BioFAD Project in Ghana

(FAO-ISSF LOA for Training Activities Biodegradable FADs)

Activity Report

April –August 2018

With support from:

International Seafood Sustainability Foundation
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Preamble

This study is part of a pilot project coordinated by the International Seafood Sustainability Foundation (ISSF), with support provided by the Common Oceans ABNJ Tuna Project, to test the use of biodegradable and non-entangling Fish Aggregating Devices (FADs) in collaboration with Ghanaian fleets. The initiative addresses some of the challenges facing the fishing sector by implementing best practice solutions to reduce both ghost-fishing due to entanglement in FAD structure, and the amount of plastic used to construct FAD´s structures, with the aim to contribute to achieving responsible, efficient and sustainable fisheries and biodiversity conservation.

The present document shows the activities conducted within the project from April 2018 to September 2018 as follows:

Part A. Visual report of the type of materials used to build FADs in main ports of the Western Africa.
Part B. Progress on the activities related to the test at sea of biodegradable FADs with the collaboration of Ghanaian fleets.
Part C. Workshop for the reduction of the impact of fish aggregating devices´ structures on the ecosystem.
Part D. Video of the workshop conducted with the fleets operating from Dakar (Senegal), on the type of FADs used and best practices related to mitigating FAD impacts.

PART A

Visual report of the type of materials used to build FADs in main ports of the Western Africa

Gala Moreno, Jefferson Murua, Ben Ashigbui, Papa Kebe

1. Introduction

Fish aggregating Devices (FADs) are widely use in the tropical areas of the Atlantic, Indian and Pacific Ocean (Figure 1). One of the impacts related to the use of FADs are those related to its structure. Due to the fishing strategy with FADs, they are lost and abandoned causing beaching and sinking events. The impacts associated to this beaching events are damages in vulnerable ecosystems as coral reefs, interference with other economic activities as tourism and marine pollution. The fact that FADs are mainly made of plastic components makes this fishing gears remain at sea for hundreds of years.

ISSF with the support provided by the Common Oceans ABNJ Tuna Project is working through several research projects to minimize the impact of FAD structures, by researching materials from natural origin that could be used at FADs, as well as testing the at sea with the collaboration of the fleets. As part of this initiatives to use biodegradable FADs, ISSF conducted a trip to the principal ports in Africa to identify the materials and designs used to build FADs, discuss with fishers and shipowners about the reasons to use those materials (cost, availability, logistics, effectiveness, etc.), so that the state of the technology to build FADs is well known and specific solutions for this fleets can be found.

2. Objectives

The general objective is to advance towards the use of biodegradable FADs in the fleets operating in the Atlantic Ocean. For that, trips to principal ports in Africa were done to visit vessels, shipowners and the facilities to manufacture FADs.

The specific objectives of the visits were:

- ✓ To identify materials used to build FADs in the principal fleets fishing in the Gulf of Guinea
- ✓ To identify the reasons for choosing those materials
- ✓ To visually report those materials and FADs used in Western Africa

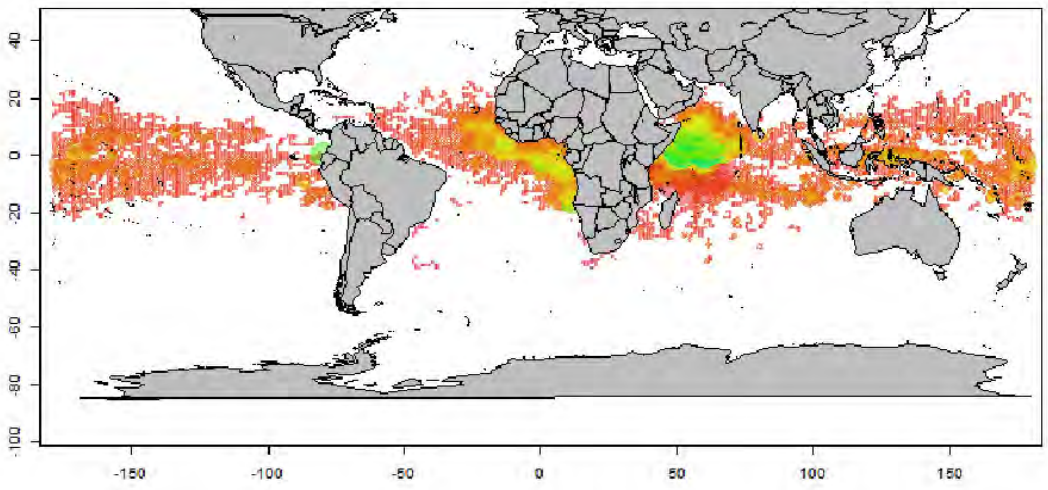

Figure 1. Spatial coverage of FADs belonging to 49 purse seiners

3. Results

3.1 Fleets in the port of Dakar, Senegal

a. Pole and line vessels fishing tropical tunas with FADs from Dakar

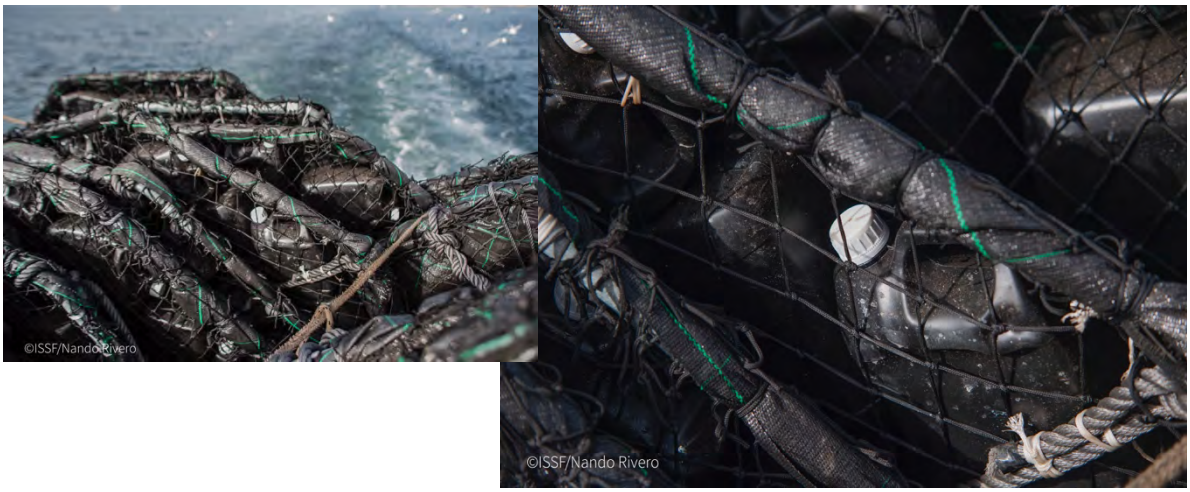

Figure 2. Plastic containers used as surface structure of the FAD

Figure 3. Low entanglement risk plastic nets used as submerged structure of the FAD

b. Purse seine vessels fishing tropical tunas with FADs from Dakar

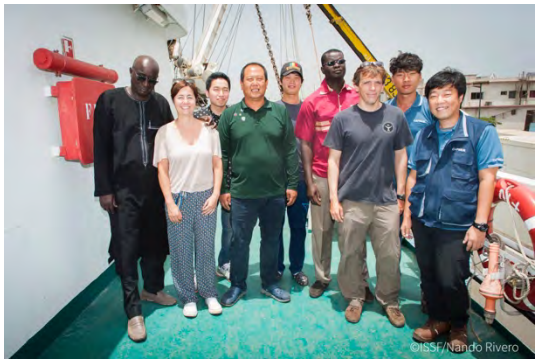

Figure.4. Yellow, purse seine net corks are used as FAD´s surface structure (top). Green nylon low entanglement risk net with palm leaves and bamboo canes used in the submerged appendage (main component is the net (90%))

3.2 **Fleet in the port of Abidjan, Ivory Coast**

a. Purse seine vessels operating from Abidjan (Ivory Coast)

Figure 5. Bamboo canes used in the raft, covered with low entanglement risk black plastic net

Figure 6. Green, low entanglement risk plastic net used in the submerged structure of the FAD

b. Other purse seine vessels operating from Abidjan (Ivory Coast)

Figure 7. Plastic containers used as surface structure of the FAD

Figure 8. White, low entanglement risk plastic net used in the submerged structure of the FAD

3.3 **Fleets using FADs in Ghana**

a. Pole and line fleet fishing with FADs in Ghana

Figure 9. Bamboo raft used with no netting to cover the raft

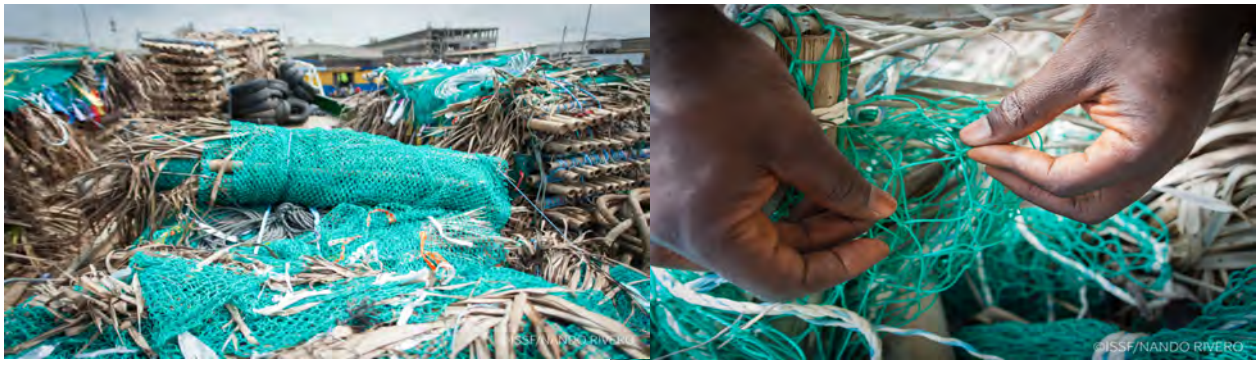

Figure 10. Submerged appendage is made of low entanglement risk green plastic net

b. Purse seine fleet fishing with FADs in Ghana

Figure 11. Raft used in purse seine is made of purse seine net corks and bamboo (no netting to cover the FAD) canes

Figure 12. Submerged appendage is made of low entanglement risk green plastic net

4. Conclusion

Scientists from ISSF were able to see in detail FADs from all the countries operating in the Gulf of Guinea from Dakar (Senegal), Abidjan (Ivory coast) and Tema and Takoradi (Ghana). One of the main outcomes of this field work was that FAD structures in the Atlantic are more sophisticated, varied and complex than those in other oceans. Further, these Atlantic FADs are mostly made of plastic, which highlights the challenge faced in this ocean to replace conventional FADs with biodegradable ones.

PART B

Progress on the activities related to the test at sea of biodegradable FADs with the collaboration of Ghanaian fleets

Ben Ashigbui and Gala Moreno

Summary of the activities conducted before FADs are deployed

Per project requirement data is to be collected and analyzed, for that training and creation of awareness needs also to be made, to allow fishers understand what biodegradable FADs are and also why the project in being carried out. With relation to data collection database for deployed bioFADs, templates were designed to facilitate the process of data collection. For administrative purposes reception forms of biodegradable FADs have been created so there is proof that project materials were pickup and delivered to respective vessel owners to be used by their vessels.

1. Data Collection Forms

Data forms were designed in 3 sections aiding the fishers and observers collect data when bioFAD's are deployed (see appendix 1 and the application created for mobile and tablets). The first section (General information) comprises of name of personnel filling the form, vessel name, vessel owner, buoy number, buoy ID and buoy replacement ID. Date, time and GPS are included as well giving as location data on bioFAD. The second section (FAD Information/Identification) consists of raft type used: the upper part of the FAD, the submerged appendage, the FAD length, the state of the FAD and activity carried out on FAD. The third section (Catch Data) takes into consideration the species distribution and amount of fish caught around FAD, comments and signature of personnel filling in the data.

2. Training /Awareness Templates

Data representation, training on forms as well as awareness creation was needed for the crew, captain and observers. Training was focused on project´s objectives and how data should be represented on the forms. Information is standard for all vessels involved. Vessel owners are engaged and a representative from the office is involved so it is easy to explain and communicate with the crew, since not all of them speak the same language. Vessels are visited in port for effectiveness and will be conducted by ISSF team both in Tema and Takoradi ports. Crew, captain, observers and boat owners were engaged. Views and feedback was sampled from all parties. The bioFAD project was explained to them and there was a question and answer session where fishers asked questions.

3. Meeting with Ghana Fisheries Observers

Went through data representation on the bioFAD data forms as well as sampling their thoughts and opinions about the project.

4. Meeting with Ghana Tuna Association

Engagement with GTA, Q&A session and establish strategies for effective communication on vessel arrivals and information sharing.

- **Verification of Vessel and Owner Information**
  GTA confirms that the list of vessels, gears and company information submitted is valid and that information can be used to facilitate the progress of the project

- **Communication and Coordination**
  GTA agreed that, aside the use of emails as mode of communication a WhatsApp group should also be created to also facilitate the movement of information as well as telephone calls and txt messages. Information such as arrival and departure of vessels will be communicated. Training sessions and further explanation will also be communicated and organized.

- **Training**

  GTA will update on vessel arrival and departure. They will also convey to venue of training for their crew and workers involved in the project whether in the office or at the port (vessel) whichever will be productive.

- **Arrival of Materials**

  ISSF will provide the biodegradable materials and the forms and will conduct all the analysis. Materials will not arrive before January 2019 FAD's. will be constructed by the fishing company.

- **Data Collection**

  FADs will be tracked at sea and collecting the data and FAD trajectories would need to be taken. GTA agreed to allow us monitor and track the trajectory and drift of only the buoys attached to the Biodegradable FADs that are involved in the project when deployed at sea. All agreed to use ZUNIBAL buoys so data will be in uniform across. The unique ID of the buoys will be provided to aid tracking. It will be possible to monitor and track FADs in real time.

5. Vessel Visits

Upon arrival of project materials, fishing vessels are visited as and when they are in port to take feedback and suggestions as to how data can effectively be collected and also to establish a relationship with fishers. Learn more about their fishing habits and practices and also create awareness about the biodegradable FAD project. Upon recommendation from fisher's data collection forms have been redesigned.

6. Observations/Recommendations

Fishers seem satisfied with training and explanations so far. They understand what is required of them and also give great feedback. Suggestions from participants have been really helpful to the progress of the trainings as well as how best to collect data.

Appendix 1: Template/Headers

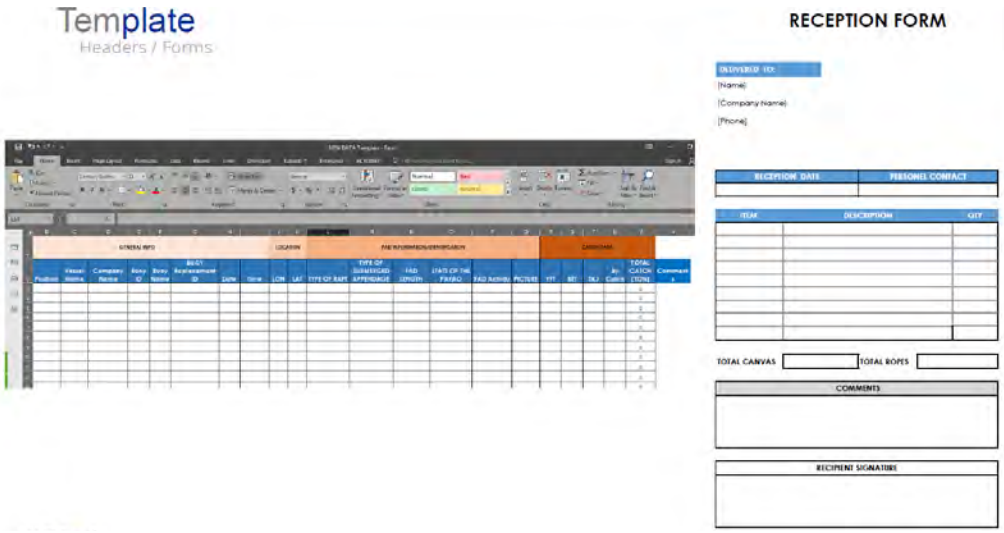

Figure 1. Templates for data collection on bioFAD related activities (left) and biodegradable reception material (right)

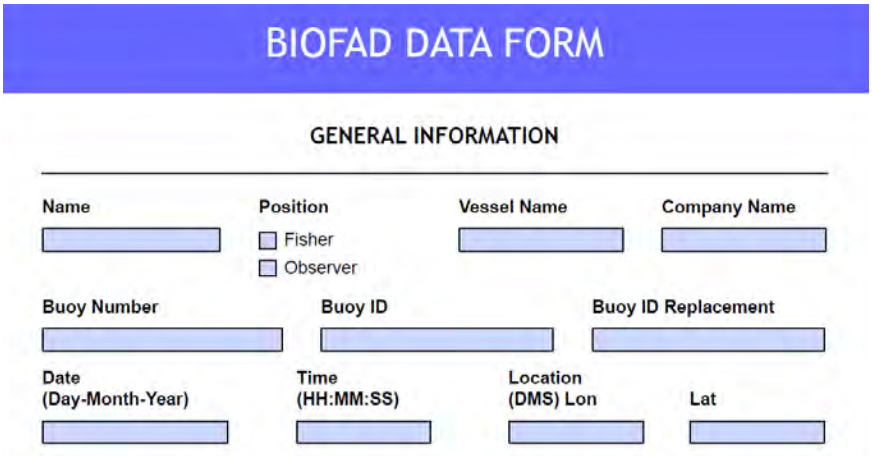

Figure 2. Template for general information related to data collection on the bioFADs under test

PART C

Workshop for the reduction of the impact of fish aggregating devices´ structures on the ecosystem

The objective of the workshop was to evaluate different options to reduce the impact of lost and abandoned FAD structures on the ecosystem. Fishers and scientists participated to provide expertise on the potential measures to minimize the impact in each ocean. Before these options were considered, data on the fate of FADs was discussed in relation to beaching, sinking, and lost or abandoned FADs. Assuming that the use of biodegradable FADs is one of the main solutions to avoid the impacts of FAD structure on the ecosystem, and the fact that there are other specific workshops and projects to address this specific solution, the workshop did not address the use of biodegradable FADs.

The following options were evaluated during the workshop (in chronological order from the construction of a FAD until they end up lost, abandoned or stranded):

- Limiting number of FADs
- Simplifying FAD structures
- Avoiding FAD deployment areas that imply high risk of stranding
- Building FADs with navigation capability
- Building FADs that could be sunk
- Using anchored FADs
- Recovering FADs at sea
- Recovering FADs from land

Links to the workshop report:

English version: https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2018-19a-workshop-for-the-reduction-of-the-impact-of-fish-aggregating-devices-structure-on-the-ecosystem/
Spanish version: https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/download-info/issf-2018-19b-taller-para-la-reduccion-del-impacto-de-la-estructura-de-los-dispositivos-concentradores-de-peces-en-el-ecosistema/

PART D

Video of the workshop conducted with the fleets operating from Dakar (Senegal), on the type of FADs used and best practices related to mitigating FAD impacts

Link to the video:
https://www.youtube.com/watch?v=a6a4Uj-AhCc&t=64s