

# **Report on vessels participating in**

**Trials of Biodegradable FAD and FAD  
recovery initiative,  
Non-Entangling FAD with no netting**

**December, 2022**

# Grand Bleu S.A and GSK Marine S.A

## 1. Participants

### 1) Vessels in participation

Vessel Name	IMO Number	Vessel Flag	Vessel Type
SOLEVANT	8104204	SENEGAL	PURSE SEINER
SEA DEFENDER	8996190	SENEGAL	PURSE SEINER
PONT SAINT LOUIS	8222422	SENEGAL	PURSE SEINER
SEA FRONTIER	8988806	GUINEA	PURSE SEINER

2) Companies : Grand Bleu S.A, and GSK Marine S.A.

3) Coastal States : DPSP, Senegal and MPEM, Guinea

4) Trial periods : until December 2022 ( not later than 1 January, 2023)

## 2. Purpose of Trial

Grand Bleu S.A. and GSK Marine S.A. are Atlantic Ocean purse seine tuna fishery. The companies target Atlantic bigeye (*Thunnus obesus*), eastern Atlantic skipjack (*Katsuwonus pelamis*) and Atlantic yellowfin (*T. albacares*) tunas through free-school and FAD-associated purse seine sets. The fishing vessels are flagged to Senegal and Guinea, and operate on the high seas of the eastern Atlantic Ocean and the Exclusive Economic Zones (EEZs) of the following coastal states: Senegal, Mauritania, Cape Verde, Guinea Bissau, Guinea, Sierra Leone and Liberia. The fishery is managed regionally by the International Commission for the Conservation of Atlantic Tunas (ICCAT).

The companies aim to improve its sustainability and reduce its impact by working towards the objectives below:

- Sustainable fish stocks
- Minimizing environmental impacts
- Effective management

The companies fully have recognized that the traditional DFADs are made using petroleum-derived products such as plastic, PVC, and nylon nets as well as metals. Eventually, petroleum-derived materials break up and contribute to ocean pollution as macro- and micro-plastics.

Accordingly, in order to meet the above objectives, the companies have decided to participate into the trials to phase in using only non-entangling Fish Aggregating Devices (NEFADs) and Biodegradable Fish Aggregating Devices (BIO-FADs), as defined by the International Seafood Sustainability Foundation (ISSF) are constructed with no netting material to minimise ghost fishing (entanglement of fauna, primarily sharks and turtles). For a FAD to be completely non-entangling, it must not use netting materials either in the surface structure (raft) or the submerged structure (tail).

The companies have started the trials to design, construct NE-biodegradable FADs made by natural and biodegradable materials such as bamboo, palm leaves, coir and jute fiber to prevent pollution of the marine environment reducing the amount of synthetic marine debris in Atlantic Ocean.

### **3. Biodegradable FAD**

#### **1) Defining “ Biodegradable “**

The term “biodegradable” is applied to a material or substance that is subject to a chemical process during which microorganisms in the environment convert materials into natural substances – such as water, carbon dioxide, and decomposed organic matter – that are non-toxic for the marine environment. The time required for biodegradation of different materials varies.

#### **2) Bio-FAD Designs**

The companies are testing various organic materials and designs for biodegradable FADs, which can help to reduce marine debris and beaching as well as ghost fishing.

The companies have continued to research biodegradable materials for FAD rafts and ropes, for example, that can meet their needs but are less harmful in the ocean than man-made materials and also, are testing a smaller type of bio-FAD, like the jelly-FAD, that may further reduce their ecosystem impacts. The Jelly-FAD is a dFAD that drifts with the least structural stress, like jellyfish and its design considers the following factors.

- Reduces dFAD’s structural stress to be used successfully with organic materials
- Reduces presently used large dFAD sizes
- Reduces the need for flotation (plastic buoys)

- Eliminates netting
- Drifts slowly
- Provides shade

3) By reference to ISSF Technical Paper 2019-11, Biodegradable FAD configurations are as follows:

- **Raft:** Rafts should be constructed using bamboo, balsa wood or other natural materials that degrade without producing pollution on the marine environment. For FAD flotation, the use of plastic buoys and containers should be reduced as much as possible (e.g., reducing the weight and volume of the FAD structure would require less flotation).
- **Tail:** Only natural and/or biodegradable materials (cotton ropes and canvas, manila hemp, sisal, coconut fibre, etc.) should be used, so that they degrade without causing impact on the ecosystem.

#### 4) Introduction of Bio Materials

BIO-FADs consist of eco-friendly & biodegradable materials as the below. Coir Materials is made by coconut fiber, which is a natural material extracted from the husk of coconut. And Jute materials is made by Jute fiber which is one of the most affordable natural fibers is composed primarily of the plant materials organic compound and polymer.





**Jute Strand**



**Jute Raw**



**Cotton Canvas**



**Jute Canvas**



**Coir rope, Jute  
Canvas and  
Bamboo**



**Tail: Coir rope, Jute  
Canvas and Bamboo**

#### 4. Bio-FAD Testing

The companies participated in trials of Bio-Fad testings as shown on the various photos as below and shall continue to participate in trials of various organic materials and design for bio-FAD prototypes to evaluate the performance of different FAD structures and organic materials since the testing shows that Bio-FAD is inferior to the traditional FAD in terms of durability and tuna – aggregating effectiveness.

**See Annexes**

**Annex 1 : Photos showing construction of Bio-FAD ( FV “SEA FRONTIER”, “ PONT SAINT LOUIS”)**

**Annex 2 : Photos showing construction of Bio-FAD ( FV “SOLEVANT”, “SEA DEFENDER” )**

**Annex 3 : Video showing deployment of Bio-FAD ( deployed on Sept, 2022)**

**Annex 4 : Video showing retrieval of Bio-FAD on Oct, 2022( one month after deployment)**

**Annex 5 : Video showing retrieval of Bio-FAD on Nov, 2022( two months after deployment)**

**Annex 6 : Video showing retrieval of Bio-FAD on Dec, 2022( three months after deployment)**

사진 종류	실행 날짜
Bio FAD 제작 도면	2022.9.30 이전
Bio FAD 제작 위한 Materials 사진	2022.9.30 이전
Bio FAD 제작 사진	2022.9.30 이전
Bio FAD 설치 사진/날짜	2022.9.30 이전
Bio FAD 회수 사진 (설치후 1개월 경과 시점)	2022.10.30
Bio FAD 회수 사진 (설치후 2개월 경과 시점)	2022.11.30
Bio FAD 회수 사진 (설치후 약 3개월 경과 시점)	2022.12.20

#### 5. Non-entangling FAD

By reference to ISSF Technical Paper 2019-11, fully non-entangling FAD designs are as follows:

- **Raft:** The surface structure shall not be covered with netting or meshed materials. If covered, cover with canvas, tarpaulin, shade cloth, or non-entangling materials.
- **Tail:** Subsurface structure is made with ropes, canvas sheets, or other non-entangling materials.

Fully non-entangling FAD with no netting should be used anywhere on the FAD (raft or tail) to prevent any entanglement by 1 January 2022 with six months grace periods for “ Solevant “ and “ Sea Defender” ,

whereas by 30 November, 2022 with six months grace periods for “ Sea Frontier” and “ Pont Saint Louis”.

## **6. BIO NE-FAD STRUCTURE & DESIGN**





Marine debris can be of concern when FADs are constructed with materials that degrade very slowly, such as PVC pipes for the rafts or nylon nets and polypropylene ropes. In addition, lost or abandoned FADs can drift and beach in sensitive areas such as coral reefs, or pollute commonly encountered habitats. The companies have adopted the programs to reduce the FAD structure's impact on the ecosystem.

- Develop FAD recovery program to retrieve and replace any own or foreign entangling FADs when possible and safe to do so.
- Monitor FAD deployments and locations of drifting FADs to minimize FAD density impacts on the pelagic ecosystem and to avoid high-risk deployment areas.
- Provide FAD track data on the position of FADs in confidentiality to scientists or ICCAT upon their request, in order to quantify their impacts on coastal environments, and to measure the efficiency of the initiatives taken to mitigate the loss and abandonment of FADs.
- Promote FAD marking schemes and FAD ownership rules.
- Try to remove from the water and bringing back to port 10 % of encountered FADs with non-biodegradable elements (e.g., plastic containers) when possible and safe to do so.

The photos and extracts below show the fad recovery programs in above are mostly in progress, but the companies shall continue to explore and improve the programs to reduce the FAD structure's impact on the ecosystem at a best practice.

#### **See Annexes**

**Annex 7: Photos showing retrieval of traditional FAD(Entangling FAD)**

**Annex 8: "FAD logbook" and "List of deployed FAD and BUOYS" to monitor FAD deployments and locations of drifting FADs**

**Annex 9: FAD track data on the position of FADs**

#### **☞ 하기 반영 예정**

- 기존 FAD (entangling FADs) 회수하는 사진
- Monitor FAD deployments and locations of drifting FADs : "FAD logbook" 과 "List of deployed FAD and BUOYS" 자료 발췌하여 보고서에 반영
- FAD track data on the position of FADs : 표본 Data 발췌하여 보고서에 반영.

## **8. Target**

The companies have commenced the trials for use of BIO NE-FADs and implementation of FAD

recovery program from this year, 2022 and the trials will be progressed continually for improvement and eventually accomplishment for the use of only non-entangling and Bio FAD at least before the deadline as required in ISSF Conservation Measure 3.7 on the purpose of the environment protection for Atlantic Ocean. There are reports of successful sets on biodegradable NE-FADs from the fleets, but durability of these materials is a concern for the fleets as coconut fiber ropes appear to break down relatively quickly. The companies have a plan for the trial to use various bio materials made with raw cotton, manila hemp as well as coir & jute fiber in forthcoming years.

The companies do constantly the best practice for the construction & deployment of BIO degradable & NE-FAD to reduce the environmental impact and for the conservation and management of tropical tunas. End.

In accordance with the above, all participating parties are asked to sign below.

On behalf of Participant (Grand Bleu S.A.):

Signature: \_\_\_\_\_

Name and title or role: \_\_\_\_\_

Date: \_\_\_\_\_

On behalf of Participant (GSK Marine S.A.):

Signature: \_\_\_\_\_

Name and title or role: \_\_\_\_\_

Date: \_\_\_\_\_

On behalf of Participant, Direction de la Protection et de la Surveillance des Pêches (DPSP), Senegal

Signature: \_\_\_\_\_

Name and title or role: \_\_\_\_\_

Date: \_\_\_\_\_

On behalf of Participant, Ministère de la Pêche et de l'Economie Maritime (MPEM), Guinee

Signature: \_\_\_\_\_

Name and title or role: \_\_\_\_\_

Date:

See Annexes

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