



## COLLECTION OF DRIFTING FISH AGGREGATING DEVICES MANAGEMENT PLANS

Prepared by: IOTC Secretariat, 31 July, 2020

At its 23<sup>rd</sup> 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.”*

This document contains the FAD management plans made available to the Commission in accordance with:

a) 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.”*

b) to assist CPCs in analysing the FADs management plans, as required in by the provision of paragraph 13 of the Resolution:

*“The Management Plans shall be analysed by the IOTC Compliance Committee.”*

### **Drifting fish aggregating devices (FADs)**

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

From the ten CPCs having purse seine vessels registered in the IOTC Record of Authorised Vessels, nine CPCs have provided a DFAD management plans.

Six revised DFAD management plans were provided in the 2019 - 2020 intersessional period. The 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 2020).

Reception of DFAD PLANS	EU		IDN	IRN	JPN	KEN	KOR	MUS	SYC
	(FRA, ITA)	(ESP)							
2013	N/S	N/S	N/S	N/S	25 December	N/A	31 December	N/S	N/S
2014	N/S	15 January	N/S	26 January	26 December	N/A	N/S	14 March	N/S
2015	N/S	N/S	12 January	N/S	N/S	N/A	N/S	N/S	27 April
2016	11 March	11 March	N/S	N/S	N/S	N/A	16 March	N/S	N/S
2017	13 April	19 April	N/S	N/S	10 April	N/A	21 March	N/S	N/S
2018	19 January	14 March	N/S	N/S	05 July 2018	N/A	16 March	14 Nov 2018	N/S
2019	20 May	20 May	N/A	14 April		N/A	9 April		N/S
2020	01 April	01 April	N/A	N/S	03 April	31 July	01 April	01 April	N/S

N/A	Not applicable	N/S	Not submitted
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**Progress report on implementation of DFADs**

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 nine CPCs that have provided a DFADs management plan, five CPCs have provided a report on the progress of implementation of their DFAD management plans in 2017. Seven CPCs provided a report on the progress of implementation of their DFAD management plans in 2018. Five CPCs have provided a report on the progress of implementation of their DFAD management plans in 2019. Four CPCs have provided a report on the progress of implementation of the DFAD management plans in 2020. These are summarised in the Table 2.

**Table 2:** Submission history of progress of implementation of the DFAD management plans (2017 to 2020).

Reception of progress report on DFAD MGT PLANS	EU		IDN	IRN	JPN	KEN	KOR	MUS	SYC
	(FRA, ITA)	(ESP)							
2017	22 March	22 March	17 March	N/S	15 March	N/A	21 March	17 March	N/S
2018	15 March	15 March	16 March	15 March	16 March	N/A	16 March	16 March	12 April
2019	N/S	N/S	N/A	14 April	01 April	N/A	09 April	10 April	09 May
2020	N/S	01 April	N/A	N/S	01 April	N/A	01 April	21 August	N/S

N/A	Not applicable	N/S	Not submitted
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Indonesia has indicated that it operated only anchored FADs in 2019 (Source: IOTC-2020-CoC17-IR09).

Kenya has submitted the DFAD plan on 31 July 2020.



## Annex 1

# Collection of DFADs management plans

<i>European Union (FRA/ITA) DFADs Management Plan</i>	<i>Received 01.04.2020</i>
<i>European Union (ESP) DFADs Management Plan</i>	<i>Received 01.04.2020</i>
<i>Indonesia DFADs Management Plan (drifting)</i>	<i>Received 12.01.2015</i>
<i>Iran DFADs Management Plan</i>	<i>Received 14.04.2019</i>
<i>Japan DFADs Management Plan</i>	<i>Received 03.04.2020</i>
<i>Korea DFADs Management Plan</i>	<i>Received 01.04.2020</i>
<i>Mauritius DFADs Management Plan</i>	<i>Received 01.04.2020</i>
<i>Seychelles DFADs Management Plan</i>	<i>Received 21.08.2020</i>

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**NATIONAL FAD MANAGEMENT PLAN IN THE INDIAN OCEAN - 2020**

**Section I - Management measures**

**Article 1 - References**

- **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.
- **Recommendations from the CECOFAD project** on data collection on floating objects
- **-Recommendations from ISSF** 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 2020.

It also applies to French-flagged supply 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

<b>Vessel name</b>	<b>Boat type</b>	<b>PS vessel assisted by the tender vessel</b>
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, MANAPANY
KERSAINT	Tender vessel	AVEL VAD, CAP SAINTE MARIE, CAP SAINT VINCENT, GLENAN, TALENDUIC, TREVIGNON
GLENAN	Purse seiner	

MANAPANY	Purse seiner
TALENDUIC	Purse seiner
TREVIGNON	Purse seiner

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## 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. As FADs are deployed in the high seas, no interaction or conflict with other fleet fishing gears has been noted so far.

### 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, transshipping, 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.

**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  $1/\text{number of purse seiners sharing the buoy}$ .

**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 (purse seiner or associated tender vessel) owner or manager. 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 in 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. A DFAD typically 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.

**Supply/tender vessel:** means a vessel that provides assistance to other fishing vessels. Supply 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 in 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.

Section II sets out the methods to monitor the use of FADs and their instrumented buoys.

##### **4.2 Limitations on the use of FADs and instrumented buoys**

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

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

##### **4.3 Reducing the potential 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.

Section IV outlines the solutions implemented to reduce their impacts and the tools used to monitor compliance.

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

### Article 5 – Monitoring of the activities related to floating objects and to their instrumented buoys

#### 5.1 Types of activities related to floating objects and to their instrumented buoys

The monitoring of the activities related to FOBs and their instrumented buoys follows a dual objective:

- (i) assess the contribution of these devices to the tuna seine fishing effort to assess the impact of this fishing mode on tropical tuna stocks.
- (ii) assess 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)
<b>FAD</b>	Natural and/or man-made	DFAD	Drifting FAD	Drifting bamboo raft
	Natural and/or man-made	AFAD	Anchored FAD	Anchored floating platform
<b>LOG</b>	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 distinguish between the activities related to FADs and the activities related to 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.

**Table 3:** Types of activities related to FOB and to 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.
	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.
BUOY	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 related to FOBs and to their instrumented buoys

Fishing vessel or supply vessel masters shall record the activities related to FOBs and to their instrumented buoys on the logbook according to 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 ST-08 form.

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 2020.

#### **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.

### **Chapter III – Measures on the limitations on the use of FADs and instrumented buoys**

#### **Article 10 – Limitation on the number of operational buoys and in stock**

Pursuant to IOC Resolution 19/02:

Considering that a limitation on the number of active buoys per vessel at any time may efficiently limit the number of FADs at sea;

Considering that to ensure a responsible and sustainable fishery, ORTHONGEL will continue to promote the rational use of FADs through a limitation on the number of active buoys already adopted by the RFMOs and applicable to all fleets;

Encouraging the armament not to increase the number of FADs above the sound levels established by OP in 2012;

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 11 – 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.

<b>Date</b>	<b>Operational buoys</b>	<b>Activations</b>	<b>Deactivations</b>
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.

**Article 12- 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

<b>Vessel</b>	<b>Date of departure</b>	<b>Date of return</b>	<b>Buoy ID</b>	<b>Delivery date</b>	<b>Deployment date</b>	<b>Date of retrieval in port</b>
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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:

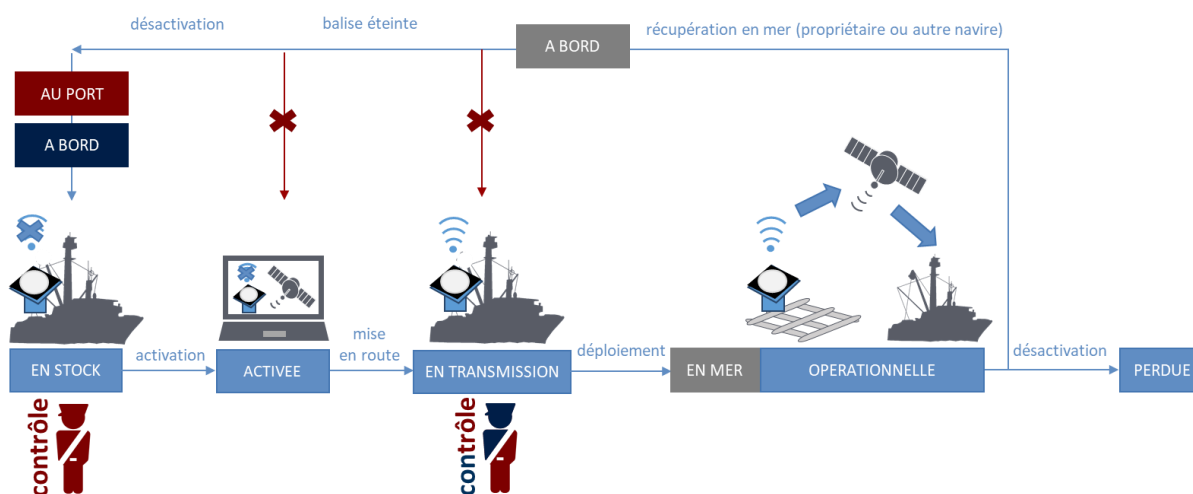
$$N = Operational + in\ stock_{PS\ vessel} + in\ stock_{tender}$$

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

### Article 13 – 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	

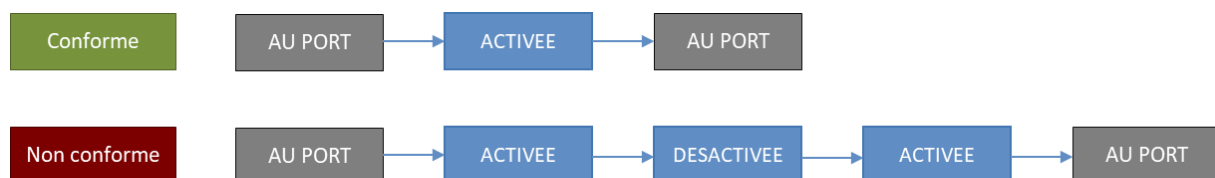
Vessel having ownership	Vessel which activated the buoy	
Vessel to which a buoy has been assigned	Vessel (s) monitoring the buoy	
Tender vessel	Buoys activated by a supply vessel	
Activation date	First use of a buoy	UTC
Vessel position at activation	Latitude and longitude	Decimal deg.
First transmission 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 14 – 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 masters (Table 5) and the buoy suppliers (Table 6).



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

#### Article 15 – 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.

The use of (aerial or underwater) lights on FADs or instrumented buoys shall also be prohibited.

## Chapter IV – Measures to reduce the impacts of FADs on the ecosystem

### Article 16 – 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 17 – FAD material and dimensions

Figures 3 and 4 show allowable FAD materials and dimensions required for the French fleet in 2020.

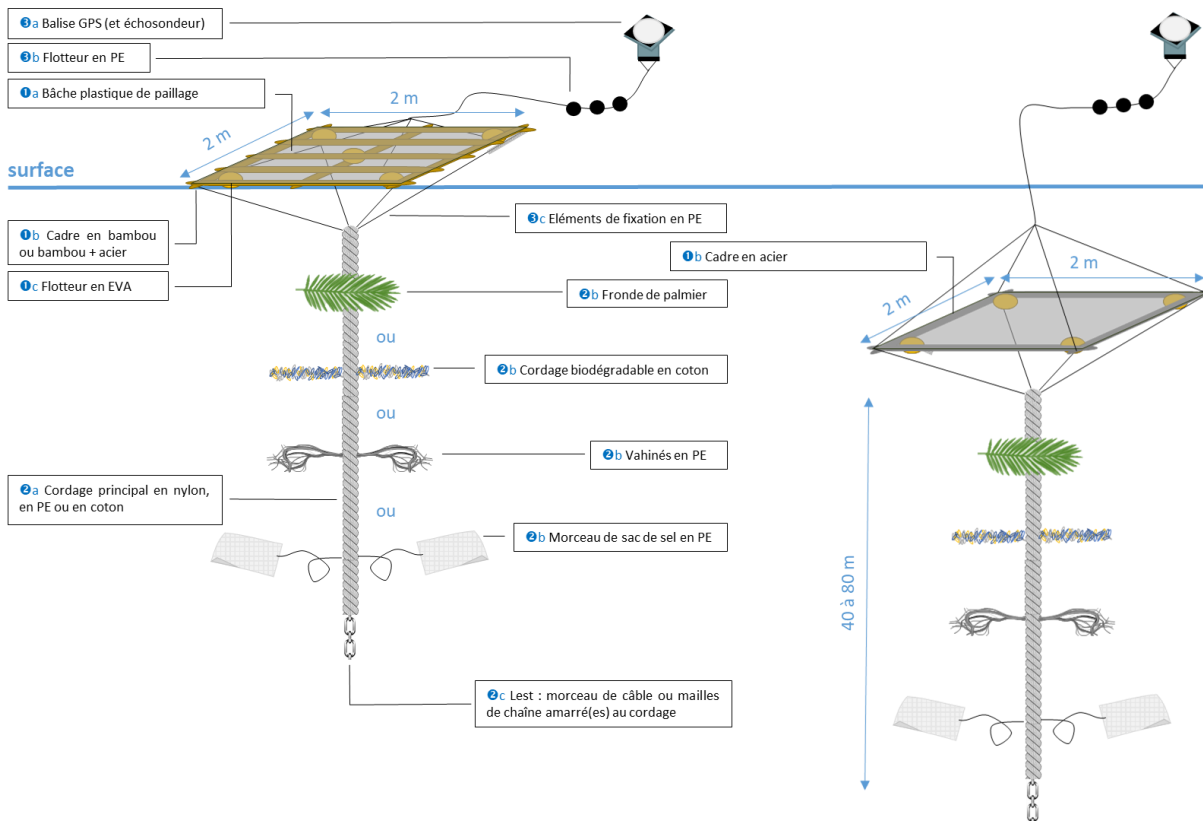
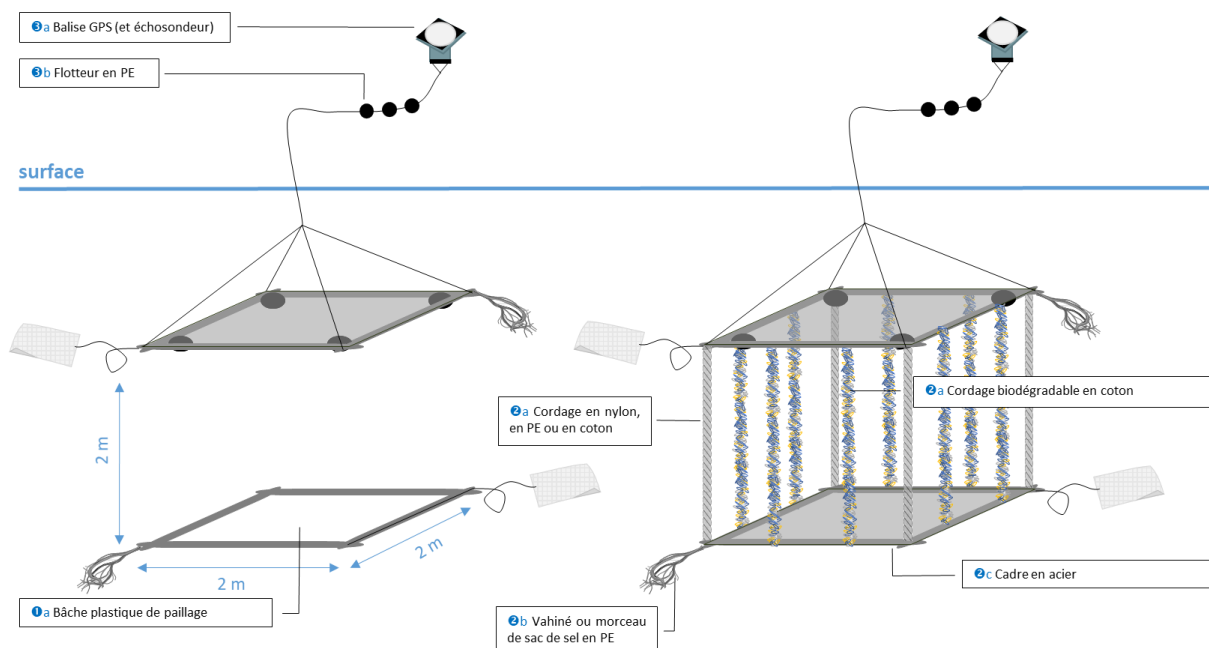


Figure 3. Structure of French FADs: floating (left) and submerged (right) raft type.



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

When carrying out any activity on a FAD, fishing vessel or tender vessel masters 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 different types of FADs that may be encountered are described in Table 7.

**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

### Article 18 – Biodegradable FADs

Pursuant to Resolution 19/02, all non-biodegradable materials used in the construction of FADs shall be replaced by biodegradable materials by 2020. A progress report shall be submitted to the xx Working Party on Ecosystems and Bycatch or to the 22th Working Party on Tropical Tunas.

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.

#### **Article 19 – 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 hazards depending on their deployment area and contribute to FAD recovery campaigns.

#### **Article 20 - Incidental bycatch reduction and utilisation policy**

Compliance with 17/04, best practices for the safe handling of endangered species.

## 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	10
reporting procedures for DFAD deployment	5
incidental bycatch reduction and utilisation policy	20
consideration of interaction with other gear types	2
plans for monitoring and retrieval of lost DFADs	6, 7, 19
statement or policy on “DFAD ownership”	7
institutional responsibilities	
application processes for DFAD and /or DFAD beacons deployment approval	10
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, 14, 16, 17
DFAD design characteristics (a description)	17
DFAD markings and identifiers, including DFADs beacons	6,7
- lighting requirements	15
radar reflectors	No radar reflector
visible distance	No specific regulation
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	No closed area
Applicable period for the DFAD–MP	2.1
Means for monitoring and reviewing implementation of the DFAD–MP	5.1, 11, 12, 13, 14, 16, 17, 18
DFAD logbook template	5



## Annexe I : Logbook structure used by French purse seiners and tender vessels in 2020

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		ESTIMACION 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 / Dirección Degrés / Grados / Degrees	Vitesse / Velocidad / Speed Nœuds / Nudos / Knots	Portante / Positivo / Successful Nulle / Nullo / Nil	Type de calée / lance type / Fishing set type	1		2		3		4		5		6					
										ALBACORE		LISTAO		PATUDO		GERMON		AUTRES ESPECES		REJETS					
DATE	TIME	LATITUDE each set or at midday	LONGITUD each set or at midday	EEZ	T°C sea	Direction / Dirección Degrés / Grados / Degrees	Vitesse / Velocidad / Speed Nœuds / Nudos / Knots	Portante / Positivo / Successful Nulle / Nullo / Nil	Type de calée / lance type / Fishing set type	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
Tailla	Captura	Tailla	Captura	Tailla	Captura	Tailla	Captura	Tailla	Captura	Tailla	Captura	Tailla	Captura	Especie	Tailla	Captura	Especie	Tailla	Captura						
Size	Catch	Size	Catch	Size	Catch	Size	Catch	Size	Catch	Size	Catch	Size	Catch	Species	Size	Catch	Species	Size	Catch						

ASSOCIATION		OBJET FLOTTANT				BOUEE INSTRUMENTEE				COMMENTAIRES					
ASOCIACION		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 apoyo / 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		ACTIVITE SUR LA BOUEE	BOUEE DÉJÀ PRESENTE		BOUEE DEPLOYEE		Problèmes divers Détails sur les prises accessoires Taille du banc Autres associations Autres remarques			
	ACTIVIDAD SOBRE EL OBJETO	TIPO DE OBJETO	TIPO DE DCP		ENTANGLING RISK			ACTIVIDAD SOBRE LA BOYA	BOYA ANTIGUA		BOYA NUEVA				
	FOB ACTIVITY	FOB TYPE	DFAD TYPE	En surface Parte superficial Surface	Sous la surface Parte sumergida Underwater	BOUY ALREADY ON THE FOB	DEPLOYED BUOY		TYPE	NUMERO	TYPE				
								TYPE	NUMERO	TYPE	NUMERO				

**European Union (Spain) DFADs Management Plan**

**Received on 01.04.2020**



## (COURTESY TRANSLATION)

### MANAGEMENT PLAN FOR FISH AGGREGATING DEVICES (FAD) - 2020

#### 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 studies 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.” (18-05)*

WPCFC:

At the 16<sup>o</sup> Annual Commission, the CPC could not agree a definition of FADs. Therefore, this issue is going to be part of the agenda of the 2020 annual meeting.

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 accidentally 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).”(19/02)*



## **5. Obligations under the RFMOS regarding FADS.**

Tuna RFMO have adopted the following provisions:

### **WCPFC:**

- Conservation and Management Measure for bigeye, skipjack and yellowfin tuna (CMM 2018-01). It includes provisions on FADs.
- Conservation and Management Measure on the application of high seas
- FAD closures and catch retention (CMM 2009-02), which sets out the specifications regarding FAD closure.
- Conservation and Management Measure on instrumental buoys (CMM 2009-05)
- Conservation and Management Measure on cetaceans (CMM 2011-03)

### **IOTC:**

- Resolution 19/02, on FAD management Plan.
- Resolution 18/01, 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
- Resolution 13/04, on the conservation of cetaceans.
- Resolution 13/05, on the conservation of whale sharks.

### **IATTC:**

- Resolution 2018-05, on FAD provisions.
- Resolution 2017-02, on the multiannual program for the conservation of tunas in the East Pacific Ocean (2018-2020).

### **ICCAT:**

- Recommendation 19-01, replacing Recommendation 16-01 on conservation of tropical tunas.

## **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. Specific closures on fishing with FADs**

- **WCPFC:**



- 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 FAD 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.

- Closure:

72 days closure is established since 2018 until 2020, 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.



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 96° and 110° W and between 4°N and 3°S, "corralito".

During this period, only innocent passage will be authorized with the appropriate request.

- Limitation of the number of buoys:

No more than 450 FAD 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 two- and three-month period, split into 2020 and 2021, respectively, as indicated in paragraph 28 below:

1 January to 28 February for 2020 and 1 January to 31 March in 2021, 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. SCRS should provide this advice to the Commission in 2020.

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***

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:

- a) 2020: 350 FADs per vessel
- b) 2021: 300 FADs per vessel





With a view to establishing FAD set limits to keep the catches of juvenile tropical tunas at sustainable levels, in 2021 SCRS should inform the Commission about the maximum number of FAD sets which should be established per vessel or per CPC. To support this analysis, CPCs with purse seine vessels shall urgently undertake to report to the SCRS by 31 July 2020 the required historical FAD set data. CPCs that do not report these data in accordance with this paragraph shall be prohibited from setting on FADs until such data have been received by the SCRS.

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 shall report the difference between the 2018 level and the 2020 level to the 2021 Commission meeting.

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.

- **CTOI:**

- Limitation of the number of buoys:

Non instrumental buoys are prohibited. Only instrumental buoys have to be used for drifting FADS.

300 active instrumental buoys cannot be exceeded per vessel at any time. In addition, the number of instrumental buoys acquired by each vessel is fixed at a maximum of 500.

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.

Non instrumental buoys were eliminated in 2017.

## **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







.....:TABLAS VINCULADAS (no mover ni manipular):.....

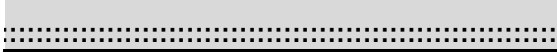
ORIGEN
Propio
"Nombre buque"
Desconocido
No aplicable
ACTIVIDAD
Despliegue
Comprobación
Lance
Modificaciones sobre objeto anterior
Recogida en el mar
Baja
Recogida en puerto

MODELO
d+
dl+
ds+
dsl+
f7 ó f07
fe7
isd+
isl+
m3i
m3i+
m4i
mds
msi
t
t7 ó t07

DCP					
Material / Estructura	Flotación	Recubrimiento			
Cañas	Garrafas	Rafia/Nylon			
Metal	Corchos	Malla			
Plástico/PVC	Bolos	Sin recubrimiento			
Natural	Otro	Otro			
Otro	<table border="1"> <thead> <tr> <th>S/N</th> </tr> </thead> <tbody> <tr> <td>S</td> </tr> <tr> <td>N</td> </tr> </tbody> </table>		S/N	S	N
S/N					
S					
N					
Mixta					
Baliza sola					
Tipo de DCP					
A la deriva					
Fondeado					

Material / Estructura
Malla en chorizo
Malla abierta
Malla mixta (con 'velas')
Cabos
Otro





RABO	
Añadidos	Lastre
De origen natural	Aros / Cáncamos
De origen artificial	Cable metálico
Ambos	Ninguno
Ninguno	Otro
	Piedra
	Bloque cemento

N/P
N
P

## ANNEX II

## Verification methodology

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. Under a sworn statement issued by the manufacturers, they 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 files directly from the manufacturers in a monthly basis with a two-month delay; this delay guarantees the protection of data of industrial nature, that are subject to protection by the Law. The files contain daily records of all the active buoys managed by each individual vessel.

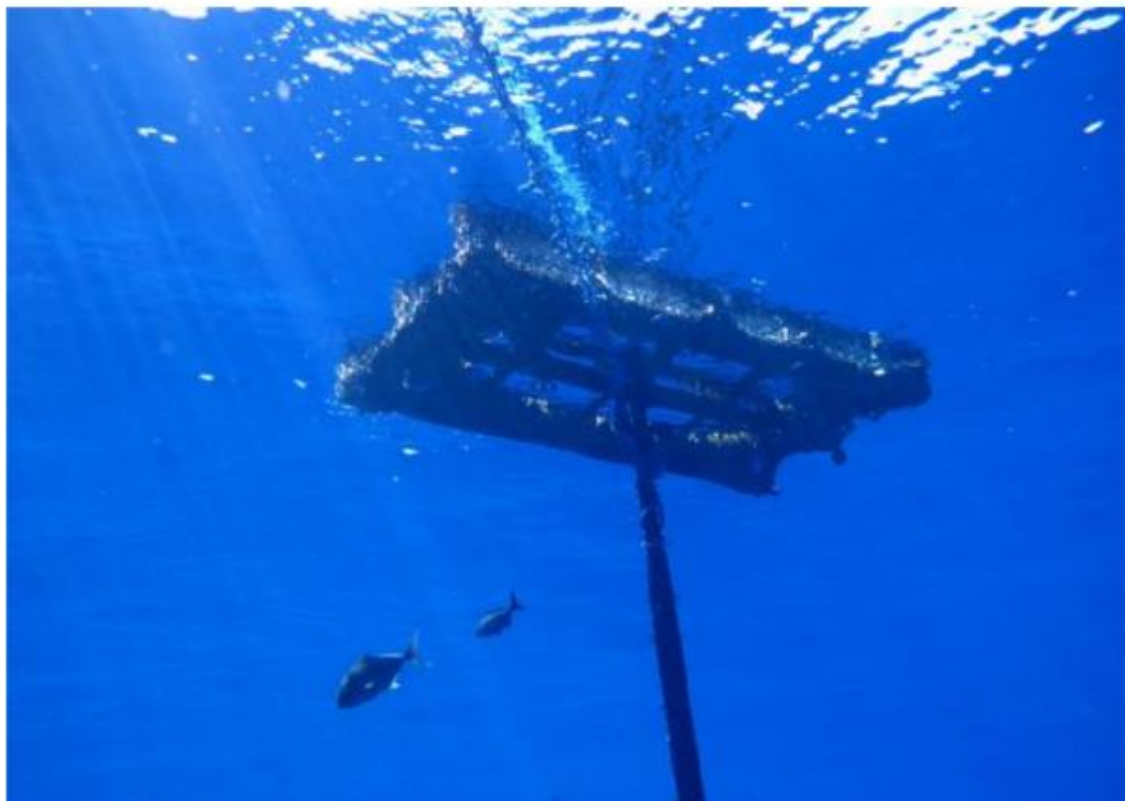
In order to identify records that do not correspond to active beacons at sea, different filters are applied to the data:

- c) Records outside the IOTC Convention Area [ $20 < \text{longitude} < 150$ ];
- d) Records on land: two conditions are required, 1) the position of the record overlays a land mask and 2) speed = 0 knots;
- e) Records of operational active buoys onboard the vessel before deployment: speed > 4 knots: and,
- f) Records of deactivated buoys: 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), comparisons with the information recorded in the FAD logbook and with the information collected by the observers onboard, among others.

Santiago J., H. Murua, J. López and I. Krug, 2017. Monitoring the number of active FADs used by the Spanish and associated purse seine fleet in the IOTC and ICCAT convention areas. *Joint t-RFMO FAD Working Group meeting, Doc. No. j-FAD\_13/2017*

**INDONESIA DRIFTING FISH AGGREGATING DEVICES  
MANAGEMENT PLAN IN INDIAN OCEAN  
(DFADs MANAGEMENT PLAN FOR 2015 – 2017)**



**Source: ISSF**

# **INDONESIA DRIFTING FISH AGGREGATING DEVICES MANAGEMENT PLAN IN INDIAN OCEAN (DFADs MANAGEMENT PLAN FOR 2015 – 2017)**

## **1. Objective**

The objective of this FADs management plan are but not limited to:

- a. Strengthen a collection of scientific data.
- b. Minimize the catch of bycatch of small tuna on FADs
- c. Strengthen catch composition data collection to purse-seine fisheries on FADs.
- d. Limit a number of deployed FAD.

## **2. Scope**

Description of its application with respect to:

- a. Vessel Type:
  - i. Small pelagic purse-seiner with one boat;
  - ii. Large pelagic purse-seiner with one boat;
  - iii. Large pelagic purse-seiner-group
  - iv. Handline
  - v. Pole and line
  
- b. DFAD numbers and/or DFADs beacon numbers to be deployed:

Each eligible vessel only granted to deploy maximum 3 (three) sets of FADs.

- c. Reporting procedures.

Reporting procedure is classified into two (2) categories, namely:

- c.1 Reporting Procedure for DFAD deployment

Any company or operator or person who has deployed FADs is required to submit a FAD deployment report to Directorate General of Capture Fisheries, shall include:

- i. Date and time of FADs deployment.
- ii. Number of deployed FADs
- iii. Marking of FADs
- iv. FADs position (Latitude and Longitude)
- v. Name of fishing vessel and it's gear type.
- vi. Conclusion and recommendation

c.2 Reporting Procedure for DFADs Harvesting

Any fishing company or operator or person who has harvested fish on FADs is required to submit a harvesting report to Directorate General of Capture Fisheries, shall include:

- i. FADs location (latitude and longitude)
- ii. Marking of FADs
- iii. Name of fishing vessel and it's gear type
- iv. Frequency of harvesting.
- v. Number and catch species
- vi. Catch composition

d. incidental bycatch reduction and utilization policy:

i. Catch Retention

Each eligible vessel to have FADs shall retain all catch on board, both target species and bycatch such tuna juvenile.

ii. Releasing Turtle

Each eligible vessel to have FADs shall require to release all marine turtles which are entangled in fishing gear.

e. Consideration of interaction with other gear types:

There is a potential conflict between eligible vessel to have FADs and Tuna Longline fleet.

f. Plans for monitoring and retrieval of lost DFADs

Monitoring may be undertaken at the time of deployment as well as harvesting. During this monitoring, losted DFADs will be retrieved. In this incident, investigation will be made to find out the owner of DFADs.

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

a. Institutional responsibilities:

Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries is responsible to manage FADs to be deployed by Indonesia flagged vessels.

b. Application processes for DFAD and /or DFAD beacons deployment approval:

b.1 Each person who is intending to deploy FADs within Indonesia Fisheries Management Area and High Seas shall require to have FAD License to be issued by Director General of Capture Fisheries.

- b.2 Application to have FAD shall be submitted to Director General of Capture Fisheries by Providing the following information:
- Date of FADs Deployment;
  - Proposed of Number of FADs;
  - Location of FADs Deployment (latitude and longitude);
  - Estimation of harvesting frequency (monthly or yearly basis);
  - Estimation of fish species and catch in each setting.
- b.3 In addition to the requirement as stipulated in point b.2, the application shall be accompanied with the following document:
- Copy of Fishing Permit;
  - Copy of ID of vessel owner or responsible person;
  - FADs layout and general specification such as material, dimension, and number of each FADs main component;
- c. Obligations of vessel owners and masters in respect of DFAD and /or DFAD beacons deployment and use
- c.1 Vessel owner and master shall submit a report to Director General of Capture Fisheries in respect of DFADs deployment shall include minimum information as following:
- Date of FADs Deployment;
  - Number of Deployed FADs;
  - Location of each FADs (latitude and longitude);
  - FADs Marking;
  - Name of vessel and type of fishing gear;
  - Conclusion and recommendation.
- C.2 Vessel owner and master shall submit a report to Director General of Capture Fisheries in respect of DFADs use shall include minimum information as following:
- Location (latitude and longitude) of used FADs;
  - FADs Marking;
  - Name of vessel and type of fishing gear;
  - Frequency of harvesting of FADs;
  - Catch by species.
- d. DFAD and/or DFADs beacons replacement policy
- d.1 In case FADs license is expired and not be renewed, the holder of FADs License shall discharge of the deployed of FADs.

- d.2 In case the holder of FADs license does not discharge the deployed FADs as stipulated in para d.1, he or she will be classified as non-eligible person to have new FADs license.
- e. Reporting obligations
  - e.1 Report of FADs deployment shall be submitted to Director General of Capture Fisheries within 14 days after the deployment.
  - e.2 Report of FADs use shall be submitted to Director General of Capture Fisheries every six (6) month.

#### **4. DFAD construction specifications and requirements**

- a. DFAD design characteristics (a description)

DFAD component consist of:

  - i. buoy;
  - ii. attractor;
  - iii. rope; and
  - iv. weight.
- b. DFAD markings and identifiers, including DFADs beacons:

DFAD marking composed of:

  - i. Name of owner;
  - ii. Number of fishing permit and fishing vessel authorized to use DFADs.
  - iii. Location (latitude and longitude) of DFADs deployment.
- c. Lighting requirements

4000 watt – 16000 watt.
- d. Radar reflectors

Radar reflector is a piece of flat galvanized steel that could be detected by radar.
- e. Visible distance

DFADs can be deployed with a minimum distance ten (10) nautical miles each other.
- f. Radio buoys (requirement for serial numbers)

No radio buoys requirement regulated.
- g. Satellite transceivers (requirement for serial numbers)

No satellite transceivers requirement regulated



h. Technical requirement in DFADs use.

It is prohibited to shift of DFADs by vessel or other auxiliary tool which is intending to gather aggregated fish in more than one DFADs.

## **5. Applicable areas**

This plan is applied to Indonesia flagged vessel that are fishing in the following waters:

- a. Indonesia archipelagic waters
- b. Indonesia territorial waters
- c. Indonesia Exclusive Economy Zone
- d. High Seas of Indian Ocean

## **6. Applicable period for the DFAD–MP**

DFAD Management Plan will be implemented during 2015-2017.

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

- 7.1 Regular monitoring will be undertaken by fisheries observer by fishing vessel or fisheries patrol boat.
- 7.2 DFAD Management Plan will be reviewed every 3 (three) year and will be amended at any time if deemed necessary. The first review will be done in 2017.

## **8. DFAD logbook**

No specific DFAD logbook regulated.

**IRAN Management Plan for DFAD preparation (Revised on 2019)**

**1. Objective :**

- Catch Increase
- Data collection of catch volume, composition and sizes as well as by-catch amount
- Implementation a 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 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 DFAD installation timing report, harvest, catch amount and composition.
- 2.4. Regular 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. 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 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 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 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 DFADs deployment condition via logbooks
- 3.4. According to the number of deployed DFADs by each vessel in Iran, that is notably fewer than maximum announced level by IOTC, there is no definite policy for DFADs replacement.

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

#### **4. DFAD construction specifications**

- 4.1. DFADs are mostly made of Bamboo wood or renewable materials in their natural form. Dimensions of these DFADs are approximately 2\*3 and/or 3\*3 meters.
- 4.2. Name of the vessel has been marked on 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 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 DFAD-MP**

From 1<sup>st</sup> of August till 30<sup>th</sup> of March

#### **7. Monitoring and reviewing of MP**

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

#### **8. DFAD Logbook**

- a) DFADs logbook is merged with catch logbook to ease data collection (attached), however Data on DFAD sets catch and effort is included in this logbook.
- b) DFADs characteristics are provided to SHILAT by vessel owners. If required, SHILAT could visit DFADs. 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. DFADs identifiers data is provided in the logbook
  - iv. DFADs type is included in logbook.
  - v. 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)



**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.

**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.





## **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 2020 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.
- DFAD numbers and/or DFADs beacon numbers to be deployed  
Approximately 1,000 DFADs will be deployed and 500 DFADs will be retrieved from the ocean and then deployed again.
- 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, dolphinfish, 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 drifting 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 2020.

#### 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).



## **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 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:** Deployment of Non-entangling FADs. Details on non-entangling FADs are given at Appendix 2a and 2b. Biofads also are being tested. Use of exclusively biodegradable non entangling FADS is being encouraged.
  - e. **Consideration of interaction with other gears type:** The Mauritius tuna longline fleet operating from Port Louis carries 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 FAD sets at sea. In the event of a loss or of the impossibility of hauling in a FAD, operators must record in the logbook (Appendix 1) its last known date and position.
  - g. **Statement or policy on DFAD ownership:** Presently, Fads beacons are clearly marked with a serial number pending the new marking scheme which will be developed at the annual session of 2020.
3. **Institutional arrangement for management of the DFAD Management Plan:**
  - a. **Institutional responsibilities:** Ministry of Blue Economy, Marine Resources, Fisheries and Shipping monitors activities of its flagged vessels DFADs 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 vessel.

- b. **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 vessels owners and operators according to the DFAD-MP. Moreover, all information pertaining to deployment of DFAD and or DFAD beacons is recorded in logbooks that are inspected for compliance by the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping.

**DFAD and/or DFADs beacons replacement policy:**

- c. **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 biofads should be deployed by the purse seiners or the supply vessel. Only non-entangling biofads would be used in the future.
- (iii) Record each activity with respect to DFAD and DFAD beacon deployment and use in the fishing and DFAD logbooks.
- (iv) All DFADs deployed are marked with a detailed marking scheme defined by the beaconID.
- (v) Reporting of daily information on all active DFADs per assigned vessel including date, instrumented buoy ID and daily positions.

- d. **Reporting obligations**—All information pertaining to DFAD/DFAD beacons deployment is 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 2 and 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

MSI XXXXX

M3I XXXXX

M3I+ XXXXX

M4I 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. With the coming into force of the Resolution 19/02, operators will be required to report daily information on active DFADs per vessel. 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 which entered into force on 1 January 2020. 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)

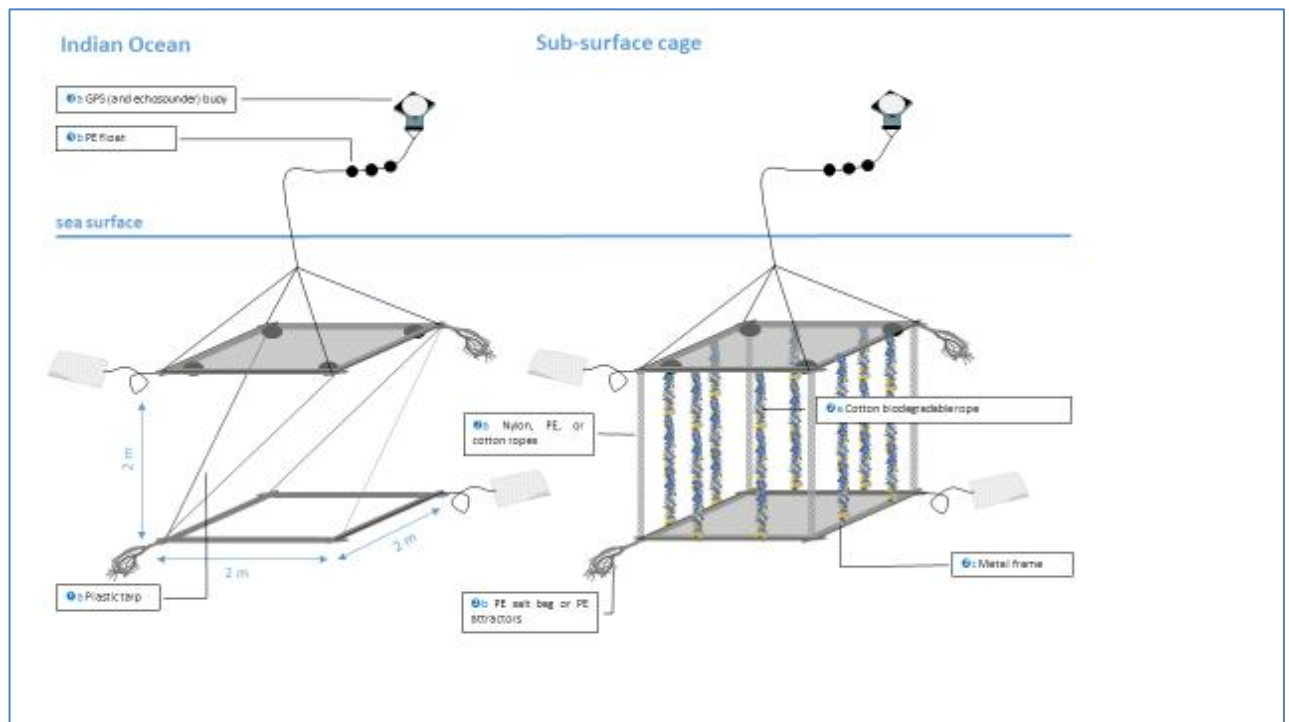
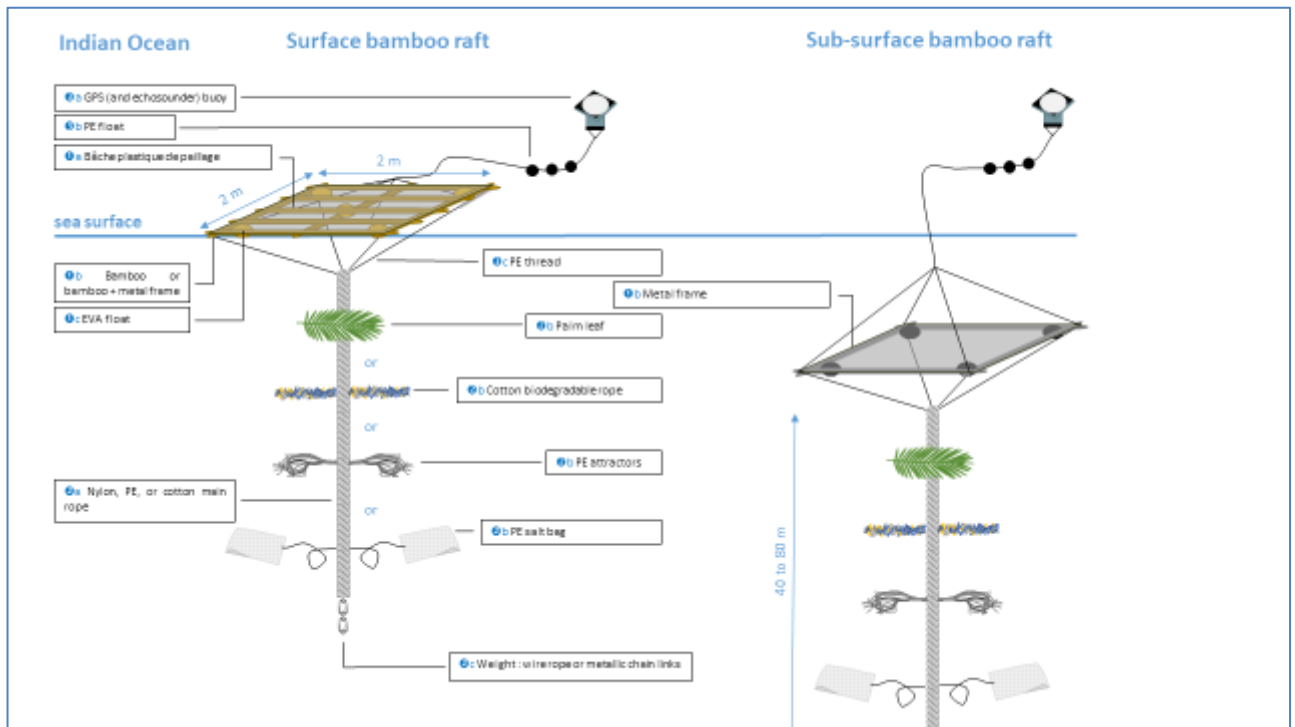
For each of the above activities, the following information is also recorded in the logbook:

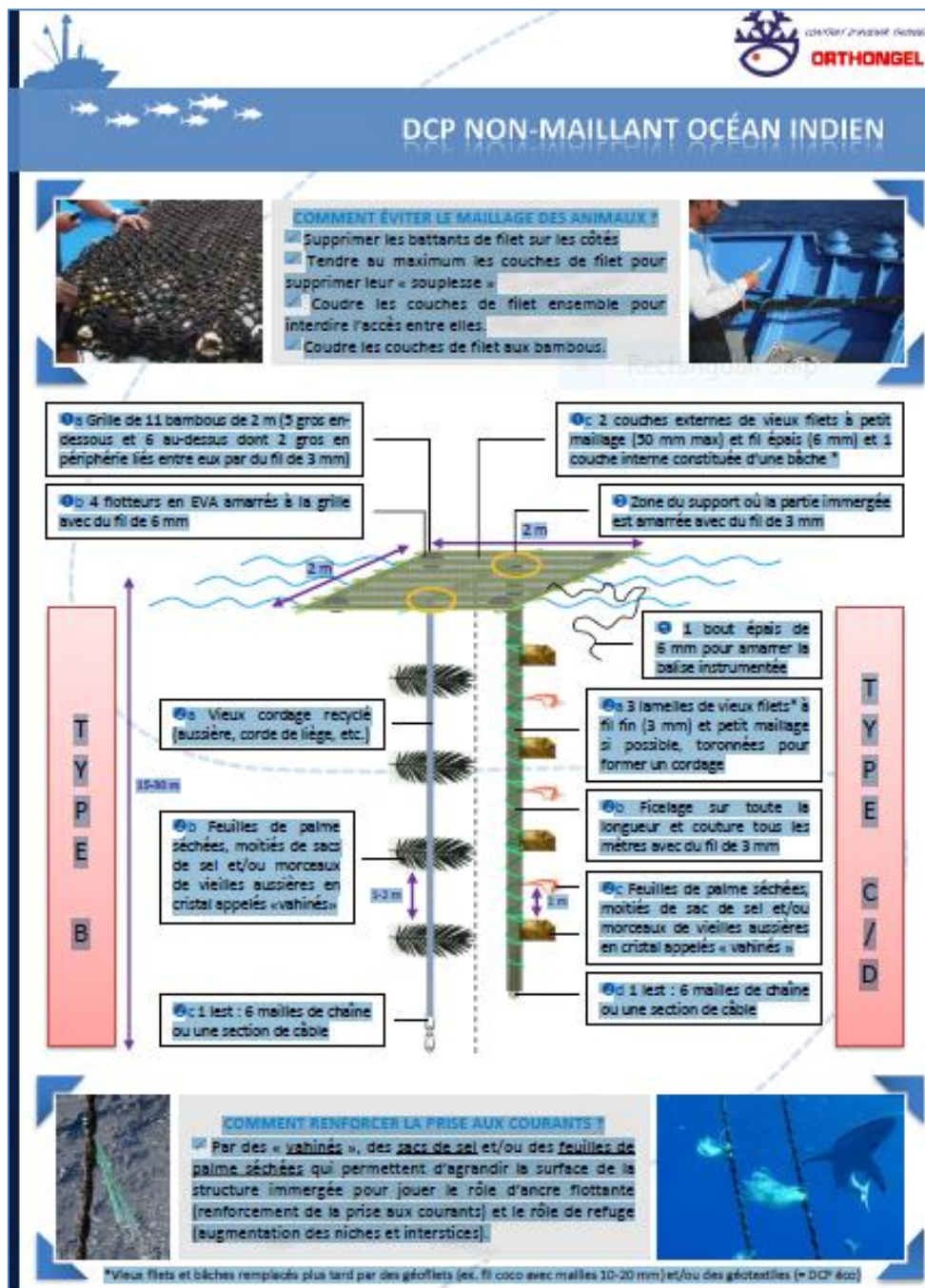
- Date and time;
- Position (latitude & longitude);
- Type of FAD (natural, artificial, "classic" or "non-entangling" draft) along with a short description (tree trunk, pile of straw, container, rope, ...)
- Number of associated beacon in case of a TFAD;
- Number of removed beacon in case of a TFAD if 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







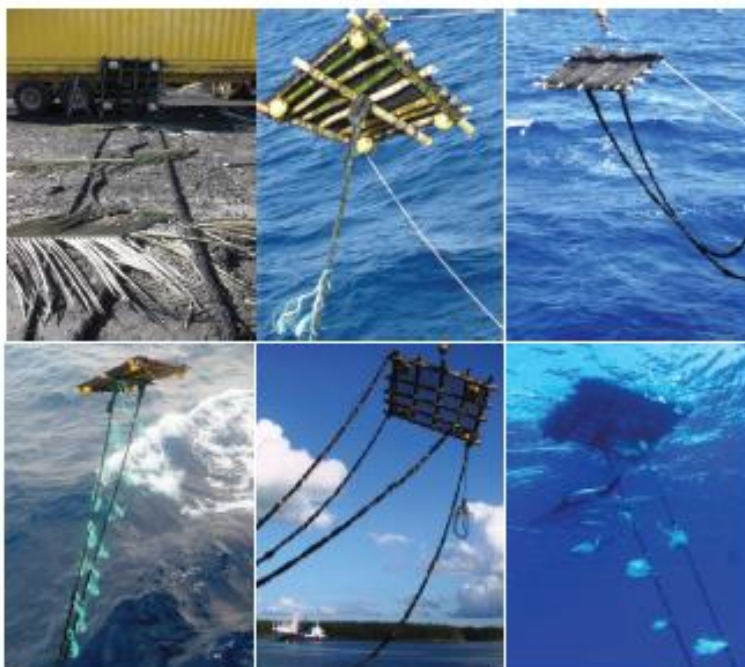


b) DCP non-maillants déployés dans l'océan Indien

Design B



Design C/D





# SAPMER

NATURAL SEAFOOD SINCE 1947


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 23<sup>rd</sup> 2011 which is available at the following link : <http://www.orthongel.fr/contenu/docs/decisions/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 (<http://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.

 **ORTHONGEL**

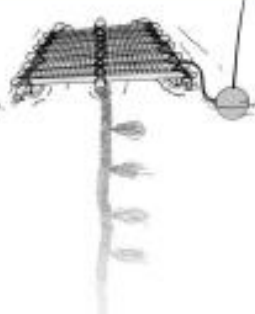
## The Tuna for Tomorrow Program « ecoFAD »

### Objectives and means



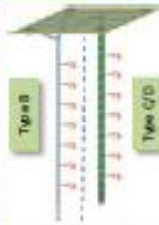

Based on the results of the MADE program, this program intended to modify the Fishing Aggregating Devices (FADs) of the whole French tuna purse-seiners in order to eradicate the entangling of turtles and sharks.

This program has received public funding from DPMA and EU in the context of EFF collective actions and was carried out in close cooperation with IRD.

Duration : July 2010 to June 2012



### Deployment of non-entangling FADs by the crews

### Program protocol

- Presentation to the crews of the objectives and of initial designs conceived by IRD.
- Provision to the vessels of materials to build non-entangling FADs.
- Documentation by captains of the deployments and sets on non-entangling FADs.
- Debriefing the end of the cruise with the person in charge of the program.
- Redefinition of the characteristics of non-entangling FADs & writing of design sheets for the crews.

### Program results

- 3 designs retained.
- 1100 non-entangling FAD deployments documented in the Indian Ocean, 130 in the Atlantic Ocean (where the French tuna purse-seiners use few FADs).
- Comparative analysis of fishing data on non-entangling and traditional FADs showing that the FAD maturation time and the average tonnage caught per set are identical and that there is therefore no significant difference in terms of yield fishing on non-entangling FADs rather than on traditional FADs.

### Program implications in terms of management

Since 2012, the fleet of Orthongel therefore does deploy only non-entangling FADs (Decision n° 11) and Orthongel has widely disseminated these results which were used as bases for advice by the scientific committees of RFMOs and ISSF on FAD design.

Orthongel Decision n° 11: <http://www.orthongel.fr/content/view/full/decisions/Dec11-2012eco.pdf>  
 Program description: <http://www.orthongel.fr/index.php?content=cat&page=ecopoco>  
 Goujon, M., Vernet, A.L., Dagorn, L., 2012. Preliminary results of the Orthongel program « eco-FAD » as June 30th 2012. IOTC-2012-WPEB08-INF21

**Seychelles DFADs Management Plan**

**Received 21.08.2020**

# SEYCHELLES DRIFTING FISH AGGREGATING DEVICE MANAGEMENT PLAN 2020-2021

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 (2020 – 2021). 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. Due to the COVID-19 public health crisis, the Seychelles Fishing Authority was forced to cancel technical workshops to support the development of the FAD management plan. These workshops are being rescheduled for later in 2020.





## 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)

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

**Table 2.** CECOFAD classification of activities with FOBs and buoys

<b>Code</b>	<b>Name</b>	<b>Description</b>
<b>FOB</b>	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
<b>BUOY</b>	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 2020-2021 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 2020 calendar year. In the interim, SFA may continue to administer functions and activities within the DFAD program. The following 2020-2021 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 2020-2021 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 2020-2021 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 2020-2021 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 2020-2021 DFAD-MP component related to DFAD construction, design, and components includes some measures defined within the [Seychelles Fisheries Comprehensive Plan](#). This current 2020-2021 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 2020, 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 (Inmarsat 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)<sup>1</sup> 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<sup>2</sup> or ASTM D6868<sup>3</sup>, 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 accomplished in this domain will be made

<sup>1</sup> <https://iss-foundation.org/knowledge-tools/guides-best-practices/non-entangling-fads/>

<sup>2</sup> <https://www.european-bioplastics.org/bioplastics/standards/>

<sup>3</sup> <https://www.astm.org/Standards/D6868.htm>



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<sup>4</sup> 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.

<sup>4</sup> <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<sup>2</sup> 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).

### 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 2020-2021.

### 6- Monitoring & reviewing implementation of the DFAD-MP

The implementation of the 2020-2021 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
<b>Project inception: scoping, installation, and launch</b>	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	<i>Industry</i>
<b>Data collection</b>	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	<i>Industry</i>
<b>Transmission of data</b>	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	<i>Industry</i>
<b>FAD inspection and maintenance</b>	Reserves right to inspect systems in accordance with applicable regulations	Ensures regular functionality of FAD systems	Performs maintenance as required (in collaboration with industry)	<i>Industry</i>
<b>Data storage</b>	Sets FAD data retention specifications	N/A	Stores raw FAD data in accordance with minimum retention requirements	<i>Industry</i>

## Appendix II. Seychelles purse seiner and support vessel logbook





### **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](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](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](https://www.iotc.org/sites/default/files/documents/data/Form_3BU.zip)