

Research project for inclusion of non-entanglement fads and Biodegradable Fads in fishing operations GRUPO MESSINIA HG.

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1. Introduction

MESSINIA HG Group, through its executive staff, taking into account the regulatory changes aimed at contributing to the sustainability of fishing resources and reducing the environmental impacts caused by fishing activities, has begun the execution of its initiative through a project that has as a basis the guidelines of the ISSF (International Seafood Sustainability Foundation), and fishery control organizations such as CIAT (Inter-American Commission for Tropical Tuna) with a view to implementing improvement processes in the application of FADs, which allows us to comply with the resolutions adopted to FAD Management. and promote the care of the oceans by reducing environmental impacts where the fleet carries out its fishing operations.

2. Justification

Currently the fleet of the MESSINIA HG Fishing Group has five tuna boats that fish in the EPO (EASTERN PACIFIC OCEAN), PESCATUN 1, SEA TUNA 1, HELLAS TUNA, TUNAMAR, TUNAPESCA that operate with the purse seine capture method, which makes it essential to include it in fishing control measures.

MESSINIA H.G Through fleet administration, its technical team, and its management department, it has determined the importance of adopting in its work philosophy measures that allow legal and regulatory compliance in the fishing field. The vessels are currently listed in official PVR (VESSEL PROACTIVE REGISTER) initiatives of ISSF (International Seafood Sustainability Foundation) and must follow their guidelines and conservation measures regarding FAD Management to maintain their compliance. in addition to applying good fishing practices that allow us to maintain operations without requiring penalties and/or sanctions. Furthermore, aware of the problems generated using these devices at sea, it is essential to join the sustainability initiatives for fishing resources by looking for eco-friendly alternatives.

3. Development.

For this study, three primary phases are considered with the Fleet work team, the same ones that have been approved by the administration, where the current methodology of the capture method of fishing vessels will be evaluated to the performance tests of the devices. Non-entanglement as well as Biodegradable fish aggregating devices next requirement of RFMOs and regulatory entities.

4. Project phases

4.1.PHASE 1. Current analysis of the tuna capture method of the tuna fleet.

This stage consists of evaluating the methods used by the tuna fleet and the types of devices used to capture tuna through the tuna purse seine. In the case of the MESSINIA Group purse seine vessels, the FADs fish aggregating devices constitute a tool that allows vessels to provide at least 30% of their annual catches; therefore, their deployment is carried out in a controlled manner in authorized fishing areas assigned in their fishing permits and licenses.

Parameters to evaluate in the project phases:

1. Types of FADS: It consists of collecting in situ information from the vessels belonging to the tuna fleet.
2. FADS Inventory: Identify in number the number of devices maintained by each of the fishing vessels, considering the active and inactive FADS.
3. Materials for the construction of FADS: Prepare a list of materials used for the construction of the devices and have specifications of the materials used to determine their degree of toxicity or impacts that they may cause to the ecosystem.
4. Determine the functionality of the methodologies in terms of the efficiency of the FADS implemented in tuna vessels.
5. Conclusions of phase 1

4.2. PHASE 2 Feasibility study for FADS proposal.

- Reduction of the risk of incidental catches of non-target species FADS NON-TAMMING.
- Reduction of risk of incidental catches of non-target species plus reduction of impact to the ecosystem through BIODEGRADABLE NON-ENTLING FADS.

4.2.1. Feasibility study for the use of NON-ENTLING FADS:

This phase aims to implement the continuous improvement process that allows reducing the risk of capture or generation of an unfavorable impact on non-target species (turtles, sharks), etc. For which there is a FAD Management policy that meets these requirements,

detailed

below:

PARA LA MEDIDA DE CONSERVACIÓN DEL ISSF 3.5 *

Transacciones con buques que utilizan únicamente plantados no enmallantes

AMERICA TOWER I CORP.

AMERICA TOWER I CORP./TUNAMAR., exige a bordo de su(s) buque(s) el uso únicamente de plantados que no se enmallen y no permite a bordo de sus buques la práctica de plantar plantados que tengan el mayor riesgo de enmalle, tal como se define en la Guía de la ISSF para plantados no enmallantes. Esta política se aplicará a todos los nuevos despliegues de plantados, independientemente del tipo de buque que los despliegue.

Para lograr esto, las características de los plantados que utilizarán los buques de la Compañía se ajustan a lo siguiente:

Para la balsa FAD, nos comprometemos a:

- Cubrirlo con lona, lona, tela para sombra o materiales que no se enreden; o],
- Si se usa una red para cubrir, use solo una red de malla pequeña (< 2,5 pulgadas / 7 cm de malla estirada) tanto para la parte superior como para la sumergida y envuélvala firmemente sin que quede ninguna red suelta colgando de la balsa.]

Para la estructura de cola (es decir, estructura colgante subterránea), nos comprometemos a:

- [Usar cuerdas, lonas o láminas de nailon u otros materiales que no se enreden; o]
- [Si se utiliza una red de cualquier tamaño de malla como cola sumergida, atándola firmemente formando haces en forma de salchicha.

Esta política fue adoptada el **22 de enero de 2024**.

* CM 3.5 será derogada y reemplazada por CM 3.7 a partir del 1 de abril de 2025

CM 3.5 Transactions with Vessels that Use Only Non-Entangling FADs

FOR ISSF CONSERVATION MEASURE 3.5 *

Transactions with Vessels that Use Only Non-Entangling FADs

AMERICA TOWER I CORP.

AMERICA TOWER I CORP./TUNAMAR., requires onboard its vessel(s) the use of only non-entangling FADs and does not permit aboard its vessels the practice of deploying FADs that are of Highest Entanglement Risk as defined in the [ISSF Guide for Non-Entangling FADs](#). This policy shall apply to all new FAD deployments, regardless of the type of vessel that deploys the FADs.

In order to achieve this, the characteristics of any FADs to be deployed by the Company's vessels adheres to the following:

For the FAD raft, we commit to:

- Cover it with canvas, tarpaulin, shade cloth, or non-entangling materials; or],
- [If netting is used to cover, using only small mesh netting (< 2.5 inch / 7 cm stretched mesh) for both upper and submerged parts and wrapping it tightly with no loose netting hanging from the raft.]

For the tail structure (i.e., subsurface hanging structure), we commit to:

- [Using ropes, canvas or nylon sheets, or other non-entangling materials; or]
- [If net of any mesh size is used as submerged tail, tying it tightly into sausage-like bundles.

This policy was adopted on January 22, 2024

* CM 3.5 will be repealed and replaced by CM 3.7 as of 1 April 2025

As a start to the implementation of this phase, it is considered to ensure that the devices used by the tuna fleet meet the requirements established by CM 3.5 Transactions with Vessels that Use Only Non-Entangling FADs, ensuring the complete migration of these devices.

A device file will be established which will be shared with the fleet captains (training).

A schedule for changing the devices for the group's ships will be prepared, with their respective monitoring and training.

The design and construction of NON-MESH FADS will be carried out using small mesh nets <2.5 inches/ 7cm if it is covered with net (both the upper part and the submerged part), if small mesh nets are used as cover, the nets will be They wrap tightly, with no loose nets hanging from the raft.

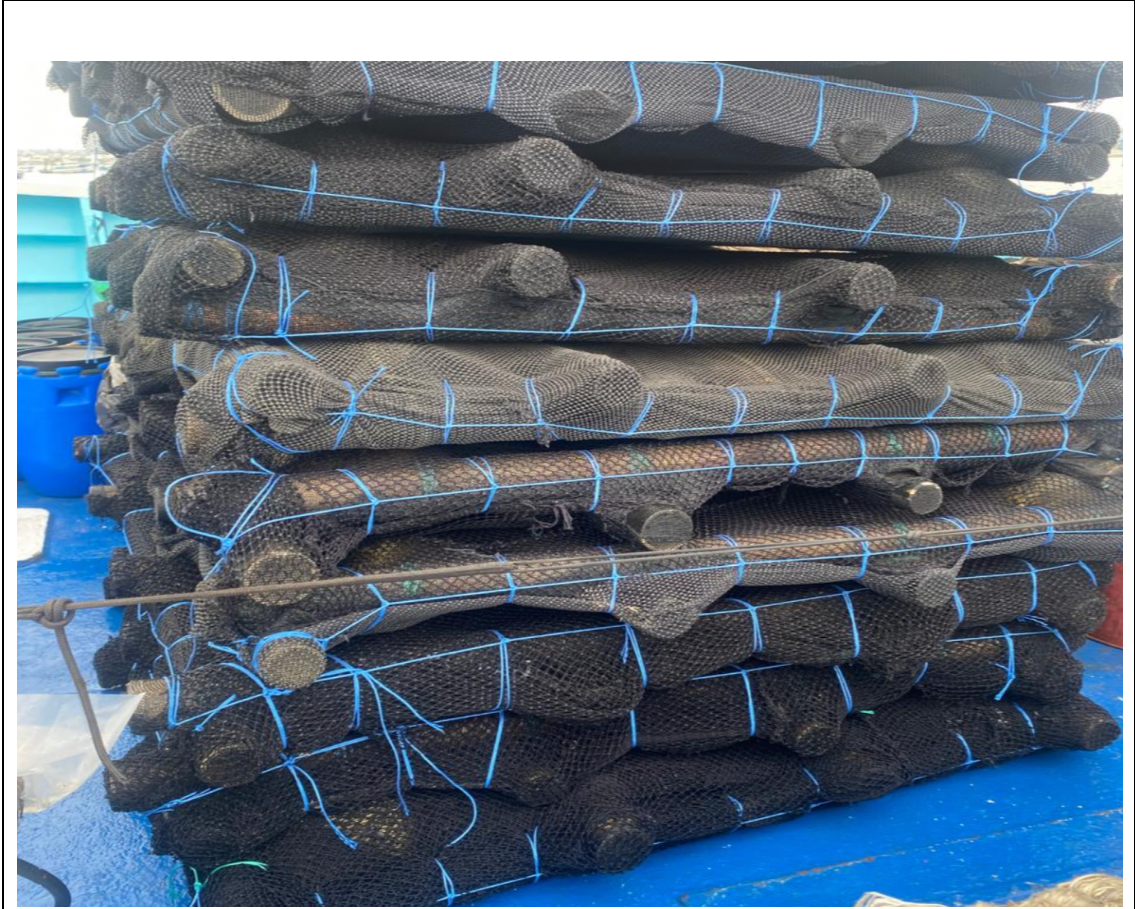
If the net is used as a dip tail, the mesh could be any size if rolled tightly into sausages.

If open panels are used, only small meshes (<2.5in/7cm extended mala) can be used but weight must be added to the panel to keep it taut. Guía de ISSF sobre DCPs no enmallantes y biodegradables — agosto de 2019



Application in the fleet of the Messina H.G. group.

To date, all the Group's vessels carry out the deployment of non-entanglement FADs, complying with FAD Management policies.



BP SEATUNA



BP PESCATUN I



BP PESCATUN I

BP SEATUNA 1

4.2.2. Feasibility study for the use of BIODEGRADABLE NON-ENTLING FADS.

To begin the feasibility study for the manufacture, testing and use of this type of materials, the group has considered it necessary to review the different materials originating in Ecuador that constitute favorable materials for the ecosystem, in addition to recovering certain manufacturing activities used for years. passed in the province of Manabí Ecuador.

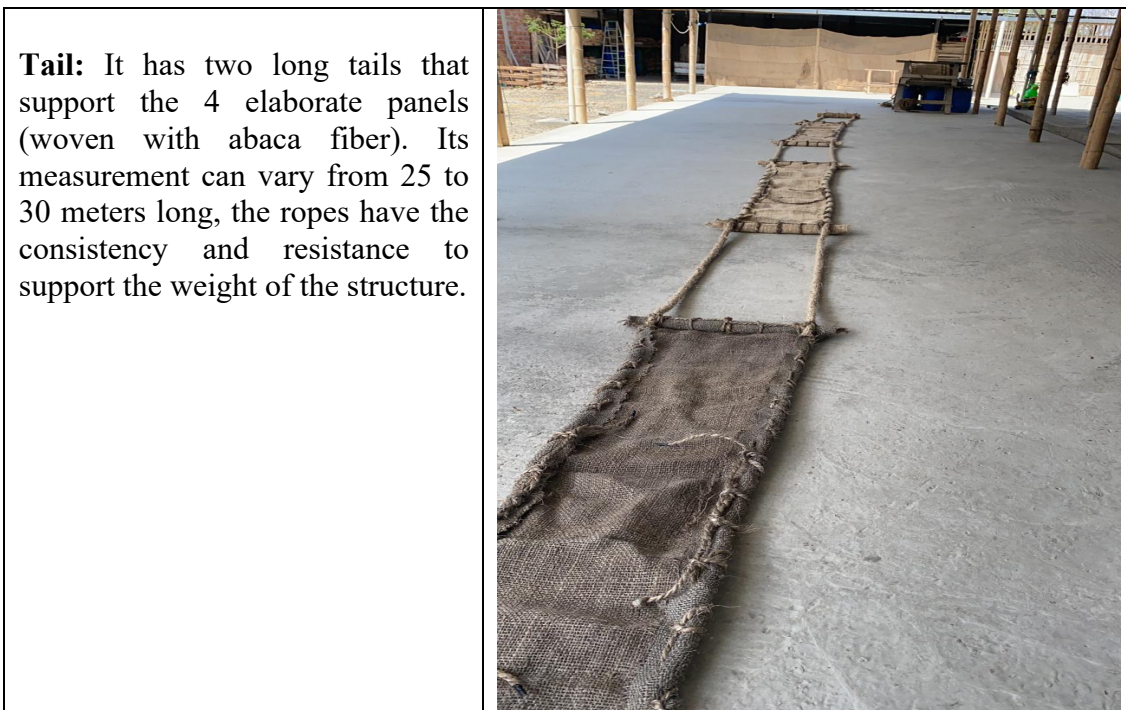
Messinia H. G. has identified the following components as possible biodegradable materials that could be used in the testing stage.

PROTOTYPE 1

FAD components	FADs ABACA	
	MATERIAL	ORIGIN
Main material	Abaca fiber	(Banana trunk) Coastal region Ecuador
Secondary material	Guadua Cane	Ecuador coast region
	Driftwood	Existence in Ecuador
Conservation material	Reactive resin and silicone emulsion	local suppliers

This last stage will be considered of vital importance since it will determine the useful life of BIOFADS.

Currently, approaches have been made with manufacturers of BIODEGRADABLE FADS which are in the testing phases. These are made using ABACA fiber (banana stem origin) as a base material, which is woven by hand on rustic machines.



Tail restraint ropes:

It consists of placing two fasteners (ropes) with which the tail will be fixed to the main panel.



Plantation Structure:

The base of the plantation is composed of two types of materials to give resistance to the structure of the plantation and is made up of 4 bamboo canes placed separately horizontally and three vertically, these are held by ropes (abacá). For it to float, it is necessary to place 4 floating boards attached with abaca ropes.



Plantation Structure:

The base of the FAD is the fabric (floating structure) of the FAD, this can vary in size 1.80x1.70



4.3.PHASE 3: Biofads performance testing.

For phase 3, the feasibility study is contemplated through testing the proposed BIOFAD in a favorable environment (sea water), for which it is considered essential to establish the realistic scenarios to which the FADS are currently subjected, the following will be taken Aspects for monitoring and controlling FADs:

- Frequency of monitoring of devices placed at sea.
- Times in which the biodegradability effect of FADS has the indicated effect.
- Novelities detected regarding the aggregation of fish in the devices.
- Possible impacts that may arise from its implementation.

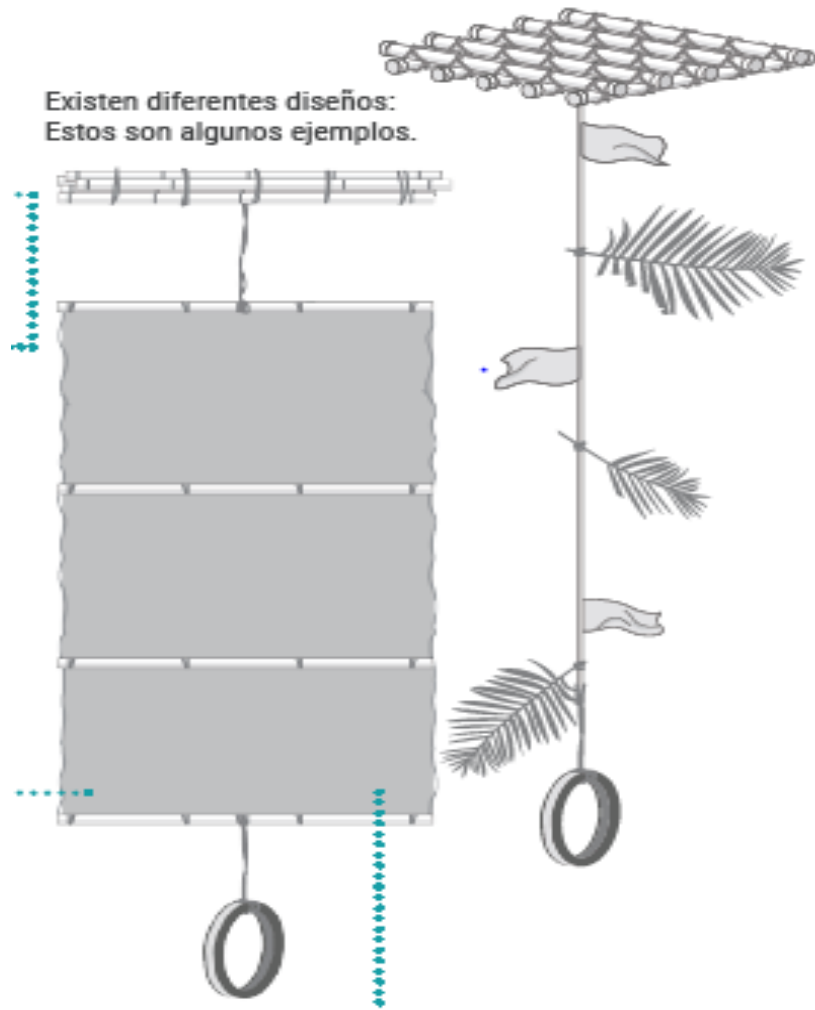
For the conclusions, its effectiveness will be assessed as a function of time, and opportunities for improvement are considered, which will be supported by specialized personnel with the help of the fleet captains and personnel on board.

STRUCTURE OF THE BIODEGRADABLE FAD COMPLETED



PROTOTYPE 2

PROTOTYPE #2 SAMPLE OF BIODEGRADABLE FADS				
Start date: 07/12/2022			FAD measurements: 1.20 x 1.80 m	
No.	Components of FADs	Material	Origin	Amount
1	Main Material	Manila Fiber Fabric	Ecuador Coast Region	100 mt
		3/4" ϕ manila rope	Ecuador Coast Region	80 guadua cane
2	Secondary Material	Dried Guadua Cane	Ecuador Coast Region	5 ba
		Tail weight material 1/2"	(disused chain of fishing net)	1 fathom
		Driftwood 6 cm thick	Ecuador Coast Region	4 mt



It is worth mentioning that these materials are for the 1 FAD test. Sample image attached. *(ISSF Source)*

Deployment of Biodegradable FADs on board the Messinia GH tuna vessels



BP PESCATUN 1



BP PESCATUN 1



BP HELLAS TUNA



BP HELLAS TUNA



BP TUNAMAR



5. Initial conclusions:

The fleet adopts the conservation measures to date on the use of NON-ENTLING FADs in accordance with CIAT conservation measures and resolutions.

In the case of BIODEGRADABLE FADs, although tests have been carried out to determine the efficiency of FADs in the sea, there are no positive conclusions given that the interviews with the navigators and deck managers of the vessels such as This is the case of the vessels BP TUNAMAR, BP TUNAPESCA, BP HELLAS TUNA, BP SEATUNA, BP PESCATUN 1, where:

- The captains consider that the prototype FADs do not maintain buoyancy because they have broken some of the tail ropes (they do not support the weight of the tail) therefore the estimated time at sea is approximately 1 month of resistance in the water.
- Another observation is that it was evident that one of the plantations sank due to water entering the cane structure, making it heavier.
- In other cases, the tails of the FADs have broken in such a way that it has sunk.

6. Recommend:

The approximate dry weight of the FAD is 70 to 80 kg. Therefore, it is recommended to make other prototypes using floats to avoid the sinking of the FADs in the sea.

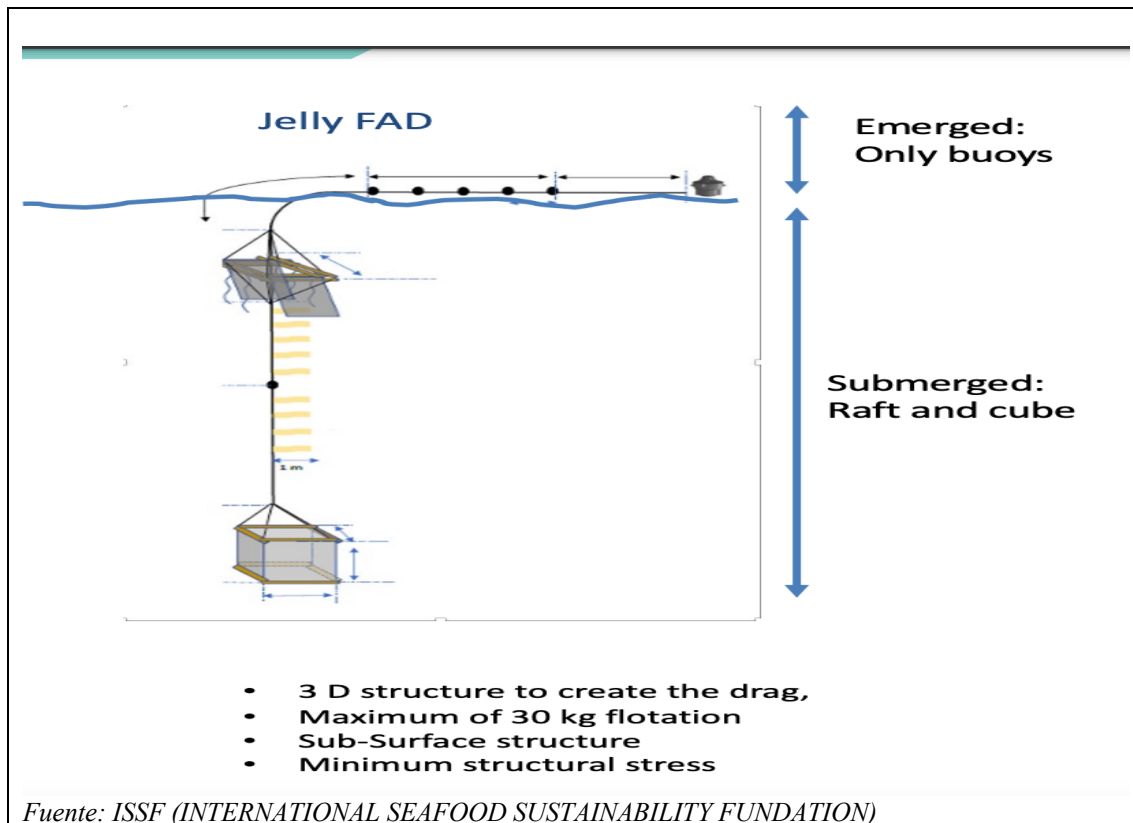
Make a mixed prototype using non-degradable material in smaller percentages, such as the ropes that hold rods and with which the moorings are made.

The abaca fiber should be replaced by cotton to reduce the weight of the FADs, in addition to the floats.

Carry out tests of new prototypes in nearby waters to measure the resistance of the Fads (Resistance of materials) to carry out a continuous evaluation of the behavior of the materials (Source: captains).

It is recommended to use the new ISSF Guide (The Jelly-FAD: Nature Inspired Innovation) who, through their scientific committee, have developed a prototype of Biodegradable FAD that calls it "JELLY FAD" The same one that has been tested in regions of the EPO and the Atlantic.

Messinia Group will take these recommendations to execute a new prototype for effectiveness tests at Sea (October 2024).



7. BIBLIOGRAPHY:

INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION In ISSF CM 3.7 – Transactions with Vessels or Companies with Vessel-based FAD Management Policies, ISSF extended to 1 April 2025 the effective dates for provisions on non-entangling FADs and FAD retrieval. The updates to these provisions are excerpted and highlighted below.

1. With respect to the element on the use of only non-entangling FADs (item d above), no later than 1 April 2025, public FAD management policies developed under this measure shall include a statement that purse seine vessels and supply vessels covered by the policy will from this date only deploy or redeploy (i.e., will be placed in the water) fully non-entangling FADs, without any netting in any components, including both the raft and the tail. From 1 April 2025, where practicable, the purse seine vessels and supply vessels should retrieve any encountered pre-existing non-fully NEFAD (whether a set is done or not) which is not in compliance with this measure.

2. ISSF CM 3.5 is repeated and replaced by this measure as of 1 April 2025.

RESOLUTION C-23-04 ON THE DESIGN AND BIODEGRADABILITY OF DRIFTING FISH AGGREGATING DEVICES (FADS) IN THE AREA OF COMPETENCE OF THE IATTC (INTER-AMERICAN TROPICAL TUNA COMMISSION).