployed. For the follow-up of this measure, each vessel operating in the WCPFC area shall send a certificate from the buoy supplier company that collects the number of active buoys per vessel. The information must be sent quarterly to the CIAT Secretariat.

- **ICCAT:**

FAD closure

In order to reduce the fishing mortality of juvenile bigeye and yellowfin tunas, purse seine and baitboat vessels fishing for, or vessels supporting activities to fish for, bigeye, yellowfin and skipjack tunas in association with FADs in the high seas or EEZs shall be prohibited during a period of 72 days in

2022, since January, 1st until March, 13th throughout the Convention area. This should be reviewed and, if necessary, revised based on advice by the SCRS taking into account monthly trends in free school and FAD-associated catches and the monthly variability in the proportion of juvenile tuna in catches.
In addition, each CPC shall ensure its vessels do not deploy drifting FADs during a period of 15 days prior to the start of the closure period.

FAD limitations

2022 300 FADs per vessel
CPCs shall ensure that, for vessels flying their flag, the following limits shall apply on the number of FADs with operational buoys at any one time according to definitions given in paragraph 26. The number of FADs with operational buoys will be verified through the verification of telecommunication bills. Such verifications shall be conducted by the competent authorities of the CPCs.
In addition, each CPC with purse seine fishing vessels is encouraged not to increase its total fishing effort on FADs from its 2018 level.
CPCs may authorize their purse seine vessels to set on floating objects provided that the fishing vessel has either an observer or a functioning electronic monitoring system on board which is capable of verifying set type, species composition, and providing information on fishing activities to the SCRS.

- **IOTC:**

  - Limitation of the number of buoys:

    Non instrumental bouys are prohibited. Only instrumental bouys have to be used for drifting FADS.
    300 active instrumental buoys cannot be exceed per vessel at any time. In addition, the number of instrumental buoys acquired by each vessel is fixed at a maximum of 500.
    From 1 January 2022, Spain encourage its flag vessels to use FADs made of natural or biodegradable materials, in accordance with the guidelines at Annex V of the Resolution 19/02, as to remove from the water, retain onboard and only dispose of in port, all traditional FADs encountered (e.g. those made of entangling materials or designs).

    In order to comply with the FAD limit, each vessels must submit a certificate issued by the company that supplies the beacons or by a scientific institute that certifies the following data:

    - Number of instrumental buoys per vessel at any time by quarter.
    - Number of instrumental buoys contracted by year.

    Regarding the obligations required in the RES 19/02 Annex I, the Spanish fleet operating in the Indian Ocean hasn’t interaction with other fleets as it is a long distance fleet and only longliners and purse seiners with their supply vessels are involved.

In reference to the buoy design, the DFADs can be seen from, from a distance of up to 2 or more NM, depending on weather conditions and whether tools other than eyesight are used for detection (e.g. binoculars), the buoys are all identified with a unique ID, assigned by the manufacturer. Buoy ID are used to identify each individual FAD, recorded in FAD logbooks and all electronic records available. There is no lighting neither radar or radio devices installed in the beacons, the identification of the buoys is done through their ID.

12. Control of the regulatory measures of the RFMOs.

12.1. Control of the limitation of the number of buoys:

The industry control the number of FADs since 2014 and, thanks to AZTI that carries out the control tasks.
In 2019, the General Secretariat for Fisheries established the obligation of the control of FADs in the annexes of the Temporary Fishing License. The guarantee of compliance are the certificates of a Scientific Institute which include the information of the number of instrumental buoys active and acquired by vessels.
Each FAD is associated with a buoy, so the control is done through the number of active instrumented buoys per day and per vessel.
The main information is provided aggregate by the suppliers of instrumented buoys to the Scientific Institute who receives this information per month in .csv files containing the daily information.
The main tasks includes control mechanisms as analysis of buoys deactivated in port, data crossing of the first moment of activation of a buoy and VMS location of the vessel, as well as with FAD notebooks and observer information.
In Annex II. AZTI Methodology, the methodology carried out to control the FAD number is explained in detail.

12.2. Control of FAD's spatial and temporal closures:

The General Secretary of Fisheries carries out the control of the FAD closures in the Fisheries Monitoring Center thanks to VMS systems.

13. Measures to monitor and follow up the present plan

The relevant authorities may perform documentary monitoring of the provisions envisaged in the present plan, and they may require, if necessary, the data described in section 6.
The Spanish Institute of Oceanography (IEO), as the Spanish scientific authority in this regard, shall be responsible for processing and monitoring the information provided by the operators, and shall be authorized to draft the follow-up reports for this plan and to propose the measures it deems appropriate in order to improve the functioning thereof.
Moreover, the General Secretariat for Fisheries may determine, in coordination with the IEO, the participation of other scientific bodies in order to fulfill the objectives set forth in the present plan.

14. Confidentiality measures for the information provided by operators

The information provided by the operators shall be treated as confidential at all times, and its use shall be restricted solely to scientific or monitoring purposes, if necessary. The General Secretariat for the Sea undertakes not to disclose this sensitive information, other than for the aforementioned purposes, without the express consent of the ship-owners.

15. Amendments to the present plan

This plan shall be amended in line with future measures adopted within the different RFMOs and with the conclusions of the reports envisaged in section 12.

16. Implementation

All provisions in this Plan will be in force until further modifications are adopted or new international provisions are set.

ANNEX I
DFAD logbook

:::REGISTRO DE DCPs y BALIZAS:::

Envíos y dudas al correo: DCP@ieo.es

Vessel: License plate:

					Buoy			Position			Floating structure					Tail							Bycatches				
Trip nº	Date	Hour	Origin	Buoy?	Model	Number ID	Activity	Lat	Lon	FAD type	Material/structure	Flotability	External coat	Mesh with light > 3 cm in the external coat	Dimensions	Material/structure	Added materials	ballast	Mesh with light > 3 cm without knots	Depth (m)	Bank stimation (tons)	Catches (tons)			Group	No. of specimens or weight (t)	N/P	Nº/Weight specimens released alive	Observations/comments
																						SKJ	YFT	BET					
AAAA-nnn	DDMMAAAA	HHMM		(S/N)				ggmm	gggmm					(S/N)	aaxbbxcc				(S/N)										
2016-006	01/12/2016	09:01	Buque1	S	m3i+	133259	Lance	01°30'S	009°58'W	A la deriva	Cañas	Corchos	Malla	S	2x3x0,5	Malla en chorizo	De origen artificial	Aros / Cáncamos	N	20.5	30	10	2	1	Tiburón ballena	1	N	1	

Field	Formato	Description/comments	Examples
TRIP Nº	AAAA-nnn	Enter the annual trip number, where YYYY is the year and nnn is the tripnumber (3 digits), the voyage being understood as the trip between departure and arrival in port. If the voyage has started the previous year, it continues with the numbering already assigned. *It is only necessary to enter this numbering at the beginning of each trip*	2016-001
Date	DDMMAAAA	Day (DD): Two digits (15 p.e.) (no leading 0 required) Month (MM): Two digits (06 p.e.) Year (YYYY): Four digits (2016 p.e.) Automatically, the date will appear in 'dd/mm/yyyy' format.	28092016
Hour	HHMM	GMT Time (HH): Two digits (12 p.m.) (no leading 0 required) Minutes (MM): Two digits (08 p.m.) Automatically, the time will appear in 'hh:mm' format.	603
Origin		Select from the drop-down list according to the origin of the DCP you are working with (see Table 0).	own
Buoy?	S/N	Select 'Y' (Yes) if the object has a buoy or 'N' (No) if it does not have one. This field has been designed to record in a more convenient way the encounter of non-buoy objects, both natural and artificial (nets, carrion, grass, pallets...). In case a beacon or any other element is added to the object, insert a new line with the characteristics of the new FAD. (see Table 1 - Modifications on previous object) (see Examples sheet). Translated with www.DeepL.com/Translator (free version)	S
Model		Select from the drop-down list the buoy model (d+, dl+, ds+, dsl+, te7, m3i, m4i...) If the model is not found in the list, select "Other" and overwrite the model. Avoid generic models such as: Nautical, Tunabal, Satlink...	ds+
Number ID	number	Write down the numerical code used for the identification of the buoy (the one that is usually written after the model) without spaces or signs in between.	13448
Activity		Identify the activity performed on the FAD in the drop-down box (see Table 1 and Examples sheet).	Pick up at sea
Lat	ggmm	Degrees (gg): Two digits (03 p.e.) (no leading 0 required) Minutes (mm): Two digits (08 p.e.) Start with a '-' sign in case of south latitude. The latitude in gg°mm'N/S format will automatically appear in the box.	-203 (for 02°03'S)
Lon	ggmm	Degrees (gg): Three digits (050 p.e.) (no leading 0's necessary) Minutes (mm): Two digits (08 p.e.) Start with a '-' sign in case of west longitude. The latitude in ggg°mm'E/W format will automatically appear in the box.	5023 (for 050°23'E)

Floating Object

FAD tail

Field	Formato	Description/comments	Examples
FAD Type		Select from the drop-down list the type of FAD that is the subject of the activity (see Table 2 and Examples sheet). NOTE: It is not necessary to fill in the FAD characteristics fields (floating structure and tail) in case of anchored/anchored FAD (e.g. support vessel).	Anchored
Structure/material		Select from the drop-down list the material that configures the main floating (or semi-submerged) structure of the FAD (see Table 3)..	Cane
Flotability		Select from the drop-down list the main material used for the buoyancy of the FAD (see Table 4).	Corks
External coating		Select from the drop-down list the material used to wrap the most superficial part of the FAD (see Table 5).	Mesh
Mesh with light > 3 cm in the outer coating	S/N	Select 'Y' (Yes) if the most superficial covering of the floating structure has a mesh size greater than 3 cm or 'N' (No) otherwise. NOTE: In case of using a net with mesh size > 3 cm as grill cover and then wrapping it entirely with concealing mesh (raffia, tarpaulin, mesh <3 cm...) select 'N' (No).	
Dimensions	aaxbbxcc	Enter in this field, the digits necessary to indicate the length (aa), width (bb) and height (cc) of the floating structure of the object, in meters.	2x1x0.3
Structure/material		Select from the drop-down list the major material/structure used to make the FAD tail (see Table 6).	Mixed mesh (with 'sails')
Added elements		Select from the drop-down list the group of materials added to the majority structure. In case of several materials of natural+artificial origin, select the most abundant one (see Table 7).	Colored ribbons
Ballast		Select from the drop-down list the material used as ballast for the FAD (see Table 8).	None
Mesh with light > 3 cm without "knots"	S/N	Select in this box 'S' (Yes) in case of including in any part of the tail or in any addition, net with mesh size > 3 cm without knots.	S
Calado (m)	number	Write down in this box, with digits, the maximum depth reached by the FAD.	30

Catches (tons)

Bycatches

Field	Format	Description/comments	Examples
Bank estimate (tons)	number	Enter in this box, with a single digit, the estimated tons of YFT, BET and SKJ if no set is made. If any other type of fish or stain (object fish, bait, trash, etc.) is detected, enter 0.	5
SKJ	number	Record the catches of SKJ (Katsuwonus pelamis) in the hold plus the discards of this species, in tons.	10
YFT	number	Record the catches of YFT (Thunnus albacares) brought into the hold plus discards of this species, in tons.	2
BET	number	Record the catches of BET (Thunnus obesus) entering the hold plus the discards of this species, in tons.	1
Group		Select from the drop-down list the group of species captured. If there is more than one group, note them on the following lines (see Example sheet) (see Table 9).	Other fishes
No. of specimens or weight (t)	number	Enter the number of specimens or weight (in tons) of the group of species in question (one number for each group). It is not necessary to indicate the quantities per species, only the total of the group. **In case of estimating part of the catch in weight and part in number, indicate it in two consecutive lines.**	0.5
N/P		Select 'N' (number) or 'P' (weight, peso in Spanish) as appropriate.	P
Nº/Weight specimens released alive	number	Anotar con dígitos el número o peso (*en toneladas*) de los ejemplares del grupo que se hayan liberado vivos. No es necesario indicar las cantidades por especie, únicamente el total del grupo.	0.1

Tabla 9	
GROUP*	Description/comments
Sharks (hammerhead sharks, mako sharks, silky sharks...)	Select sharks in case of catching specimens of this group, regardless of their destination. NOTE: Do not select in the case of a whale shark
Billfishes/Sharks/Swordfishes	Select this group when the catch includes fish known as billfishes, billfishes or swordfishes, regardless of their destination.
Turtles	Select turtles in case of catching any turtles, regardless of their destination.
Rays and manta rays	Select this group in case of catching mantas, rays or manta rays, regardless of their destination.
Marine mammals (whales, dolphins...)	Select this group in case of catching marine mammals in the purse seine, regardless of their destination.
Whale sharks	Select this group in case of catching any specimen of whale shark (pinto), regardless of its destination.
Other fishes (billfishes, bananas...)	Select other fishes in case of catching pinfishes (Balistidae e.g.), bananas, dorados or any other type of fish not included in the previous lines of this table.

NOTE: All species found inside the purse seine after the eyebolts have been raised (purse seine closure) must be included.

						Buoy			Position			Floating structure					Tail						Catches (tons)			Bycatches				
	Trip nº	Date	Hour	Origin	Buoy?	Model	Number ID	Activity	Lat	Lon	FAD type	Material/structure	Flotability	External coat	Mesh with light > 3 cm in the external coat	Dimensions	Material/structure	Added materials	ballast	Mesh with light > 3 cm without knots	Depth (m)	Bank stimation (tons)	SKJ	YFT	BET	Group	No. of specimens or weight (t)	N/P	Nº/Weight specimens released alive	Observations/comments
DESCRIPCIÓN DE LA ACTIVIDAD	AAAA-nnn	DDMMAAAA	HHMM		(S/N)				ggmm	gggmm					(S/N)	aaxbbxcc				(S/N)										
Plantación de un objeto balizado propio en 02º02'S / 008º01E el 06/03/2016 a las 12:05	2016-002	6032016	1205	Propio	S	dsl+	56234	Despliegue	-202	801	A la deriva	Plástico/PVC	Corchos	Sin recubrimiento	N	3x2	Cabos	Ninguno	Cable metálico	N	40									
Plantación de un objeto balizado propio en 02º02'N / 008º01'W el 06/03/2016 a las 13:30		6032016	1330	Propio	S	m3i	165222	Despliegue	202	-801	A la deriva	Cañas	Corchos	Malla	S	4x2	Malla mixta (con velas)	De origen artificial	Aros / Cáncamos	S	50									
Plantación de un objeto balizado para otro buque conocido de nombre "Cerquero 1"		6032016	1440	Cerquero1	S	dl+	60111	Despliegue	ggmm	gggmm	A la deriva	Cañas	Corchos	Malla	S	3x2	Malla en chorizo	Ambos	Aros / Cáncamos	N	40									
Detección de un objeto balizado propio y recogida en el mar		9032016	1415	Propio	S	te7	150	Recogida en el mar	ggmm	gggmm		Plástico/PVC	Corchos	Sin recubrimiento	N	3x2	Cabos	Ninguno	Ninguno	N	40	2								
Detección de un objeto balizado ajeno perteneciente a un buque desconocido		9032016	1730	Desconocido	S	m4i	80442	Comprobación	ggmm	gggmm	A la deriva	Metal	Garrafas	Rafia/Nylon	N	4x1.5	Malla en chorizo	De origen natural	Aros / Cáncamos	N	60	0								
Cambio de baliza del objeto anterior						dsl+	56235	Modificaciones sobre el objeto anterior																					
Lance a un banco agregado por un buque de apoyo anclado a un monte submarino		10032016	645	No aplicable	N			Lance	ggmm	gggmm	Fondeado											15	8	5	3	Tiburones	6	N	6	
Lance a un objeto balizado propio		10032016	1100	Propio	S	isl+	109215	Lance	ggmm	gggmm	A la deriva	Plástico/PVC	Corchos	Sin recubrimiento	N	3x1.5	Cabos	Ninguno	Cable metálico	N	40	25	10	2	1	Tiburones	4	N	2	
Introducción de otro grupo de capturas accidentales																									Marlines/Picudos/Peces espada	3	N	0	
Recogida en el mar del objeto sobre el que se ha largado en la línea anterior								Recogida en el mar																					
Lance a un objeto natural no balizado		10032016	1500	No aplicable	N			Lance	ggmm	gggmm		Natural (carroña, trasmallo, palé…)			N	2x0.3				N	0.3	40	20	10	8	Tiburones	1	N	1	Lance a tronco
Introducción de otro grupo de capturas accidentales																									Marlines/Picudos/Peces espada	1	N	0	
Introducción de otro grupo de capturas accidentales																									Tortugas	1	N	1	
Balizado del objeto natural sobre el que se ha largado en la línea anterior y adición de una parrilla				Propio	S	dsl+	56236	Modificaciones sobre objeto anterior				Mixta	Corchos	Malla	S	6x2	Malla mixta (con velas)	Ninguno	Aros / Cáncamos	S	40	0								
Lance a un objeto ajeno (tronco balizado)		11032016	625	Desconocido	S	d+	11777	Lance	ggmm	gggmm		Natural (carroña, trasmallo, palé…)				2x0.3				N	0.2	5	1	1	1	Tiburones	2	N	1	
Cambio de baliza y adición de un rabo al objeto sobre el que se ha largado en la línea anterior						m3i	165333	Modificaciones sobre objeto anterior				Mixta	Corchos	Sin recubrimiento	N		Malla en chorizo	De origen artificial	Cable metálico	N	45									
Detección de un objeto perteneciente a otro buque llamado "Cerquero 2"		12032016	820	Cerquero 2	S	te8	224	Comprobación	ggmm	gggmm		Cañas	Corchos	Malla	S	4x2	Malla mixta (con velas)	De origen artificial	Cable metálico	S	35	5								
Cambio de baliza del objeto detectado en la línea anterior				Propio		m3i	165444	Modificaciones sobre el objeto anterior																					
Detección de un objeto natural (sin balizar) por parte de un buque de apoyo		14032016	900	No aplicable	N			Comprobación	ggmm	gggmm		Natural (carroña, trasmallo, palé…)			N	1x0.3					2									Trasmallo
Balizado del objeto natural detectado en la línea anterior para un buque ajeno denominado "Cerquero 3"				Cerquero 3	S	m3i	165555	Modificaciones sobre el objeto anterior																						Balizado de trasmallo

Buque	0														
Matrícula	0														
		Buoy			Position										
Date	Hour	Buoy?	Number ID	Activity	Lat	Lon	FAD type	Catches (tons)			Bycatches				ervations/comme
DDMMAAAA	HHMM	(S/N)			ggmm	gggmm		SKJ	YFT	BET	Group	. of specimens or weight	N/P	Nº/Weight specimens released alive	
Date	*Time*		*Buoys*	*Type of visit*	*Latitude*	*Longitude*	*FAD Type* ***(falta campo vacío en Material)***	*Estimated catches (SKJ)*	*Estimated catches (YFT)*	*Estimated catches (BET)*	*Taxonomic group (bycatch)*	*Estimated catches (bycatch)*	*Unit*	*Specimen released alive (Bycatch)*	*Observations*
01/12/2016	09:01	S	m3i+133259	Lance	01º30'S	009º58'W	Artificial_A la deriva	10	2	1	Tiburón ballena	1	N	1	Buque1
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0
00/00/00	00:00	0		0	00º00'N	000º00'E		0	0	0	0	0	0	0	0

ANNEX II

AZTI Methodology, the methodology carried out to control the FAD number

Joint t-RFMO FAD Working Group meeting **Doc. No. j-FAD_13/2017**
April 7, 2017 (10:35 AM)

Original: English

MONITORING THE NUMBER OF ACTIVE FADS USED BY THE SPANISH AND ASSOCIATED PURSE SEINE FLEET IN THE IOTC AND ICCAT CONVENTION AREAS

J. Santiago [1], H. Murua[2], J. López[2] and I. Krug[3]

The purse seine vessels of the Spanish ANABAC and OPAGAC fleet owners organizations agreed in late 2014 to freeze the number of DFADs by 1st of January 2016. According to that agreement, each purse seine vessel could use simultaneously a maximum of 550 Drifting Fishing Aggregating Devices (dFDAs) at any time of the year. This limit to be evaluated through the number of active instrumented buoys, which implicitly established the prohibition of the use of DFADs without buoys. This voluntary agreement also established that the verification of the volume of the daily active beacons used by each purse seiner would be carried out by the independent scientific body AZTI and sanctions were also included in the agreement.

Furthermore, in 2015 IOTC adopted *the Resolution 15-08 Procedures on a Fish Aggregating Devices (FADs) Management Plan* that sets the maximum number of instrumented buoys active and followed by any purse seine vessels at 550 at any one time (and 1100 acquired purchased annually). In 2016, *Resolution 16-01 on interim plan for rebuilding the Indian Ocean Yellowfin tuna stock in the IOTC area of competence* decreased the limit to no more than 425 daily active instrumented buoys per purse seine vessel (and 850 purchased annually).

Likewise, in November 2015 ICCAT adopted the *Recommendation by ICCAT on a Multi-annual Conservation and Management Programme for Tropical Tunas* [Rec. 15-01], establishing a provisional limit of no more than 500 instrumental buoys active at any one time for each fishing vessel.

Since September 2015 AZTI is carrying out the verification of the compliance with the different FAD limit measures adopted; initially as a voluntary agreement and later as agreed IOTC Resolutions 15/08 and 16/01 and ICCAT Recommendation 15-01. The procedure and mechanisms developed to verify the compliance are briefly outlined in the present document.

Method used for the verification

The basic information utilized to monitor the number of active buoys and, hence, verify the compliance with the limits, is provided by the instrumented buoys manufacturers. Currently, three are the companies that supply instrumented buoys to the Spanish and associated fleet (i.e. vessels belonging to the Spanish fishing companies but operating under other flags). By means of a sworn statement issued by these three companies, manufacturers provide daily information on the position and speed of each individual active buoy. Buoys are given unique identifier codes provided by the manufacturer that are associated to a single purse seine vessel, irrespectively of whether they are deployed by the purse seine vessel itself or by a supply vessel.

AZTI receives the buoy data directly from the manufacturers in a monthly basis with a two-month delay. This means that the first day of the information received in month *m* is the information of month *m-2*. Data is received in csv files, independently for each vessel, and contains daily records of all the active buoys managed by each individual vessel in month *m-2*. The information gathered in the csv files is: date [dd-mm-yy], time [hh.mm], individual unique buoy identified code [the format varies with the manufacturer, although it is always alphanumeric], latitude and longitude [expressed in degrees and minutes in decimal values] and speed [knots].

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The agreement considers the following definitions for instrumented buoys, depending on their situation and condition:

- Operational active buoy: a beacon that, after leaving the factory and passing through transit, has been registered and has the ability to transmit.
- Active buoy at sea: operational beacon transmitting position reports deployed at sea.
- Deactivation: action of de-registering an active buoy at sea by the buoy supplier company after the request by the ship owner due to loss, theft or any other possible cause.
- Reactivation: action of re-registering a beacon previously deactivated by the buoy supplier company after the request by the vessel owner (note that a buoy that has been deactivated at sea needs to pass at least one time by the fishing port before it is reactivated).

In order to identify records that do not correspond to active beacons at sea different filters are applied to the data:

- Records outside the Convention Areas [Atlantic Ocean: -100 > longitude > 20; Indian Ocean: 20 > longitude > 120]
- Records on land: two conditions are required, 1) the position of the record overlays a land mask (shapefile http://www.naturalearthdata.com/downloads/10m-physical-vectors/10m-land/) and 2) speed = 0 knots.
- Records of operational active buoys that are onboard the vessel before deployment: speed > 4 knots.
- Records of deactivated buoys: The buoys manufacturers fill with NAs those that have been deactivated during the month of reference. Therefore, those records with NA values are excluded.

AZTI has put in place additional control mechanisms, if necessary, that include: random examination onboard purse seiners and supply vessels at port to check buoys that have previously been deactivated and retrieved on deck (and are, thus, able to be reactivated and used again), crosschecking the first activation of the buoy with VMS vessel position, comparisons with the information recorded in the FAD logbook and with the information collected by the observers onboard, among others.

Preliminary results

Some examples of the results of the verification are shown in **Figures 1** and **2**. **Figure 1** shows the daily evolution of the number of active buoys at sea of one vessel of the Spanish and associated fleet between September 2016 and January 2017 in the Indian Ocean. This trend illustrates the effect of the transition from Res. 15-08 to Res. 16-01 in the IOTC convention area. **Figure 2** shows the average daily density of FADs used by one of the vessels in the Indian Ocean in January 2017, by 1x1º statistical square. According to ICCAT Recommendation 16-01 CPCs shall ensure that this type of information is submitted for the bulk of the fleet every year to ICCAT.

Figure 1. Example of the evolution of the number of active buoys used by one vessel of the Spanish and associated fleet between September 2016 and January 2017 in the Indian Ocean. Limits adopted in Resolutions 15-08 and 16-01 are also shown.

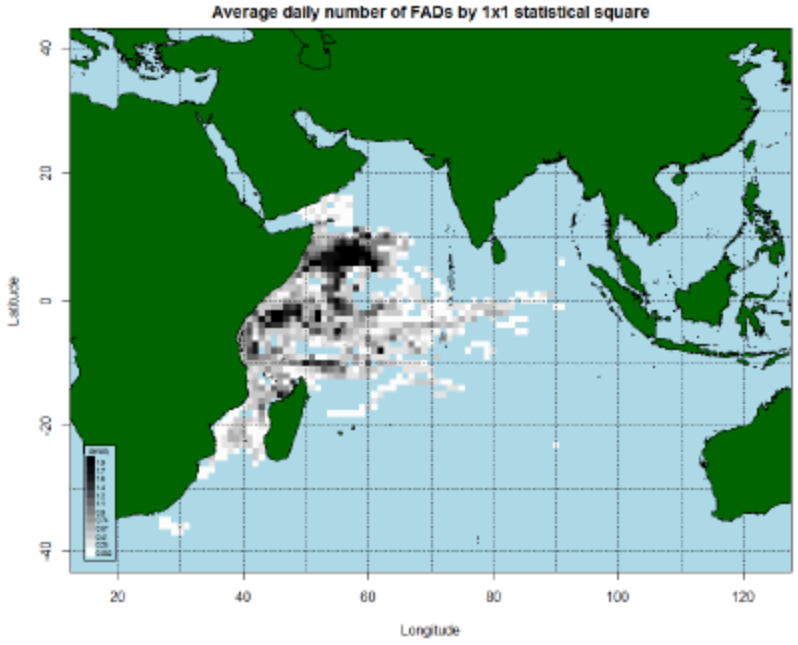

Figure 2. Average daily density of FADs used by one vessel of the Spanish and associated fleet in the Indian Ocean in January 2017, by 1x1º statistical square.

Iran DFADs Management Plan

Received 13.04.2021

IRAN Management Plan for AFAD/DFAD preparation

(Revised on 2021)

1. Objective :

- Catch Increase
- Data collection of catch volume, composition and sizes as well as by-catch amount
- Implementation a AFAD/DFADs monitoring and control plan

2. Scope:

2.1. There are 8 purse-seine vessels that currently 5 of those are active with GT capacity between 1200-2500 Mt. The vessels sizes range is among 60-90 meters.

2.2. There are almost 40 AFAD/DFAD beacons deployed for each vessel; however for operating vessels, some logs could be deployed; which are not reported.

2.3. A logbook considered for each vessel; which contains AFAD/DFAD installation timing report, harvest, catch amount and composition.

2.4. Regular AFAD/DFADs are deployed but any incidental catch or endangered caught species will be released to sea as much as possible.

2.5. Fishing permission license for these vessels are issued for two different seasons. AFAD/DFADs are not permitted in Oman Sea. Besides there is not any type of fishing method in Arabian Sea and Indian Ocean that engages with other fishing gears.

2.6. Numbers of aFAD/DFADs of each vessel are regularly checked. In case of any loose condition, SHILAT receives the report.

2.7. SHILAT is making necessary arrangements to collect the documents on AFAD/DFADs ownership.

3. Institutional arrangements

3.1. Deputy of Fishing and fishing Harbors of Iran Fisheries Organization is officially responsible for Management and Policy making for AFAD/DFADs deployment.

3.2. Amount and composition of fish that unloaded in ports, is compared to the logbook data for verification and final approval.

3.3. The owners are obliged to report AFAD/DFADs deployment condition via logbooks

3.4. According to the number of deployed AFAD/DFADs by each vessel in Iran, that is notably fewer that maximum announced level by IOTC, there is no definite policy for AFAD/DFADs replacement.

3.5. Logbook reports are received upon arrival of vessels in unloading ports. It is necessary for fishing license issuance.

4. AFAD/DFAD construction specifications

4.1. AFAD/DFADs are mostly made of Bamboo wood or renewable materials in their natural form. Dimensions of these AFAD/DFADs are approximately 2*3 and/or 3*3meters.

4.2. Name of the vessel has been marked on AFAD/DFADs.

4.3. There is no lighting requirement.

4.4. These devices have no reflection on radar instruments.

4.5. Visibility distance is 4 miles.

4.6. Some buoys are installed on AFAD/DFADs have special serial numbers

4.7. Buoys are also traceable via satellite.

5. Application areas

5.1. Operation zone of purse seiners is Oman Sea and International waters of Indian Ocean including fishing Islands, coastal waters and EEZ areas of coastal countries (by loyalty payment to coastal countries)

6. Applicable period for AFAD/DFAD-MP From 1st of August till 30th of March

7. Monitoring and reviewing of MP

Logbook data and the activities of AFAD/DFADs management plan, is reviewed annually by fishing management Committee.

8. AFAD/DFAD Logbook

a) AFAD/DFADs logbook is merged with catch logbook to ease data collection (attached), however Data on AFAD/DFAD sets catch and effort is included in this logbook.

b) AFAD/DFADs characteristics are provided to SHILAT by vessel owners. If required, SHILAT could visit AFAD/DFADs. FAD/DFADs data during operation collected by captain and filled in logbook.

i. Position included in logbook (by latitudes and longitudes)

ii. Date is included in logbook (by year, month and day)

iii. AFAD/DFADs identifiers data is provided in the logbook

iv. AFAD/DFADs type is included in logbook.

v. AFAD/DFADs design characteristics is already identified and provided to SHILAT but no data on design included in logbook.

vi. Visits are implemented during deployment and hauling.

C. if the visit followed by a set the results of the set in terms of catch and by-catch is filled in logbook through caught species specifications (type and Amount)

LOGBOOK & FAD LOGBOOK OF PURSE SEINERS((Revised on 2019)

Name of vessels: **Name of captain:**

Row	Date of fishing activity			Input Position in Lat. & Long.				Association صید از طریق این تجهیزات						Set No.		Fishing Effort (days)		Sea State				
	YY	MM	DD	Lat°	Lat'	Long°	Long'	Free School گله آزاد	Log لاگ	Beacan /DFAD بویه			Other سایر	Positive	Nil	earching vessel	deploy DFAD	Calm آرام	Semi Calm نیمه آرام	Rough طوفانی یا مواج	Chlorophyll میزان کلروفیل	Temprature (°C) دمای آب
										ID	Deploy	Hauling										
1																						
2																						
3																						
4																						
5																						
6																						
7																						

Row	Tuna fishes (Kg) تون ماهیان						Billfish (Kg) منقار ماهیان			Sharks (Kg) کوسه ها				Others سایرماهیان						Discard		Total Catch (Kg)
	YFT گیدر	SKJ هوور مسقطی	BET تون چشم درشت	LOT هوور	KAW زرده	Other سایر	SWO شمشیر ماهی	BLM مارلین سیاه	SFA بادبان ماهی	Whale Shark کوسه کر	Oce,white Shark باله سفید	Silk Shark کوسه ابریشمی	Thr.Shark کوسه دم دراز	Name of Species-نام گونه	Catch Quantity(kg) میزان صید	Name of Species نام گونه	Catch Quantity(kg) میزان صید	Name of Species نام گونه	Catch Quantity(kg) میزان صید	Name of Species نام گونه	Catch Quantity(kg) میزان صید	
1																						
2																						
3																						
4																						
5																						
6																						
7																						

Japan DFADs Management Plan

Received 16.03.2022

DFAD Management Plan for Japanese tuna purse seine fishing vessels

Fisheries Agency of Japan (FAJ)

1. Objective

This document describes Drifting Fish Aggregating Devices (DFAD) Management Plan to be applied to Japanese tuna purse seine fishing vessels, in accordance with paragraph 12 of IOTC Resolution 19/02. The objective of the plan is to ensure that the use of DFAD by Japanese tuna purse seine fishing vessels is managed in a manner consistent with the conservation and management measures and data collection requirements of the IOTC.

2. Scope

(1) Vessel-types and support and tender vessels:
This Management Plan applies to DFAD used by Japanese tuna purse seine fishing vessels during their fishing operation in the Indian Ocean.

(2) DFAD numbers and/or DFAD's beacon numbers to be deployed:
Each vessel may deploy at maximum 150 sets of DFAD at any one time.

(3) Reporting procedures for DFAD deployment:
A vessel operator shall record information about deployment of DFADs in the FAD logbook (See attached) and submit it to the Japan Far Seas Purse Seine Fishing Association after each cruise. The Japan Far Seas Purse Seine Fishing Association shall submit it to FAJ after reviewing it.

(4) Incidental bycatch reduction and utilization policy:
The primary objective of this DFAD Management Plan is to reduce captures of non-target species associated with fishing on DFADs.
FAJ and Fisheries Research and Education Agency (FRA) have been carrying out a series of research activities in order to develop effective and practical methods for reduction of both juvenile bigeye and yellowfin tuna and non-target species catch in DFAD operation.
The more specific purposes of the research activities have been:

- To investigate effectiveness of larger mesh size nets;
- To develop simulation models visualizing under-water shapes of purse seine nets; and
- To evaluate new DFAD designs (sheet type) that potentially can avoid entanglements of non-target species such as sharks and sea turtles.

FAJ periodically holds consultation with scientists, industries and other experts to review the development of effective mitigation measures for juvenile bigeye and yellowfin tuna catch for further improvements of the measures.

(5) Consideration of interaction with other gear types
When a fishing operator finds other gear type vessels, the operator does not deploy DFADs near the vessels.

(6) Plans for monitoring and retrieval of lost DFADs:
The location of DFAD which is marked with the identified number is monitored by GPS. If the signal is lost, every effort is made to retrieve it. If it cannot be collected, the incident is recorded on FAD logbooks.

(7) Statement or policy on "DFADs ownership":

Vessel operators monitor the location of DFAD through GPS. Each DFAD is marked with relevant information in order to identify the owner.

3. Institutional arrangement of the DFAD Management Plans:

(1) Institutional responsibilities:

Vessel operators are responsible for implementation of this DFAD Management Plans including the FAD logbook control. The Japan Far Seas Purse Seine Association will guide and assist the implementation of this plan. The FAJ provides guidance for proper application of this plan, if necessary, through the Japan Far Seas Purse Seine Fishing Association.

(2) Application processes for DFAD and /or DFAD beacons deployment approval:

Vessel owners shall notify FAJ of the number of DFAD and beacons planned to deploy in advance. All actual deployment is recorded on the FADs logbook.

(3) Obligations of vessel owners and masters in respect of DFAD and /or DFAD beacons deployment and use:

Vessel operators and owners shall comply with requirements stipulated in this Management Plan and IOTC management measures regarding DFAD operation

(4) DFAD and/or DFADs beacons replacement policy:

All replacement will be recorded on the FADs logbook. Old DFAD should be retrieved as practically as possible.

(5) Reporting obligation

Fishing operators and/or owners will report use of DFAD through the FADs logbook after each cruise to the Japan Far Seas Purse Seine Fishing Association. The Japan Far Seas Purse Seine Fishing Association will submit the logbook to the FAJ.

4. DFADs construction specifications and requirements

(1) DFAD design characteristics

DFAD design characteristics are sheet type and net type.

(2) DFAD marking and identifiers, including DFADs beacons

Vessel operators monitor the location of DFAD through GPS. Each DFAD is marked with relevant information in order to identify the owner.

(3) Lighting requirements

The GPS buoy has a function to light up when the vessel approaches.

(4) Radar reflectors

Radar reflectors are not installed in a DFAD.

(5) Visible distance

It depends on the ocean condition.

(6) Radio buoys (requirement for serial numbers)

No radio buoy is used on DFAD.

(7) Satellite transceivers (requirement for serial numbers)

A GPS buoy is installed in each DFAD.

5. Applicable areas

This Management Plan will be applied to fishing operation in the IOTC convention area. All Japanese fishing vessels follow area/time closures adopted as the IOTC conservation and management measures.

6. Applicable periods for the DFAD-MP

This Management Plan will be applied for the entire period while Japanese purse seiners operate in the IOTC convention area. This plan may be modified if the IOTC conservation and management measures are amended.

7. Means for monitoring and reviewing implementation of the DFAD-MP

The Japan Far Seas Purse Seine Fishing Association will review the submitted logbook and will submit it to the FAJ. The FAJ provides guidance to the Japan Far Seas Purse Seine Fishing Association based on the information on the logbook, if necessary.

8. DFAD logbook

The format of FADs logbook is attached.

DFAD logbook

Address

Name

Nameof vessel		Gross tonnage				Tonnage
Call sign		Licence number				Number

year	month	day	Latitude	Longitude	ID	DFAD type(drifting natural FAD, drifting artificial FAD) DFAD design characteristics	(1)deployment (2)hauling (3)retrieving (4)loss (5)operation	Remarks
			N S	E W				
			N S	E W				
			N S	E W				
			N S	E W				
			N S	E W				
			N S	E W				
			N S	E W				
			N S	E W				
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Korea DFADs Management Plan

Received 17.03.2022

DRIFTING FISH AGGREGATING DEVICE (DFAD) MANAGEMENT PLANS

Ministry of Oceans and Fisheries

Republic of Korea

1. Objective

This DFADs Management Plan is devised to minimize and reduce fishing mortalities of juvenile bigeye and yellowfin tunas and non-target species associated with fishing on FADs, and to collect data concerning the fishing activities. This Management Plan covers the use of drifting fish aggregating devices (DFADs) by Korean-flagged purse seiners for the year of 2022 in accordance with paragraph 2 of the IOTC Resolution 19/02. The Ministry of Oceans and Fisheries (MOF) is responsible for the implementation of this Management Plan.

2. Scope:

Description of its application with respect to:

- vessel-types and support and tender vessels

  This Management Plan applies to Korean purse seiners and supply vessel.

- Number of instrumented buoys

  The number of instrumented buoys that may be acquired annually for each purse seine vessel is set at no more than 500. No purse seine vessel shall have more than 500 instrumented buoys (buoy in stock and operational buoy) at any time. No more than 300 operational buoys will be followed by any purse seine vessel at any one time.

- reporting procedures for DFAD deployment

  All DFAD-related activities such as deployment, retrieval and loss, etc. are recorded in the DFAD logbook which will be submitted to National Institute of Fisheries Science for compilation and analysis.

- incidental bycatch reduction and utilization policy

  In accordance with paragraph 2 of Resolution 19/05, Korea requires all purse seine vessels to retain on board and then land, to the extent practicable, the following non-targeted species or species group; other tunas, rainbow runner, dolphin fish, triggerfish, billfish, wahoo, and barracuda, except fish considered unfit for human consumption, and/or species which are prohibited from retention, consumption, or trade through domestic legislations and international obligations.

- consideration of interaction with other gear types

  N/A

- plans for monitoring and retrieval of lost DFADs

  All DFAD-related activities such as deployment, retrieval and loss, etc. are recorded in the DFAD logbook which will be submitted to National Institute of Fisheries Science for compilation and analysis.

- statement or policy on “DFAD ownership”

Korea requires its purse seine vessel operators to ensure that instrumented buoy attached to the DFAD contain a physical, unique reference number marking (ID provided by the manufacturer of the instrumented buoy) and the vessel unique IOTC registration number clearly visible. This way, we can identify which vessel or company owns a particular DFAD.

3. Institutional arrangements for management of the DFAD Management Plans:

- Institutional responsibilities

  The Ministry of Oceans and Fisheries (MOF) is responsible for the management and implementation of this Management Plan.

- application processes for DFAD and /or DFAD beacons deployment approval

  Every activity on DFAD is recorded by the master of fishing vessels on drifiting FAD logbook which is reported to NIFS, and the relevant information is collected by scientific observer programs as well. There's no requirement in place regarding DFAD deployment approval, other than DFAD logbook.

- Obligations of vessel owners and masters in respect of DFAD and /or DFAD beacons deployment and use

  Vessel owners and masters must comply with the requirements in Resolution 19/02 and this Management Plan including the number of maximum instrumented buoy, maintenance of DFAD logbook and marking, etc.

- DFAD and/or DFADs beacons replacement policy

  If deployed DFAD is worn out or need to be replaced, the master of the fishing vessel will replace it and record the case on the DFAD logbook. In general, the mater of each fishing vessel shall record information concerning DFADs activities on the DFAD logbook and report them to NIFS.

- reporting obligations

  Every activity on DFAD is recorded by the master of fishing vessels on DFAD logbook which is reported to NIFS.

4. DFAD construction specifications and requirements

- DFAD design characteristics (a description)

  Non-entangling FAD

- DFAD markings and identifiers, including DFADs beacons

  Vessel name, call sign and unique ID are marked on DFAD and instrument buoy attached to the DFAD contains ID provided by the manufacturer of the instrumented buoy and the vessel unique IOTC registration number.

- Lighting requirements

  The use of lights is not allowed.

- radar reflectors

  DFADs of Korean fleet do not and will not have radar reflectors

- visible distance

  Approximately 3 nautical miles from a vessel with telescope

- radio buoys (requirement for serial numbers)

The use of radio buoys is not allowed.

- satellite transceivers (requirement for serial numbers)

  All the buoys must have their own unique identification number.

5. Applicable areas

- Details of any closed areas or periods e.g. territorial waters, shipping lanes, proximity to artisanal fisheries, etc

  This Management Plan applies to Korean purse seine and supply vessels across the whole IOTC area of Competence.

6. Applicable period for the DFAD–MP

This Management Plan applies to Korean purse seine and supply vessels in 2022.

7. Means for monitoring and reviewing implementation of the DFAD–MP

Every activity on DFAD is recorded by the master of fishing vessels on DFAD logbook which is reported to NIFS, and the relevant information is collected by scientific observer programs as well.

8. DFAD logbook template (data to be collected specified in Annex III).

FAD logbook

Vessel Name : | Registration Number : | Completed by : | Year :

Date		Position		FAD Activities		FAD Shape			FAD Size			Buoy Information	
Month	date	Longitude	Latitude	Activity	Fished?	Type	Structure	Material	width (m)	length (m)	height (m)	Identifier	Type

1 페이지

Progress on DFADs Management Plan

Ministry of Oceans and Fisheries
Republic of Korea

The Republic of Korea has fully implemented the DFADs Management Plan submitted previous year. The Korean-flagged purse seine vessels and the supply vessels used DFADs in accordance with the Plan, and all DFADs used were recorded in the DFAD logbook. In addition, all the relevant reporting requirements were also fully met.

In 2021, two purse seiners engaged in fishing activities in the IOTC area of competence and the total number of instrumented buoys allowed for the vessels was 1,000 (500 for earch vessel) pursuant to the IOTC Resolution 19/02. In the same year, each of the two purse seiners followed less than 300 instrumented buoys at any one time in full compliance with the requirments made in the Resolution.

In addition, DFAD logbook template was updated and incorporated into Korea’s e-reporting system.

Mauritius DFADs Management Plan

Received 17.03.2022

Drifting Fish Aggregating Device (DFAD) Management Plan

Submitted by: **Mauritius**

Operator: SAPMER/IOSMS (Indian Ocean Ship Management Services)

Purse Seiners: Belle Isle, Belle Rive and Belouve

Supply vessel: Balbaya

1. **Objective:** Appropriate deployment and management of DFADs to maintain tuna stocks at sustainable levels.
2. **Scope:**
    a. **Vessel type** : purse seiner and supply vessel.
    b. **DFAD numbers or number of beacons to be deployed**: A maximum of 300 instrumented buoys are active at sea at any one time in relation to each of its vessels through such measures as for example the monthly review sent by the provider and a maximum of 500 instrumented buoys which may be acquired annually by each of its fishing vessel.
    c. **Reporting procedures**: Through fishing and DFAD logbooks (Appendix 1) and daily information on active FADs as per Res 19/02.
    d. **Incidental by catch reduction and utilization policy**: The deployment of Non-entangling FADs to reduce incidental by-catch forms part of the policy of the vessel owners and operators since 2012 (Appendix 2). Details on the non-entangling FADs are given at Appendix 3. Biofads are also being deployed and the use of biodegradable FADS is under trial. The vessel owners and operators are committed to the use of best practices for FAD Management through a FAD Management policy which is based on the International Seafood Sustainability Foundation (ISSF) Conservation measure 3.7 (Appendix 4).
    e. **Consideration of interaction with other gears type**: The Mauritius tuna longline fleet operating from Port Louis carry out fishing activities mostly in the EEZ and hence has no interaction with the purse seine operations which occur mostly outside the EEZ. Moreover, licensed foreign longliners operate mostly in the EEZ of Mauritius thereby eliminating the risk of conflict between purse seine fishing and tuna longlining arising from the use of DFADs. The DFAD MP shall be reviewed in case of any adverse impacts reported as a result of DFADs or part of DFADs having interfered with longline operation.
    f. **Monitoring and retrieval of lost DFADs**: All DFADs are marked and are equipped with satellite buoys that allow movement monitoring. Vessel masters are encouraged to prevent, as far as possible, loss of FADs set at sea. In the event of a loss or of the impossibility of hauling in a FAD, operators must record its last known date and position in the logbook (Appendix 1).
    g. **Statement or policy on DFAD ownership:** Presently, DFADs beacons are clearly marked with a serial number until a new marking scheme is adopted by the IOTC.

3. **Institutional arrangement for management of the DFAD Management Plan:**

- **Institutional responsibilities**: The Ministry of Blue Economy, Marine Resources, Fisheries and Shipping monitors the activities of the DFADs deployed by its flagged vessels through DFADs logbooks. The purchase order of the vessel owners and operators is also verified to ensure that their annual purchase of beacons is within the limit of 500 instrumental buoys that can be acquired annually by each vessel.
- **Application processes for DFAD and/or DFAD beacons deployment approval**: Presently, no application process and approval is required for the deployment of DFAD and DFAD beacons. However, the Ministry ensures that the deployment of DFAD is being properly done by the vessel's owners and operators according to the DFAD-MP. Moreover, all information pertaining to the deployment of DFAD and or DFAD beacons is recorded in logbooks that are verified for compliance by the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping.

  DFAD and/or DFADs beacons replacement policy:

- **Obligations of vessel owners and masters in respect of DFAD and/or DFAD beacons deployment and use**:

(i) The maximum number of instrumental buoys active at any one time at sea should not exceed 300 for each purse seiner.

(ii) Only non-entangling DFAD or bio fads should be deployed by the purse seiners or the supply vessel. Only non-entangling bio fads would be used in the future.

(iii) Recording of each activity with respect to DFAD and DFAD beacon deployment and use in the both the fishing and DFAD logbooks.

(iv) All DFADs deployed must be marked with a detailed marking scheme defined by the beacon ID.

(v) Reporting of daily information on all active DFADs per assigned vessel including date, instrumented buoy ID and daily positions.

- **Reporting obligations** – All information pertaining to DFAD/DFAD beacons deployment must be recorded in fishing and DFAD logbooks (refer to Appendix 1). This include:
  (i) The date of deployment
  (ii) The position (latitude and longitude) of DFAD/DFAD beacon deployment.
  (iii) Identification number of the beacon
  (iv) The total number of DFAD/DFAD beacons deployed per trip.
  (v) DFAD type (drifting natural, drifting artificial)
  (vi) Type of visit (deployment, hauling, retrieving, loss, intervention on electronic equipment)

4. **DFAD construction specifications and requirements**
   a. DFAD design characteristics (a description): As per annexed plan (refer to Appendix 3)
   b. DFAD markings and identifiers, including DFAD beacons: DFAD identified by serial number
   c. Lighting requirements: flash command
   d. Radar reflectors: visible without radar reflectors

e. Visible distance: 1 NM
f. Satellite buoys (requirement for serial numbers): marine instruments and Satlink
   M3I XXXXX
   M3I+ XXXXX
   M3IGO XXXXX
   SLX+ XXXXX
   ISD+ XXXXX
g. Satellite transceivers (requirement for serial numbers): All DFADs are equipped with satellite transceivers to allow the monitoring of FAD trajectory.

5. **Applicable areas**: on high seas and EEZ of the Indian Ocean Coastal State through licenses, shipping lanes, away from fishing grounds of the artisanal fishery.

6. **Applicable period for the DFAD-MP**: The current Management Plan is valid for a period of one year.

7. **Means for monitoring and reviewing implementation of the DFAD-MP**: The implementation of the DFAD-MP will be monitored and reviewed by the Ministry of Blue Economy, Marine Resources, Fisheries, and Shipping at regular intervals. The monitoring will be done jointly with the ship owners and operators and the tuna export industry. The DFAD-MP will be reviewed on a yearly basis to accommodate new management measures adopted at the Commission meeting with regard to FADs. Since the coming into force of Resolution 19/02 on 1 January 2020, operators are required to report daily information on active DFADs per vessel. These information are sent regularly to the IOTC within a delay of at least 60 days. Submission of a DFAD logbook with complete information on DFAD related activities has been made compulsory. All the information with regard to DFAD will be recorded as usual in the Ministry's database that will allow easy access for verification and monitoring. For instance, the number of DFADs deployed at sea is recorded based on the logbooks and verified if they are within the set limits of the Resolution 19/02. This information is processed and submitted to the IOTC on a yearly basis. A progress report on the implementation of the DFAD-MP will be prepared and submitted to the IOTC annually.

8. **DFAD Logbook**:
   For purse seiners: all activities are reported in the appropriate logbook designed to accommodate all information concerning activities related to DFAD.

   For supply vessel: a specific DFAD logbook is used to report all information concerning activities related to DFAD.

   Activities include:

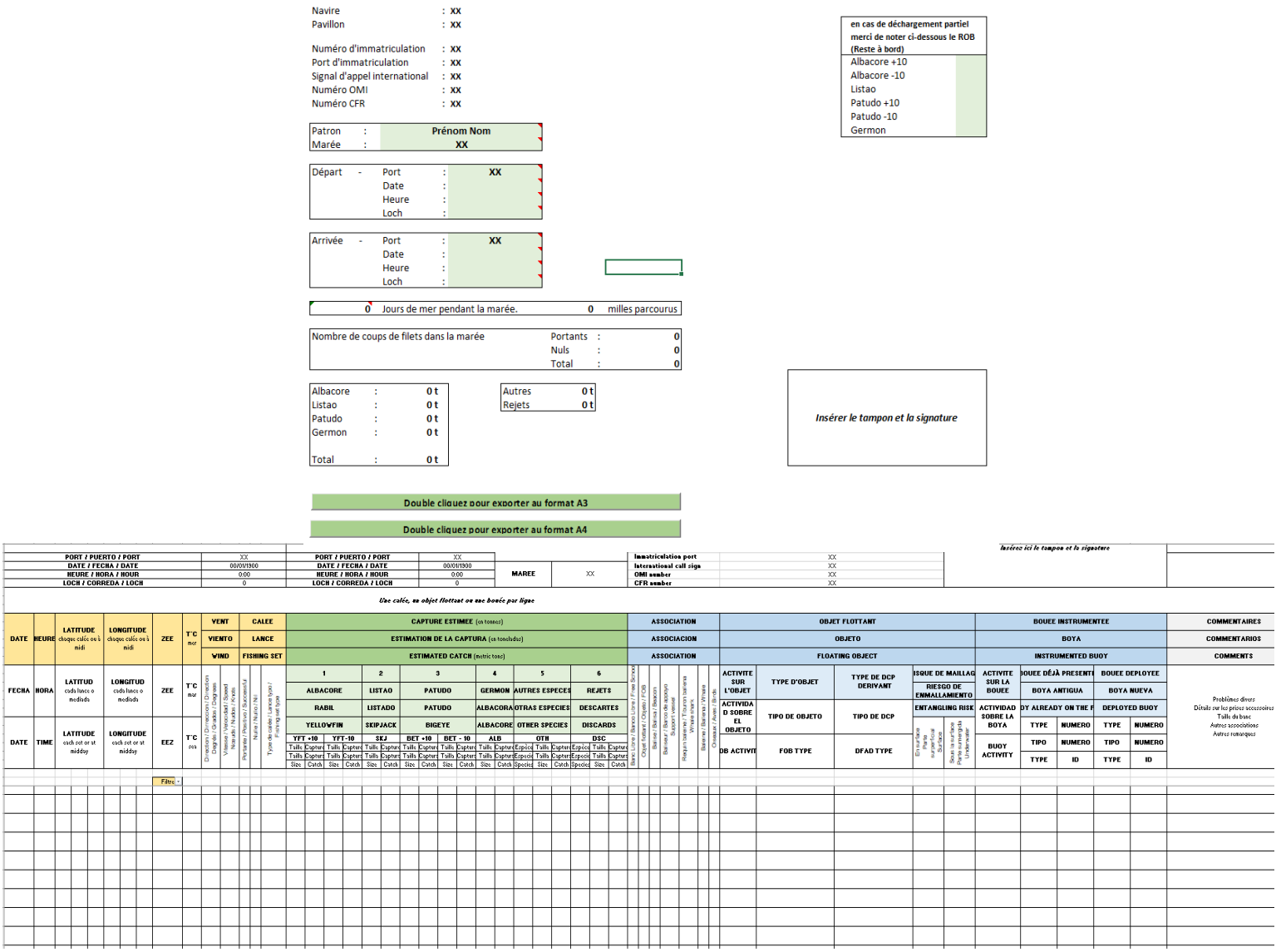
   - Deployment/launch of FADs
   - Removal of FADs
   - Visiting of FADs with or without handling (maintenance/exchange)

   For each of the above activities, the following information is also recorded in the logbook:

   - Date and time;

- Position (latitude & longitude);
- Type of FAD (natural, artificial, "classic" or "non-entangling" draft) along with a short description (tree trunk, pile of straw, container, rope, …)
- Number of associated beacon in case of a TFAD;
- Number of removed beacon in case of a TFAD if the beacon belonged to the vessel, if not write "beacon of a third vessel";
- Any observation with regard to entangled sharks or turtles if ever the FAD has net counterparts;
- Tons caught per species;
- Any discard quantities

APPENDIX 1



Navire : XX
Pavillon : XX

Numéro d'immatriculation : XX
Port d'immatriculation : XX
Signal d'appel international : XX
Numéro OMI : XX
Numéro CFR : XX

en cas de déchargement partiel merci de noter ci-dessous le ROB (Reste à bord)
Albacore +10
Albacore -10
Listao
Patudo +10
Patudo -10
Germon

Patron : Prénom Nom
Marée : XX

Départ - Port : XX
Date :
Heure :
Loch :

Arrivée - Port : XX
Date :
Heure :
Loch :

0 Jours de mer pendant la marée. 0 milles parcourus

Nombre de coups de filets dans la marée
Portants : 0
Nuls : 0
Total : 0

Albacore : 0 t
Listao : 0 t
Patudo : 0 t
Germon : 0 t
Total : 0 t

Autres 0 t
Rejets 0 t

Insérer le tampon et la signature

Double cliquez pour exporter au format A3

Double cliquez pour exporter au format A4

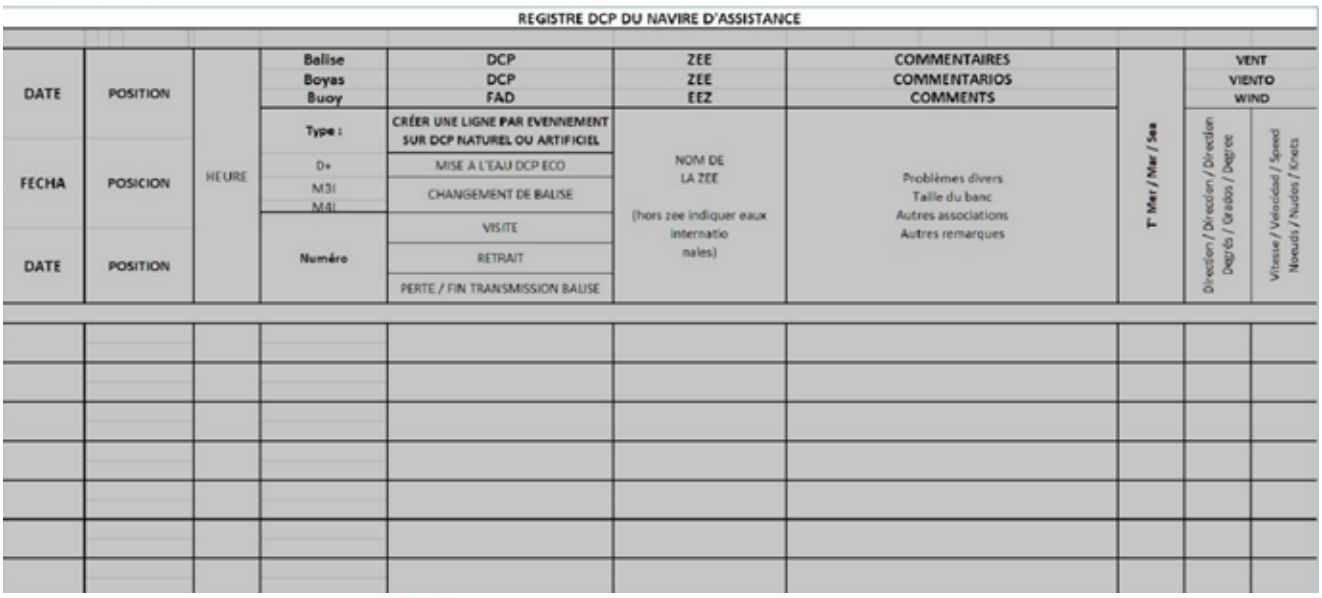
PORT / PUERTO / PORT	XX	PORT / PUERTO / PORT	XX	MAREE	XX	Immatriculation port	XX
DATE / FECHA / DATE	00/01/1900	DATE / FECHA / DATE	00/01/1900			International call sign	XX
HEURE / HORA / HOUR	0.00	HEURE / HORA / HOUR	0.00			OMI number	XX
LOCH / CORREDA / LOCH	0	LOCH / CORREDA / LOCH	0			CFR number	XX

Insérez ici le tampon et la signature

Une calée, un objet flottant ou une bouée par ligne

DATE	HEURE	LATITUDE chaque calée ou à midi	LONGITUDE chaque calée ou à midi	ZEE	T°C mer	VENT / VIENTO / WIND	CALEE / LANCE / FISHING SET	CAPTURE ESTIMEE (en tonnes) / ESTIMATION DE LA CAPTURA (en toneladas) / ESTIMATED CATCH (metric tons)	ASSOCIATION / ASSOCIACION / ASSOCIATION	OBJET FLOTTANT / OBJETO / FLOATING OBJECT	BOUEE INSTRUMENTEE / BOYA / INSTRUMENTED BUOY	COMMENTAIRES / COMENTARIOS / COMMENTS
FECHA	HORA	LATITUD cada lance o mediodía	LONGITUD cada lance o mediodía	ZEE	T°C mar	Dirección / Dirección / Direction; Dirección / Grados / Degrees; Velocidad / Velocidad / Speed; Nudos / Nudos / Knots	Portando / Portón / Suceso / Nulo / Nulo / Nil; Tipo de calée / Lance tipo / Fishing set type	1 ALBACORE RABIL YELLOWFIN; 2 LISTAO LISTADO SKIPJACK; 3 PATUDO PATUDO BIGEYE; 4 GERMON ALBACORA ALBACORE; 5 AUTRES ESPECES OTRAS ESPECIES OTHER SPECIES; 6 REJETS DESCARTES DISCARDS	Banc Libre / Banco Libre / Free School; Objet flottant / Objeto / FOB; Balise / Baliza / Beacon; Balise / Baliza / Beacon; Requin baleine / Tiburon ballena / Whale shark; Baleines / Ballenas / Whale; Oiseaux / Aves / Birds	ACTIVITE SUR L'OBJET / ACTIVIDAD SOBRE EL OBJETO / OB ACTIVIT; TYPE D'OBJET / TIPO DE OBJETO / FOB TYPE; TYPE DE DCP DERIVANT / TIPO DE DCP / DFAD TYPE; RISQUE DE MAILLAG / RIESGO DE ENMALLAMIENTO / ENTANGLING RISE; En marche / Parte superficie / Surface; Sous la surface / Parte sumergida / Underwater	ACTIVITE SUR LA BOUEE / ACTIVIDAD SOBRE LA BOYA / BUOY ACTIVITY; BOUEE DÉJÀ PRESENTE / BOYA ANTIGUA / BOY ALREADY ON THE F; BOUEE DEPLOYEE / BOYA NUEVA / DEPLOYED BUOY; TYPE; NUMERO; TYPE; NUMERO; TYPE; ID; TYPE; ID	Problèmes divers / Détails sur les prises successives / Tailles du banc / Autres associations / Autres remarques
DATE	TIME	LATITUDE each set or at midday	LONGITUDE each set or at midday	EEZ	T°C sea			YFT +10 / YFT-10 / SKJ / BET +10 / BET - 10 / ALB / OTH / DSC; Tailles Captures Espèces; Size Catch Species				

Filtre



REGISTRE DCP DU NAVIRE D'ASSISTANCE

DATE / FECHA / DATE	POSITION / POSICION / POSITION	HEURE	Balise / Boyas / Buoy Type : D+ M3I M4I Numéro	DCP / DCP / FAD CRÉER UNE LIGNE PAR EVENNEMENT SUR DCP NATUREL OU ARTIFICIEL MISE A L'EAU DCP ECO CHANGEMENT DE BALISE VISITE RETRAIT PERTE / FIN TRANSMISSION BALISE	ZEE / ZEE / EEZ NOM DE LA ZEE (hors zee indiquer eaux internatio nales)	COMMENTAIRES / COMMENTARIOS / COMMENTS Problèmes divers Taille du banc Autres associations Autres remarques	T° Mer / Mar / Sea	VENT / VIENTO / WIND Direction / Dirección / Direction Degrés / Grados / Degree	Vitesse / Velocidad / Speed Noeuds / Nudos / Knots

SAPMER

ISSF CONSERVATION MEASURE 3.5
SAPMER NON-ENTANGLING FAD POLICY

- Since January first, 2012, SAPMER SA does not permit its vessels to deploy Fishing Aggregation Device (FAD) presenting entanglement risks. SAPMER Group's vessels operated by Tuna Fishing Company (TFC) and Indian Ocean Ship Management Service (IOSMS) are subject to the same environmental measure.

- This non-entangling FAD Policy is based on our Producer Organization ORTHONGEL Decision n°11 dated November 23rd 2011 which is available at the following link: http://orthongel.fr/docs/reglt/orthongel/Dec11-DCPeco.pdf

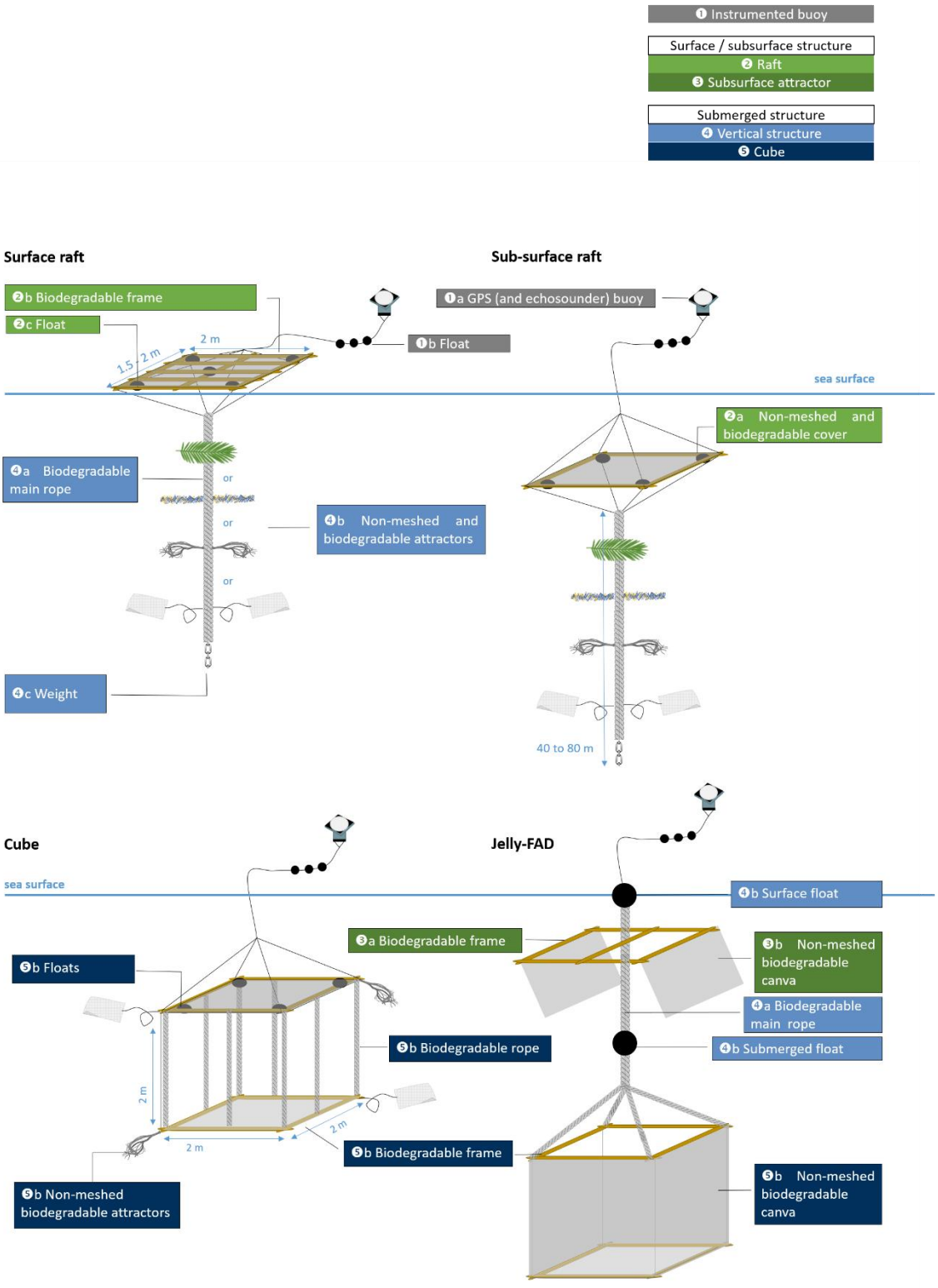
- The characteristics and engineering of non-entangling FAD were determined during the "tuna for tomorrow program ECO FAD" and are consistent with ISSF Guide for non-entangling FAD.

- This policy and our membership to ISSF are posted on Company's website https://www.sapmer.com and are also available onboard every SAPMER Group's vessels related to Tuna activities.

- This policy and the associated technical means have been developed since then in a process of continuous improvement.

Policy adopted on 10/04/2019
Policy revised on 01/02/2021

APPENDIX 3


❶ Instrumented buoy
Surface / subsurface structure
❷ Raft
❸ Subsurface attractor
Submerged structure
❹ Vertical structure
❺ Cube
Surface raft
❷b Biodegradable frame
❷c Float
2 m
1.5 / 2 m
❶b Float
sea surface
❹a Biodegradable main rope
or
or
or
❹b Non-meshed and biodegradable attractors
❹c Weight
Sub-surface raft
❶a GPS (and echosounder) buoy
❷a Non-meshed and biodegradable cover
40 to 80 m
Cube
sea surface
❺b Floats
❺b Biodegradable rope
2 m
2 m
2 m
❺b Biodegradable frame
❺b Non-meshed biodegradable attractors
Jelly-FAD
❹b Surface float
❸a Biodegradable frame
❸b Non-meshed biodegradable canva
❹a Biodegradable main rope
❹b Submerged float
❺b Non-meshed biodegradable canva

APPENDIX 4

ISSF CONSERVATION MEASURE 3.7
SAPMER FAD MANAGEMENT POLICY

SAPMER GROUP requires onboard its vessel(s) operated by SAPMER SA, Tuna Fishing Company (TFC) and Indian Ocean Shop Management Services (IOSMS) the use of the following best practices for FAD management, as identified in ISSF Technical Report 2019-11, "*Recommended Best Practices for FAD management in Tropical Tuna Purse Seine Fisheries*":

a) Comply with flag state and RFMO reporting requirements for fisheries statistics by set type

We commit to:

- Filling out completely and accurately the logbooks, including FAD logbook information, by set type as per IOTC resolution in force and submitting them by electronic means to the required authorities
- Achieving 100% human observer coverage, even if not required by the IOTC, on all fishing trips through the regional observer program OCUP operated by Bureau Veritas
- Collecting data on the number of active FADs and FAD activity (deployments, visits, sets and loss) as required by IOTC resolutions in force and submitting them to the required authorities and scientific partners

b) Voluntarily report additional FAD buoy data for use by RFMO science bodies

We commit to:

- Participate to IRD (Institut de Recherche et de Développement) scientific program by providing daily positions and echo-sounder data for every company-owned FAD, with the adequate time-lag to ensure confidentiality.

c) Support science-based limits on the overall number of FADs used per vessel and/or FAD sets made

We commit to:

- Not having more than 300 active FADs per vessel at any time, abiding by the limit of active number of FADs required by the IOTC resolutions in force;
- Deploying only FADs with satellite tracking buoys attached to;
- Not reactivating remotely buoys that were previously deactivated. They will only be reactivated when the buoys are back in port;
- Providing information on the buoy position at least once per day while they are in the water and submitting them to IRD (Institut de Recherche et de Developpement)

d) Use only non-entangling FADs to reduce ghost fishing

We commit to:

- Deploying only FADs that are completely non-entangling (i.e., without any netting), in compliance with IOTC resolutions in force and according to the ISSF Guide for Non-Entangling FADs;

e) Mitigate other environmental impacts due to FAD loss including through the use of biodegradable FADs and FAD recovery policies

We commit to:

- Studying the feasibility of using FADs with only biodegradable materials in their construction
- Participating in tests of locally-sourced biodegradable materials in collaboration with ORTHONGEL, KAIROS and the UBO (Université de Bretagne Occidentale);
- Studying the feasibility of deploying simpler and smaller FADs;
- Participating in research to determine FAD deployment areas that have high risk of stranding, by providing historical track data to IRD (Institut de Recherche pour le Développement);
- Participating in the SIOTI FIP FAD WATCH interception and recovery project with ICS

f) For silky sharks (the main bycatch issue in FAD sets) implement further mitigation efforts

We commit to:

- Applying Best Practices for safe handling and release of sharks and rays brought onboard

Seychelles DFADs Management Plan

Received 17.03.2022

SEYCHELLES DRIFTING FISH AGGREGATING DEVICE MANAGEMENT PLAN 2022-2023

Seychelles Fishing Authority

PO BOX 449, Victoria, Mahé Seychelles

AUGUST 2020

NOTE: Information provided in the Seychelles Drifting Fish Aggregating Device Management Plan serves as a one-year bridge plan (2022 – 2023). It may be updated and revised during the bridge year period, at any time, to better include stakeholder feedback and align with Seychelles' Marine Spatial Plan Initiative processes. Many points in the plan are still relevant and hence will be extended over the period 2022 – 2023.

Glossary

ANABAC: Asociación Nacional de Armadores de Buques Atuneros Congeladores

APR: Atún de Pesca Responsable

CMM: Conservation and Management Measures

COA: Certificate of Authorisation

CPC: Contracting Parties and Cooperating Non-Contracting Parties

DFAD: Drifting Fish Aggregating Device

EM: Electronic Monitoring

IOTC: Indian Ocean Tuna Commission

MoFA: Seychelles Ministry of Fisheries and Agriculture

MP: Management Plan

MSC: Marine Stewardship Council

MSP: Marine Spatial Planning

OCUP: Observateur Commun Unique et Permanent

OPAGAC: Organización de Productores de Atún Congelado

ORTHONGEL: Organisation française des producteurs de thon congelé et surgelé

SFA: Seychelles Fishing Authority

SIOTI: South-West Indian Ocean Tuna Initiative

WPEB: IOTC Working Party on Ecosystems and Bycatch

Definitions

Abandoned DFAD. DFAD left at sea without a buoy or with a buoy not capable of transmitting the position signal because of malfunction or deliberate deactivation.

Instrumented buoy. Buoy marked with a unique reference number allowing identification of its owner and equipped with a satellite tracking system to monitor its position

Acquired DFAD. A DFAD originally deployed by a vessel whose buoy has been exchanged for one belonging to the new (acquiring) vessel.

Active buoy. Instrumented buoy having been activated, i.e. capable of transmitting data (e.g. GPS position) through satellite communication. The start of data transmission requires a switch-on procedure.

Activation. Action of registering an instrumented buoy to start the satellite communication service. The activation is made onboard with the buoy manufacturer software or upon request by email or telephone to a 24/7 support service.

Buoy. A buoy is an electronic tracking device attached to the floating object (FOB) that includes a GPS unit to track the device's movements and determine its location as well as other electronic components such as temperature sensor, conductivity sensor, voltmeter, echo sounder unit and data recording unit.

Buoy in stock: Buoy purchased by a fishing company, stored onboard but not yet activated.

Buoy owner. Any legal or natural person, entity or branch, who is paying for the communication service for the buoy and/or who is authorized to receive information from the satellite buoy, as well as to request activation/deactivation.

Deactivation. Action of de-registering an instrumented buoy to stop the satellite communication service and stop the buoy transmission. The deactivation is made onboard with the buoy manufacturer software or upon request by email or telephone to a 24/7 support service.

DFAD. Human-made device which is deployed at sea to passively drift in near-surface ocean currents for the purpose of aggregating target tuna species for consequent capture. A DFAD is typically composed of a floating structure (e.g. bamboo or metal raft with buoyancy provided by buoys, corks, etc.) and of a submerged structure (made of old netting, canvass, ropes, etc.).

Lost DFAD. DFAD that can no longer be tracked because the information from the buoy attached is no longer transmitted for different potential reasons, e.g. beaching, sinking, etc.

Operational buoy. Active instrumented buoy transmitting data through satellite communication while drifting at sea.

Purchased buoy. Buoy purchased by a fishing company from a buoy manufacturer.

Reactivation. Action of registering a deactivated buoy that was previously activated to start a new satellite communication service and enable the buoy transmission. The reactivation is made onboard with the buoy manufacturer software or upon request by email or telephone to a 24/7 support service after the buoy has been brought back to port.

Shared buoy. Buoy whose data are provided to more than one purse seiner vessel.

Switch on/off. Action of applying a magnet on the buoy to start/stop data transmission after activation.

Transmitting buoy. Active instrumented buoy that is transmitting data through satellite communication while at sea, onboard a vessel or on land.

Table 1: CECOFAD classification of Floating OBjects (FOBs)

Code	Description	Example	Type of impact
DFAD	Drifting FAD	Bamboo or metal raft	Fishing effort, habitat modification, pollution
AFAD	Anchored FAD	Anchored floating platform	Fishing effort, habitat modification, pollution
FALOG	Artificial log resulting from fishing activities	Nets, wreck, ropes	Fishing effort, pollution
HALOG	Artificial log resulting from other human activities	Wooden board, oil tank	Fishing effort, pollution
ANLOG	Natural log of animal origin	Dead whale	Fishing effort
VNLOG	Natural log of plant origin	Branches, palm leaf	Fishing effort

Table 2. CECOFAD classification of activities with FOBs and buoys

Code	Name	Description
FOB	Encounter	Random encounter (without fishing) of a FOB belonging to another vessel or not equipped with a buoy
	Visit	Visit (without fishing) of a FOB (known position, owned by the vessel)
	Deployment	Deployment of a FAD at sea
	Consolidation	Deployment of a FAD on a FOB (e.g. to enhance floatability)
	Retrieval	Retrieval of the FOB
	Fishing	Fishing set on the FOB
BUOY	Deployment	Deployment (tagging) of a buoy on a FOB already drifting at sea without buoy or deployment of a FAD equipped with a buoy
	Transfer	Replacement of the buoy owned by another vessel by a buoy of the vessel
	Retrieval	Retrieval of the buoy on a FOB drifting at sea
	Loss	Loss of the buoy/end of transmission

Background

In 2012, the Indian Ocean Tuna Commission (IOTC) adopted the Resolution 12/08 which called upon all Contracting Parties and Cooperating Non-Contracting Parties (CPCs) having vessels fishing on Drifting Fish Aggregating Devices (DFADs) to develop management plans (MPs) for the use of DFADs by their purse seine fleets by the end of 2013. The overarching objective of the IOTC Resolution 12/08 and subsequent Resolution 13/08, was to improve the collection and reporting of data on DFAD-related activities as from January 2015.

Following the Resolution 13/08, the Seychelles implemented in 2015 a DFAD-MP that included four main components:

(1) Collecting data on buoy identifier, buoy ownership, DFAD design and components, and operations involving both the floating object and the buoy,

(2) Reporting the data to the IOTC,

(3) Managing purse seine effort through a limit of the number of floating objects tracked by a purse seiner at anytime, and

(4) Implementing technical measures for the design and components of the materials to limit the incidental catch of marine species through entanglement and reduce the amount of synthetic marine debris. In addition, the plan recommended to limit bycatch and discards, with particular attention to sensitive species such as sharks and marine turtles. attention to sensitive species such as sharks and marine turtles.

The IOTC Resolutions 15/08, 17/08, 18/08 and 19/02 strengthened the Resolution 13/08 by increasing the data collection and reporting requirements and sequentially reducing the number of instrumented buoys available to each purse seiner at any time. Furthermore, the rebuilding plan for the Indian Ocean stock of yellowfin tuna (Resolution 16/01 superseded by 17/01, 18/01 and 19/01) called for a progressive reduction in the number of auxiliary (support) vessels supporting the purse seiners' activities through the maintenance of the DFAD network. In 2019, the IOTC Compliance Committee reviewed the DFAD-MPs available from eight CPCs and showed that the Seychelles plan was not fully compliant with the IOTC guideline, and it covered only 75% of the requirements (IOTC2019a).

Since 2015, the use of DFADs in the Indian Ocean purse seine fishery has been greatly modified in relation with technological innovations, market demand and management measures such as the catch limit on the yellowfin tuna stock. During 2015-2019, the Seychelles purse seine fishery has substantially increased the part of the catch taken on tuna schools associated with DFADs, i.e. from 75% in 2015 to about 95% in 2019. During 2017-2019, the fleet, comprising of 13 purse seiners caught on average more than 110,000 metric tonnes of tropical tuna each year, of which more than 90% was taken on DFADs.

In this context, the report presents a one-year bridge plan for the DFAD-MP that follows the guidelines of the IOTC (Annex I of Resolution 19/02) and builds on the different certifications already obtained by some fishing companies (i.e. MSC, APR, and Friends of the Sea), the ongoing Fisheries Improvement Projects involving Seychelles purse seiners (SIOTI, OPAGAC), and some company-led initiatives dealing with FAD data collection (e.g. Code of Good Practices, French industry-funded observer program OCUP, Seychelles National Observer Program, Electronic

Monitoring, and ECHEBASTAR FAD Management Plan) and adverse impact mitigation (e.g. FAD WATCH).

It is anticipated that the 2022-2023 DFAD-MP will incorporate a third-party model where vessel owners will be responsible for engaging authorized service providers to administer DFAD activities. As a condition of the issuance of a fishing license, this model would require third-party service providers to establish government approved DFADs, receive and review DFAD data, submit required reports and infractions of fishing activity to SFA, and store data to be accessed by governmental auditors or enforcement personnel. The responsibility for auditing and enforcement, whether civil or criminal, would remain the domain of SFA. In this model, the SFA would also qualify third-party service providers and set the performance standards that must be met by industry.

This third-party model will increase program efficiency and accountability, while reducing overall costs. It will also shift much of the burden of DFAD program execution and capacity constraints from SFA to industry, allowing SFA to access propriety information in real-time and further cultivating industry collaboration. As of March 2020, the third-party model is currently being piloted with electronic monitoring systems within three (3) longline and (2) purse seine vessels operating in Seychelles EEZ. Lessons learned from the pilot model will be used to inform implementation of a third-party model for DFADs within Seychelles.

A third-party model for the DFAD-MP is expected to be developed throughout the 2021 calendar year. In the interim, SFA may continue to administer functions and activities within the DFAD program. The following 2022-2023 FAD-MP therefore notes functions and activities which may be overseen by SFA or a qualified third-party service provider, depending on timing of the FAD-MP and other considerations. Please see Appendix I for more information on this potential model.

1- Objectives

The overarching objective of the 2022-2023 Seychelles DFAD-MP is to provide a fair and transparent framework that determines the roles and responsibilities of each stakeholder involved in the Seychelles purse seine fishery operating within the IOTC area of competence in a first step as well as the foreign purse seine fleet licensed to operate within the Seychelles' waters in a second step. The 2022-2023 DFAD-MP aims to propose a set of operationalizable actions, recommendations and regulatory measures that address the data collection and reporting requirements related to DFADs and their use by purse seiners and support vessels, with the aim of reducing their impact on marine and coastal ecosystems without affecting the economic viability of industrial fishing in and around Seychelles' Exclusive Economic Zone.

The Seychelles DFAD-MP aims to comply with national fisheries policies and regulations (Seychelles Fisheries Act (2014), Seychelles Fisheries Comprehensive Plan (2019)) and international Conventions and Agreements signed by the Seychelles, including but not limited to the IOTC Conservation and Management Measures (IOTC2019b), the FAO Code of Conduct for Responsible Fisheries (FAO 1995), and the Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL 1983).

The Seychelles Fishing Authority (SFA) is the agency responsible for the implementation and follow-up of the DFAD-MP on behalf of the Ministry of Fisheries and Agriculture (MoFA) (Section Institutional arrangements).

2- Scope

The core of the Seychelles 2022-2023 DFAD-MP covers the large-scale purse seiners and support vessels flying the Seychelles flag. Vessels flagged from other states are expected to adopt and employ equivalent conservation measures. The 2022-2023 DFAD-MP component related to DFAD construction, design, and components includes some measures defined within the Seychelles Fisheries Comprehensive Plan. This current 2022-2023 DFAD-MP does not include a spatial component related to the specific conditions applying within the Medium Biodiversity Protection and Sustainable Uses areas delineated through the Seychelles Marine Spatial Plan, which will enter into force in 2021. However, we aim to incorporate buy-in to address Seychelles Marine Spatial Plan processes, including concerns about all foreign purse seiners and support vessels authorized to operate within the Seychelles' waters in future plans.

2.1- DFADs & buoys numbers

In 2022, the number of DFADs that can be deployed by each Seychelles purse seiner and associated support vessel must comply with the maximum limits of 500 instrumented buoys acquired annually for each purse seiner and a maximum of 300 operational buoys by any purse seiner at any one time in conformity with the IOTC Resolution 19/02.

The monitoring of the number of DFADs tracked by each Seychelles purse seiner at any time is based on the information (e.g. GPS position) transmitted through satellite communication by the instrumented buoys attached to the DFADs. SFA or a qualified third-party service provider will track each Seychelles purse seiner and provide data reports (including but not limited to infractions) on all legally deployed DFADs and vessel positions via VMS. Whereby a third-party

service provider, designated by the SFA is used, SFA shall maintain audit rights over the data. SFA's specified requirements include:

- Vessels are strictly prohibited from deploying a DFAD at sea without any instrumented buoys with satellite tracking ability or to use alternative positioning systems (e.g. radio), in accordance with IOTC resolution 19/02.

- Each buoy deployed at sea must be in active transmission mode and included in the individual quota of each Seychelles purse seiner. Operational buoys cannot be remotely activated or re-activated at sea after deactivation (See Definitions), i.e. they must be brought back to port where they can be recovered for reuse.

- The marking of the electronic buoy consists of two components: (1) a unique and permanent identifier linked to the satellite transmission communication and (2) the full name or approved acronym of the purse seiner to which the buoy is permanently assigned in compliance with IOTC Resolution 19/02. The unique identifier includes the buoy model followed by a number of digits that varies with the third-party service provider [i.e., Thalos model + 4 digits (Iridium satellite transceiver); Satlink model + 4-6 digits (Insmarsat satellite transceiver); Marine Instruments Model + 5-6 digits (Iridium satellite transceiver)].

- To ensure full control and compliance of the status (active, de-activated, lost, stolen, etc.) and total number of DFADs tracked by the Seychelles purse seine fishery and address the IOTC reporting requirements (Appendix III), each company operating Seychelles purse seiners must provide the SFA or the designated third-party service provider with specified data requirement. If a third-party service provider is used, the provider will relay data to SFA in consolidated and coordinated reports. This data includes:

    1. Invoices and receipts of the buoy orders made during the current year from the different buoy manufacturing companies, including the number of buoys assigned to each purse seiner;

    2. Monthly reports of numbers of buoys with activations/deactivations for each purse seiner, including first day of the month, last day of the month, minimum, mean, and maximum daily numbers of operational buoys in the month;

    3. The data set of GPS buoy positions within a maximum delay of three (3) months, including the unique buoy identifier, timestamp (yyyy-mm-dd H:M:S UTC), longitude, latitude, and IOTC vessel registration number as per the requirement under clause 21 of Resolution 19/02.

2.2- DFAD deployments and monitoring

Information on the extent and location of the DFADs deployed by the Seychelles purse seiners and associated support vessels must be collected and reported to the IOTC Secretariat as per the requirement of IOTC Resolutions 19/01 and 19/02. Whereby a designated third-party service provider is used, it shall provide the specified data to the SFA and the latter shall transmit the mandatory data or reports to the IOTC. To address the IOTC reporting requirements (Appendix II), industry will work with SFA and/or a third-party service provider to collect the following data from DFADs within the Seychelles purse seine fishery:

1. Logbooks for all purse seiners and support vessels that include the buoy identifier, the DFAD type (See Definitions), the date, UTC time and geographical coordinates of their deployment in

addition to other activity types in compliance with the Annex III of Resolution 19/02 (Section DFAD logbooks & Appendix I);

2. The data set of GPS buoy positions to derive the position of deployment from the starting point of each DFAD trajectory at sea (Section DFADs buoys numbers);

3. Observations at sea collected from onboard observers and review of videos and images collected with Electronic Monitoring (EM) programs conducted within the Seychelles purse seine fishery.

2.3- DFAD design and construction

All DFADs deployed by Seychelles purse seiners and support vessels in the IOTC area must be designed and built following the guidelines and best practices on non-entangling DFADs defined by the International Seafood Sustainable Foundation (ISSF)[1] to reduce the entanglement of marine species as much as possible in agreement with IOTC Resolution 19/02:

- The surface structure of the raft must not be covered with netting or non-meshed materials (e.g. canvas, tarpaulin or shade clothes) to reduce entanglement of marine turtles;
- The subsurface structure must be made with non-meshed materials, i.e. ropes, canvas, nylon sheets, or other non-entangling material, to reduce the entanglement of sharks and marine turtles

As per the IOTC Resolution 19/02, information on DFAD design characteristics, i.e. dimension and material of the floating part and of the subsurface structure of the raft, must be recorded by the vessel operator at deployment and entered in the DFAD logbook for all Seychelles purse seiners and support vessels following the logbook template designed by the SFA (Section DFAD logbook & Appendix I). Furthermore, information on DFAD design and materials must be collected by the observers onboard Seychelles purse seiners and support vessels as well as by the dry observers analyzing data collected with Electronic Monitoring (EM) onboard Seychelles vessels following the protocols used in the Seychelles national scientific observer program that relies on the ANABAC/OPAGAC Code of Good Practices and the ORTHONGELOCUP program.

Following IOTC Resolution 19/02 and the Seychelles Fisheries Comprehensive plan (2019), the use of natural or biodegradable materials in DFAD construction should be promoted to reduce as much as possible the amount of synthetic marine debris. . Petroleum-derived products such as plastic, PVC, and nylon nets, as well as metallic components employed in both the submerged and sub-surface structure of DFADs should be progressively replaced by biodegradable materials, i.e. naturally occurring materials (e.g., bamboo, cotton, or vegetal fibres), or in their absence, bio-based and biodegradable compounds complying with international standards such as CEN/TS 16137[2] or ASTM D6868[3], with the exception of materials used for the instrumented buoys, as per Clause 18 of IOTC Resolution 19/02. Recommendations from the experiments conducted throughout the BIOFAD project should be followed and trials pursued with the aim of progressively increasing the proportion of natural and biodegradable materials used in the DFADs deployed by the Seychelles fleet. A full review of the progress

[1] https://iss-foundation.org/knowledge-tools/guides-best-practices/non-entangling-fads/

[2] https://www.european-bioplastics.org/bioplastics/standards/

[3] https://www.astm.org/Standards/D6868.htm

accomplished in this domain will be made at the end of the bridge plan to define future directions and take measures related to the use of natural or biodegradable materials in DFAD construction in consultation with all stakeholders.

In order to monitor and control the DFAD design and components as per the Seychelles fisheries comprehensive plan (2019), as of 1st January 2022, all DFADs deployed within the Seychelles waters by Seychelles-flagged purse seiners and associated support vessels must be assembled on land in the Seychelles in dedicated DFAD manufacturing workshops where inspections will take place.

2.4- Incidental bycatch reduction & utilization policy

All Seychelles vessels operating within the IOTC area must strictly comply with the IOTC Resolutions on the conservation of marine turtles (12/04), cetaceans (13/04), whale sharks (13/05), sharks (12/09, 13/06 and 17/05), and on the full retention for both targeted tuna species and finfish bycatch species (19/05). Information relative to the capture, retention and discarding practices (i.e. species composition, magnitude and status) must be collected through logbooks, landing reports and the Seychelles national scientific observer program and reported to the SFA at the scale of the fishing operation following the SFA logbook (Section DFAD logbook) and observer data collection forms. Data will be reported to the IOTC Secretariat in conformity with the IOTC reporting requirements, i.e. forms and formats of the Regional Observer Scheme and IOTC forms 1DI and 1DR.

Furthermore, the fishing companies operating Seychelles purse seiners must follow the best practices for materials and construction for non-entangling DFADs(section 2.3) and best practices for the handling and release of sensitive marine species (i.e. sharks, rays and marine turtles) taken as bycatch following the ISSF guidelines[4] in order to maximise their chances of survival through release. This includes sorting practices and equipment that allow for quick, safe and effective live release during sorting, and providing regular training for skippers and crew in bycatch handling.

It is strongly recommended that the fishing companies technically and/or financially contribute and support programs devoted to the study of handling practices and post-release mortality, e.g. based on tagging operations.

2.5- Statement or policy on 'DFAD ownership'

In line with the voluntary guidelines for the marking of fishing gear developed by the FAO to improve the state of the marine environment by combating, minimising and eliminating abandoned, lost or otherwise discarded fishing gear (ALDFG) and taking into account the fact that all DFADs deployed must be equipped with instrumented buoys and the frequent exchange of buoys attached to the DFADs, the marking ownership of each DFAD deployed by Seychelles-flagged vessels must be made through the attached buoy based on (i) the unique buoy identifier of the satellite transmission communication and (ii) the full name or approved acronym of the purse seiner to which the instrumented buoy is permanently assigned in compliance with IOTC Resolution 19/02 (Section 2.1 DFADs & buoys numbers). It is strictly prohibited to modify the buoy marking.

[4] https://iss-foundation.org/downloads/16456/

2.6- Consideration of interaction with other gear types, including small scale fisheries

DFADs and associated buoys are not equipped with radar reflectors but are generally visible within a distance of 1-2 nautical miles, although some rafts are designed to be positioned below the water surface for stealthiness and more difficult to detect. Buoys are equipped with flashing lights which are remotely activated to detect the DFADs at sea but not used to indicate their presence and avoid an interaction with a vessel.

Interactions between the purse seine fishery and longline fisheries are considered to be limited as DFADs are small floating devices of surface area around 2.5-4 m^2 as compared to the length of a longline (10-150 km). Interactions with the semi-industrial longline fishery is spatially restricted as the main fishing grounds of the Seychelles semi-industrial longline fleet are situated on and around the Mahe Plateau where purse seiners do not operate, but where DFADs do drift. Some interactions with semi-industrial longliners and small-scale vessels have however been reported and may result in some high risk for the crew when the propeller of the outboard motor is entangled with the net and other components of the DFAD subsurface structure.

Cases of interaction between a DFAD and any fishing gear or whereby a DFAD could constitute a hazard to navigation within the Seychelles waters must be reported to the SFA and/or a designated third-party service provider with information on the date, position, and ownership of the buoy attached to the DFAD (if any) to assess the extent and nature of the issue and propose solutions through a consultative meeting with the company concerned when the DFAD ownership can be determined. Noting special considerations to avoid sensitive areas relative to MSP zoning, including the Seychelles Plateau and small gears that exploit these areas.

2.7- Plans for monitoring and retrieval of lost DFADs

Each fishing company operating Seychelles purse seiners must provide the SFA and/or a third-party service provider with the data set of GPS buoy positions (Section DFADs & buoys numbers)so as to monitor the movements of the tracked DFADs and determine beaching events (i.e., stranding in coastal environments), potentially damaging sensitive habitats such as coral reefs, and contributing to coastal marine debris and ghost fishing. Based on a methodology developed in consultation with the companies to determine when beaching occurs, the SFA will estimate the extent and location of beached DFADs in the Seychelles to contribute to the preparation of the DFAD tracking and recovery policy of the IOTC. The GPS buoys equipping DFADs considered to be beached by the companies must be kept in transmission for one month after stranding to ensure the location of the DFADs and facilitate their retrieval when possible, or until SFA deems them irretrievable.

All purse seine fishing companies with DFADs occurring within the Seychelles waters must contribute and participate to national projects of marine debris monitoring and cleanup activities, including initiatives to anticipate and predict stranding events, develop collaborations with national institutes and local NGOs to facilitate the removal of stranded DFADs and encourage recycling practices, particularly of non-functional instrumented buoys. FAD WATCH is an example of collaborative project with the industry which covers five islands of the Seychelles and involves the 42 purse seiners of the SIOTI Fisheries Improvement Project.

3- Institutional arrangements for managing the DFAD-MP

The SFA is the agency responsible for the implementation and follow-up of the DFAD-MP on behalf of the MoFA and in close collaboration with the fishing companies operating purse seiners and support vessels flying the Seychelles flag or flying a foreign flag and operating within the Seychelles EEZ through access agreements. SFA is responsible for the monitoring and reviewing the DFAD-MP on an annual basis so as to make the appropriate changes to the MP when needed in consultation with the industry and in line with the evolution of the IOTC Conservation and Management Measures (CMMs).

An annual report including information on the protocols, training, main results and challenges (including but not limited to monitoring, compliance, infractions) of the programs implemented by the companies to address the objectives of the DFAD-MP must be provided to the SFA a maximum of three months after the year of operation. Data confidentiality rules and arrangements relative to the data collected through the monitoring actions of DFAD-related activities must be defined as part of a general Memorandum of Understanding to develop between the SFA, the fishing companies or their associations, and/or a designated third-party service provider.

Penalties and fines following infractions and non-compliance with the DFAD-MP will be defined and included in national legislations and as licensing conditions or as conditions of the Certificate of Authorisation (COA).

3.1 - Application processes for DFAD and/ or DFAD deployment

Vessel owners and operators shall notify the Seychelles Fishing Authority of the number of DFAD including instrumented buoys they planned to deploy prior to leaving for any fishing operation. All actual deployment shall be recorded in the purse seiner and support vessel logbook as per appendix II.

3.2 Satellite Transceivers (requirement for serial number)

Any DFAD deployed at sea shall be equipped with an Instrumented buoy and shall be identified by the associated buoy serial number. The master of the vessel shall maintain a specific record on the buoys (serial number, brand and type in the appropriate logbook (appendix II), at the time of deployment of the corresponding DFADs. Additionally, the same information, as well as type of operation undertaken on DFAD shall be recorded for any DFAD visited.

4- Applicable areas

In a first step, the Seychelles DFAD-MP concerns the IOTC area of competence for the Seychelles flag purse seine and support vessels. In a second step and following discussions to occur with the stakeholders, the DFAD-MP aims to include all the foreign-flagged purse seine and support vessels operating within the Seychelles Exclusive Economic Zone through the Access Agreement (EU/Seychelles Sustainable Fisheries Partnership Agreement, Mauritius/Seychelles Fisheries Agreement and private fishing agreements.

5- Applicable period for the DFAD-MP

The current DFAD-MP is valid for a duration of one year and covers the period 2022-2023.

6- Monitoring & reviewing implementation of the DFAD-MP

The implementation of the 2022-2023 DFAD-MP will be monitored and reviewed at regular intervals by the SFA based on the feedback of the different stakeholders and changes in the Seychelles fisheries regulations and IOTC Conservation and Management Measures. It may be updated and revised during the bridge year period, at any time, to better include stakeholder feedback and align with Seychelles' Marine Spatial Plan Initiative processes. DFAD-related data sets are managed by SFA and/or the designated third-party service provider. If a third-party service provider is selected, they will provide SFA with access to reports, data, and associated secured databases that ensure the storage and easy extraction of data. The monitoring will be conducted in close collaboration with the purse seine fishing companies and their associations to ensure the guidelines and actions of the DFAD-MP are clear and agreed by all stakeholders and modified in a transparent way (Section Institutional arrangements for managing the DFAD-MP). The DFAD-MP will be reviewed on a yearly basis to account for the evolution of the IOTC Conservation and Management Measures (CMMs) related to DFADs. A progress report on the implementation of the DFAD-MP will be submitted to the IOTC Secretariat on a yearly basis.

7- DFAD logbook

The SFA designed a logbook for purse seiners and support vessels that includes the DFAD and buoy-related activities within the traditional skipper logbook that mainly focuses on fishing operations and associated catch (Appendix III).

Appendix I. Third-Party Service Provider Roles and Responsibilities Overview

Key Roles – Purse Seine Fishery (Licensed Flagged and non-Flagged, including vessels operating under chartering arrangements)				
Function/Task	**RESPONSIBILITY**			
	Fisheries Agency (where applicable)	**Industry/Fishers**	**Third-Party Service Provider**	***Costs***
Project inception: scoping, installation, and launch	Prequalify vendors	Contract vendors as needed for equipment procurement, shipping, installation, and servicing/maintenance. Contract with vendors for video review	Perform services as procured by industry/fishers	*Industry*
Data collection	Sets minimum FAD requirements for data collection	Ensures hardware, software, storage, maintenance, security, etc. meets FAD performance standard and data management plan	Work with industry to develop required FAD systems and procedures to meet minimum data requirements	*Industry*
Transmission of data	Sets protocols to ensure non-tampering, confidentiality and privacy	Transmits data to FAD data review centers in accordance with data management plan and other protocols	Receives and stores data in accordance with protocols; submits analyzed data to national authority; provides raw data to national authority under pre-specified protocols; provides data and reports to national authority and industry as specified in data management plan	*Industry*
FAD inspection and maintenance	Reserves right to inspect systems in accordance with applicable regulations	Ensures regular functionality of FAD systems	Performs maintenance as required (in collaboration with industry)	*Industry*
Data storage	Sets FAD data retention specifications	N/A	Stores raw FAD data in accordance with minimum retention requirements	*Industry*

SEYCHELLES FISHING AUTHORITY

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Annexe II: Logbook for Seychelles Flagged Tuna Purse Seiners

Version 04.2016

SALIDA / DEPARTURE			LLEGADA / ARRIVAL		PATRON / PATRON / MASTER		BARCO / VESSEL	HOJA SHEET
PUERTO / PORT			PUERTO / PORT				NOMBRE/NAME:	
DATE / FECHA			FECHA / DATE				INDICATIVO/CALL SIGN	
HORA / HOUR			HORA / HOUR		VIAJE / TRIP		BANDERAF/FLAG	
CORREDERA / LOCH			CORREDERA / LOCH					

		POSICION				LANCE			CAPTURAS ESTIMADAS (toneladas)/ Estimated catch (Tonnes)														ASOCIACION						ACTIVIDAD SOBRE LOS DCP						CORRIENTE		VIENTO		OBSERVACIONES
									YELLOWFIN		SKIPJACK		BIGEYE		ALBACORE		OTHERS			DISCARDS																			
FECHA/ DATE	HORA /TIME	LATITUDE.		LONGITUDE.		POSITIVO / SUCCESSFUL	NULO / NIL	Cuba/NO Cuve/Well	CAT.	TONS	CAT.	TONS	CAT.	TONS	CAT.	TONS	ESPECE/ SPECIES.	CAT.	TONS	ESPECE/ SPECIES.	CAT.	TONS	OBJETO / RAFT	LIBRE / FREE	AVES / BIRDS	BALLENA / WHALE	TIBURON BELEINA/WHALE SHARK	BARCO de APOYO/ Supply	TIPO DE VISITA/ VISIT TYPE	TIPO DCP/ FAD TYPE	MARCAS DEL DCP	TIPO BALIZA/ BUOY TYPE	ID BALIZA/ BUOY ID	TEMPERATURA (°C)	DIRECCION (grados)	VELOCIDAD (m/s)	DIRECCION (grados)	VELOCIDAD (nudos)	

SEYCHELLES FISHING AUTHORITY

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Annexe II: Logbook for Seychelles Flagged Support Vessels

Version 04.2016

SALIDA / DEPARTURE			LLEGADA / ARRIVAL		PATRON / PATRON / MASTER		BARCO / VESSEL	HOJA SHEET
PUERTO / PORT			PUERTO / PORT					
DATE / FECHA			FECHA / DATE					
HORA / HOUR			HORA / HOUR		VIAJE / TRIP			
CORREDERA / LOCH			CORREDERA / LOCH					

		POSICION				ACTIVIDAD SOBRE LOS DCP (See worksheet Referentials)												TONELAJE TOTAL ESTIMADO						CORRIENTE			VIENTO		COMENTARIOS
							BALIZA AL LLEGAR						BALIZA AL PARTIR																
FECHA DATE	HORA TIME	LAT.		LONG.		TIPO DE VISITA/ VISIT TYPE (S	TIPO DCP/ FAD TYPE	MARCAS DEL DCP	ID BALIZA/ BUOY ID	TIPO BALIZA/ BUOY TYPE	PROPIA/ AJENA		TIPO DCP/ FAD TYPE	MARCAS DEL DCP	ID BALIZA/ BUOY ID	TIPO BALIZA/ BUOY TYPE	PROPIA/ AJENA	YELLOWFIN (MT)	SKIPJACK (MT)	BIGEYE (MT)	ALBACORE (MT)	MT		TEMPERATURA (°C)	DIRECCION (grados)	VELOCIDAD (m/s)	DIRECCION (grados)	VELOCIDAD (nudos)	

Appendix III. Mandatory reporting requirements of the Indian Ocean Tuna Commission pertaining to the use of DFADs and buoys

- Form 3FA: Yearly interactions with Fish Aggregating Devices (FAD) set by purse seiners and supply vessels by moth, grid and fleet
  https://www.iotc.org/sites/default/files/documents/data/Form_3FA.zip

- Form 3FD: Number of FADs deployed in 2018 and 2019 by purse seine vessels and associated supply vessels per 1°x1° grid
  https://www.iotc.org/sites/default/files/documents/data/Form_3FD.zip

- Form3BU: Detailed monthly report of active buoys by vessel
  https://www.iotc.org/sites/default/files/documents/data/Form_3BU.zip

Tanzania 2022 DFADs Management Plan

Not submitted