Received: 12 October
IOTC-2017-WPTT19-21

TESTING DESIGNS AND IDENTIFY OPTIONS TO MITIGATE IMPACTS OF DRIFTING FADs ON THE ECOSYSTEM

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Abstract

Despite most of the currently used FADs designs have eliminated their entangling characteristic, these are made by non-biodegradable materials contributing to increase marine debris, and with other negative impacts in the ecosystem like FADs beaching and ghost fishing. IOTC together with other RFMOs have made recommendations and published resolutions to promote the reduction of the amount of synthetic marine debris, by the use of natural or biodegradable materials for drifting FADs. However, there are some practical aspects that needs to be clarified for the operationalization of this type FADs construction and effective replacement of materials. The Specific Contract N^0 7 under the Framework Contract EASME/EMFF/2016/008 provisions of Scientific Advice for Fisheries Beyond EU Waters addresses the current impediments and provides solutions that shall support the implementation of non-entangling and biodegradable FADs in the IOTC Convention Area through the collaboration with the EU purse seine tropical tuna fishery and International Seafood Sustainability Foundation. This Specific Contract has three main objectives: (1) to test the use of specific biodegradable materials and designs for the construction of drifting FADs in natural environmental conditions; (2) to identify options to mitigate drifting FADs impacts on the ecosystem; and (3) to assess the socio-economic viability of the use of biodegradable FADs in the Purse Seine tropical tuna fishery. The results of this contract will create fruitful discussions and provide solutions that shall support and help IOTC defining the process of the implementation of non-entangling and biodegradable FADs.

Introduction

In the last decade, efforts have been focused to eliminate the entangling characteristics of drifting Fish Aggregating Devices (FADs), as it is known that this affects negatively on threatened species like turtles, sharks, and other associated non-target species. However, most of those non-entangling FADs are made by non-biodegradable materials contributing significantly to the increase of marine litter (Dagorn et al., 2012) and other negative impacts for the ecosystem, such as the ghost fishing or lost FADs beaching (Maufroy et al., 2015). The EU Common Fishery Policy and the Marine Strategy Framework Directive have as objective the need to ensure environmentally friendly fishing methods, which include the minimisation of seafloor or other habitat destruction, avoid effects on other species, but also minimise the introduction of any litter into the marine environment. Along these lines, the different tuna RFMOs have already addressed these issues through several recommendations and resolutions. For example, IOTC and ICCAT have adopted the obligation to replace existing FADs with non-entangling FADs and to undertake research on biodegradable FADs (i.e. BIO FADs). As such, Indian Ocean Tuna Commission (IOTC) defined procedures on a FADs management plan through the resolution 13/08, where in Annex III it was also promoted the reduction of the amount of synthetic marine debris, by the use of natural or biodegradable materials for drifting FADs (IOTC 2013). Similarly, the Inter-American Tropical Tuna Commission (IATTC) has recently stated the use of non-entangling FADs by January 2019 and it promotes the gradual use of biodegradable materials (IATTC 2016).

However, to carry out an effective replacement of non-biodegradable FADs by those fully biodegradable, there are some practical aspects that needs to be investigated for the operationalization of this type FADs construction, including (1) the selection of appropriate materials taking into account their durability, (2) information of biodegradable FADs behaviour regarding tuna aggregation, drift, etc., and (3) socio-economic study to assess cost and benefits of a phase in of biodegradable FADs by purse seine tropical tuna fishery.

The Specific Contract N^0 7 under the Framework Contract EASME/EMFF/2016/008 provisions of Scientific Advice for Fisheries Beyond EU Waters addresses the problems associated to the current used material and designs for FADs construction and aims to provide solutions that shall support the implementation of non-entangling and biodegradable FADs through the collaboration with the EU purse seine tropical tuna fishery, International Seafood Sustainability Foundation (ISSF) and through the consultation with IOTC.

Main objectives

The main purpose of Specific Contract N0 7 is to test the use of specific biodegradable materials and designs for the construction of drifting FADs in natural environmental conditions. The study will also provide criteria and guidelines to identify options to mitigate drifting FADs impacts on the ecosystem. It will be assessed the socio-economic viability of the use of non-entangling and biodegradable FADs in the purse seine tropical tuna fishery in the Indian Ocean. Finally, it will also suggest potential biodegradable materials and designs providing recommendations to foster the implementation of fully non-entangling and biodegradable FADs.

Specifically, this Specific Contract will carry out the following tasks (Figure 1):

- Task 1 – Revision of the state of the art regarding the use of "conventional FADs" (i.e. entangling and non-biodegradable), "NE FADs" (i.e. non-entangling and non-biodegradable) and "BIO FADs" (i.e. non-entangling and biodegradable) worldwide;
- Task 2 – Evaluating the performance (e.g. lifetime) of specific biodegradable materials and designs for the construction of FADs in natural environmental conditions;
- Task 3 – Testing, comparing and measuring the efficiency of new BIO FADs against current non-entangling and non-biodegradable FADs to aggregate tuna and non-tuna species at sea in “real” conditions with the involvement of EU Purse Seine fishing fleet; ;
- Task 4 – Assessing the socio-economic impacts of BIO FADs use and phasing in the purse seiner fleet;
- Task 5 – Assessing the feasibility of using new biodegradable materials by the purse seiner fleet and recommendation of an optimum BIO FAD prototype.

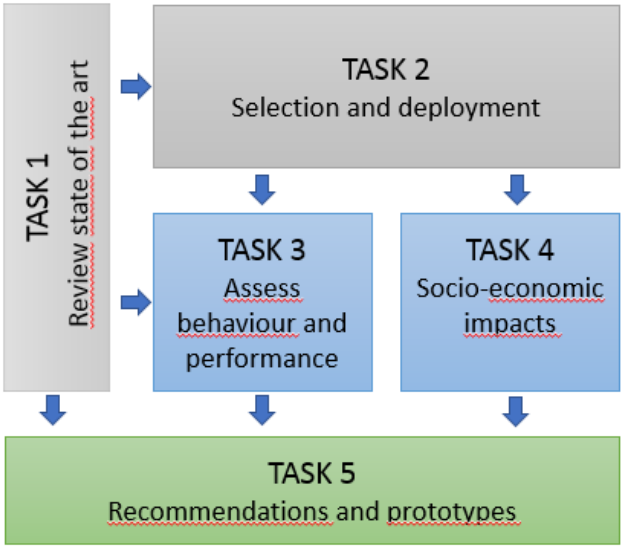

Figure 1. Flow chart of tasks of Specific Contract N0 7.

Main partners and timeline

The project, which will last 21 months and started in August 2017, will be conducted by AZTI, IEO and IEO with the collaboration of the European purse seiner fleet and ISSF (Table 1).

Main scientific products

The Specific Contract will deliver the following main scientific products which aim to create fruitful discussions and provide solutions that shall support the implementation of non-entangling and biodegradable materials and designs for FADs construction through collaboration of EU purse seine tropical tuna fisheries and ISSF and consultation with IOTC.

- Review the state of the art regarding FADs use, development and impacts worldwide including initiatives in the Atlantic, Indian and Pacific oceans.
- List of best materials and designs for non-entangling and biodegradable drifting FADs as a result of experiments in natural conditions. This product will also take into account pervious experiments conducted worldwide. Moreover, workshops and meetings with purse seine tropical tuna fishery will be carried out during the project.
- Detailed recommendations regarding the use of new biodegradable materials and designs by EU fleet based on their performance (i.e., aggregation performance, life-cycle assessment of materials) and costs (i.e., socio-economic impacts).
- Final recommendation of an optimum biodegradable FAD prototype.

Relevance for IOTC process in implementing a non-entangling and biodegradable drifting FADs

This project will contribute to summarize previous and current efforts carried out in the IOTC Convention Area as well as in other RFMOs for the implementation of non-entangling and biodegradable FADs. The results of this project will help IOTC to focus the discussion of suitable biodegradable materials and designs for FADs construction addressing the problematic of marine litter, ghost fishing and lost FADs beaching. The main scientific products and results of this Specific Contract aim to create fruitful discussions and provide solutions that shall support the implementation of non-entangling and biodegradable FADs.

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