EU/SPAIN FISH AGGREGATING DEVICE MANAGEMENT PLAN.

Alicia Delgado de Molina[1], Javier Ariz[1], J. Carlos Santana[1] and Silvia Rodriguez[1]

SUMMARY

This document analyzes the Fish Aggregating Device National Management Plan undertaken by the Spanish General Secretariat of Maritime Fisheries (Ministry of the Environment, Marine and Rural Affairs), in collaboration with the Spanish Institute of Oceanography (Ministry of Economy and Competitiveness), which will be compulsory for the Spanish freezer purse-seine fleet targeting tropical tuna (yellowfin-YFT, skipjack-SKJ and bigeye-BET) in the Atlantic, Indian and Pacific oceans.

RÉSUMÉ

Le présent document analyse le Plan national de gestion des dispositifs de concentration des poissons qu'a lancé le Secrétariat général de pêche de l'Espagne (Ministère de l'Agriculture, Alimentation et Environnement) en collaboration avec l'Institut espagnol d'océanographie (Ministère de l'Economie et de la compétitivité) afin que son application soit obligatoire dans la flottille espagnole de senneurs thoniers congélateurs qui ciblent les thonidés tropicaux (albacore, listao, thon obèse) dans les océans Atlantique, Indien et Pacifique.

RESUMEN

En el presente documento se analiza el Plan Nacional de Gestión de Dispositivos Agregadores de Peces que ha emprendido la Secretaría General de Pesca de España (Ministerio de Agricultura, Alimentación y Medio Ambiente), en colaboración con el Instituto Español de Oceanografía (Ministerio de Economía y Competitividad), para que sea de obligado cumplimiento en la flota española de atuneros cerqueros congeladores que tienen como especies objetivo a los túnidos tropicales (rabil-YFT, listado-SKJ y patudo-BET) en los océanos Atlántico, Indico y Pacífico.

KEYWORDS

Atlantic Ocean, tropical tuna, purse seine, catches, fishing effort,
artificial floating objects, bycatch species, sizes, catch-per-unit-of-fishing-effort

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[1] Instituto Español de Oceanografía. Centro Oceanográfico de Canarias. Apdo. de Correos 1373. 38080 Santa Cruz de Tenerife. Islas Canarias (España).

1 Introduction

The tuna fishery over floating objects and marine animals, whether dead or decomposing, has been practised since the introduction of tropical tuna purse-seine fisheries in the three oceans where this type of fishery takes place.

In the early 1990s, the various purse-seine fleets began intentionally introducing floating artificial objects with buoys for the purpose of increasing tropical tuna catches, while making the fishing effort 'more effective' at the same time. Currently, around 50% of sets made by these fleets on a worldwide scale are undertaken using this fishing mode; the rest are made over free schools and, in the Eastern Pacific Ocean alone, over dolphins. This development has been similar in all three oceans. In the Atlantic, purse-seine catches are made over floating objects and free schools to an equal extent.

The tuna fishery over floating objects results in characteristic catches—yellowfin, skipjack and bigeye—generally of juvenile specimens in mixed shoals. The dynamics of association and behaviour of tuna over floating objects is one of the lines of research currently being followed by several research bodies, for the purpose of rendering this type of fishery more selective. Specimens from several taxonomic groups (osteichthyan and chondrichthyan fish, and turtles) are also caught alongside the target species in greater proportion overall than in catches over free schools, although both fishing modes bring in bycatch species, which, in some cases, are specific or virtually specific to the type of association.

More than 20 years of this fishery have resulted in a wealth of biological and other information needed to assess these resources. However, the information required for assessment is insufficient and inconclusive because of numerous methodological problems involving the data obtained from the assessment models, in particular the data derived from the use of abundance indices (catch per species, fishing effort and catch-per-unit-of-fishing-effort (CPUE)).

Several tuna regional fisheries management organizations (RFMO) have laid down resolutions whereby all parties are required to establish fish aggregating device (FAD) management plans, which must gather specific information, as is the case of the Commission for the Conservation of Atlantic Tuna (ICCAT), with a compulsory (number of FADs per vessel, characteristics and identifiers of the different FADs) and an optional component (catches made over FADs, efforts to mitigate bycatch, institutional agreements, etc.).

Irrespective of the fact that the National FAD Management Plan can be put to future use by the European Union and Spanish fishing authorities as a tool to govern this type of fishery, it goes much further in that it tends to provide qualitative and quantitative information about species associated (and caught) with FADs throughout the lifetime of the device. The plan also attempts to pinpoint key elements to identify the characteristics of FADs that yield specific captures and whether such captures are the result of the trajectory of the object through various zones (season, area) or a mixture of both factors (specific characteristics of FADs, or zone and season during which catches were made).

2 FAD Management Plan for the Spanish tropical purse-seine fleet

In 2011, the Spanish fisheries management organization laid down a Fish Aggregating Device Management Plan for the national fleet, which has been implemented to date.

Background

The prevailing fisheries regulations include several requirements that justify the implementation of a national FAD management plan for the tropical tuna fleet, such as the United Nations agreement on the conservation of fish stocks, the FAO code of conduct for responsible fisheries and Council Regulation (EC) No. 2371 on the conservation and sustainable exploitation of fisheries resources, etc.

Moreover, the four RFMOs to which the tropical fleets belong have adopted several requirements that oblige the different administrations to follow up FADs.

One of the plan's general aims is to establish a series of regulations that will facilitate compliance of the UN doctrine on the marking of fishing gear (including FADs), and prevent and avoid residue and waste being dumped at sea.

Specific objectives:

- To produce a register of floating objects and their characteristics,
- To improve information collection,
- To improve knowledge of FAD catch composition,
- To further knowledge of FADs and their impact on the ecosystem,
- To establish mechanisms for information exchange between scientists and administrations.

Justification of objectives:

The application of such a plan by all members that practise fisheries over floating objects will provide the RFMO managing these resources with important information about the following:

- Number and characteristics of the deployed objects that are picked up and remain in the fishery,
- Catches made (bycatch species) over each object and their characteristics (per area, composition by species),
- Possibility of the individualized follow-up of each object: lifetime, trajectory followed, catches made (target and bycatch species, sizes, etc.) throughout the lifetime of the object.

Scope

The regulations are binding for the entire tuna purse-seine fleet and its supply boats operating in all three oceans and flying the Spanish flag.

Information collection

The first two years (2011 and 2012) of the plan involved adapting formats to information collection. Accordingly, **Tables 1** and **2** show the forms used when the plan was launched. During this initial period, the vessels sent information in a variety of formats, using multiple names for the same material or for a similar event. In many cases, the information was sent in text files. That is, information that was very difficult to process would be gathered but often went unused. However, this first trial served to define the numerous types and variations of objects and the different activities carried out over them.

In 2013, a new format for information collection was introduced. **Table 3** shows the new information collection format for FAD inventory. All information pertaining to the type, shape and material of the object and type of buoy is included in this format. Each object is marked so that it can be followed up throughout its lifetime. The format is an Excel sheet containing several drop-down tables in the fields that require defining or specifying. **Table 4** provides an example of one of these drop-down sections and **Table 5** lists all the drop-down tables in the inventory form.

Table 6 shows the new format for gathering information about activity over FADs, which has come into use in 2013. This form contains an identification field for the FAD in order to connect it to the inventory form. Other fields are provided for buoy identification, information about the activity over the object (fishery, visit, loss, change of buoy, etc.), date and time, position and (in the event of a set) estimated total of tuna and bycatch. **Tables 7** and **8** also show an Excel sheet, containing explanatory comments and drop-down sections.

Table 1. Information collection format for FAD inventory (used in 2011 and 2012).

IDENTIFICATION		
DESCRIPTION OF THE FAD		
DIMENSIONS	**WIDTH**	
	LENGTH	
	DEPTH	
NET	**DIMENSIONS**	
	MATERIAL	
	MESH SIZE	
	OTHERS	
MATERIAL		
NUMBER OF ASSOCIATED BUOY		

Table 2. Information collection format for activity over FADs (used in 2011 and 2012).

C REGISTER OF SPECIFIC FAD ACTIVITY

Vessel:　　　　　　　　　**Code:**　　　　　　　　　**Registration No.:**

Identification	Date	Time	Activity	Position	Observations

Table 3. New information collection format for FAD inventory (introduced in 2013).

ANEX I: Inventory												
Vessel			**Registration**									

FAD			FAD Dimensions			Rabo/Tail			Identification associated buoy	Type of associated buoy	Withdrawal or loss of FAD
Identification	Description	Material	width (m)	length (m)	height (cm)	depth (m)	material	mesh (mm)			

Table 4. Example of drop-down sections in the new information collection format for FAD inventory.

Table 5. Drop-down tables in the FAD inventory form.

Drop-down tables ANNEX I (Inventory):

Description
Raft of nets and reeds
Raft (metal, PVC or plastic structure)
Object with no mesh: Any kind of raft or rack with no covering
Natural (tree trunk, rope, pallet, grasses)

Type of buoy	FAD materials	Net or rabo/tail materials
GPS type SHERPE (ball)	Bamboo	Nylon
Satellite + echo sounder	PVC / Plastic	Piece of netting
Satellite without echo sounder/sonar	Metal	Tail-like
Satellite + sonar	Floats, corks, buoys, containers ...	Mesh material
	Piece of netting	Ropes
	Anti-fouling netting	Palm leaves

Table 6. New information collection format for activity over FADs (introduced in 2013).

ACTIVITY REGISTER

Vessel : _____   **Registration:** _____

| Date | Time | FAD identification | Buoy identification | Activity | Position | | Estimation of school (ton) | Estimation of accidental bycatch | | | | Observations |
					Lat	Long		Group	In no. specimens or weight (t)	No./W	No. specimens released alive	
D/M/Y	H/Min				Degree/Min	Degree/Min						

Table 7. Explanatory comments inserted in the activity register.
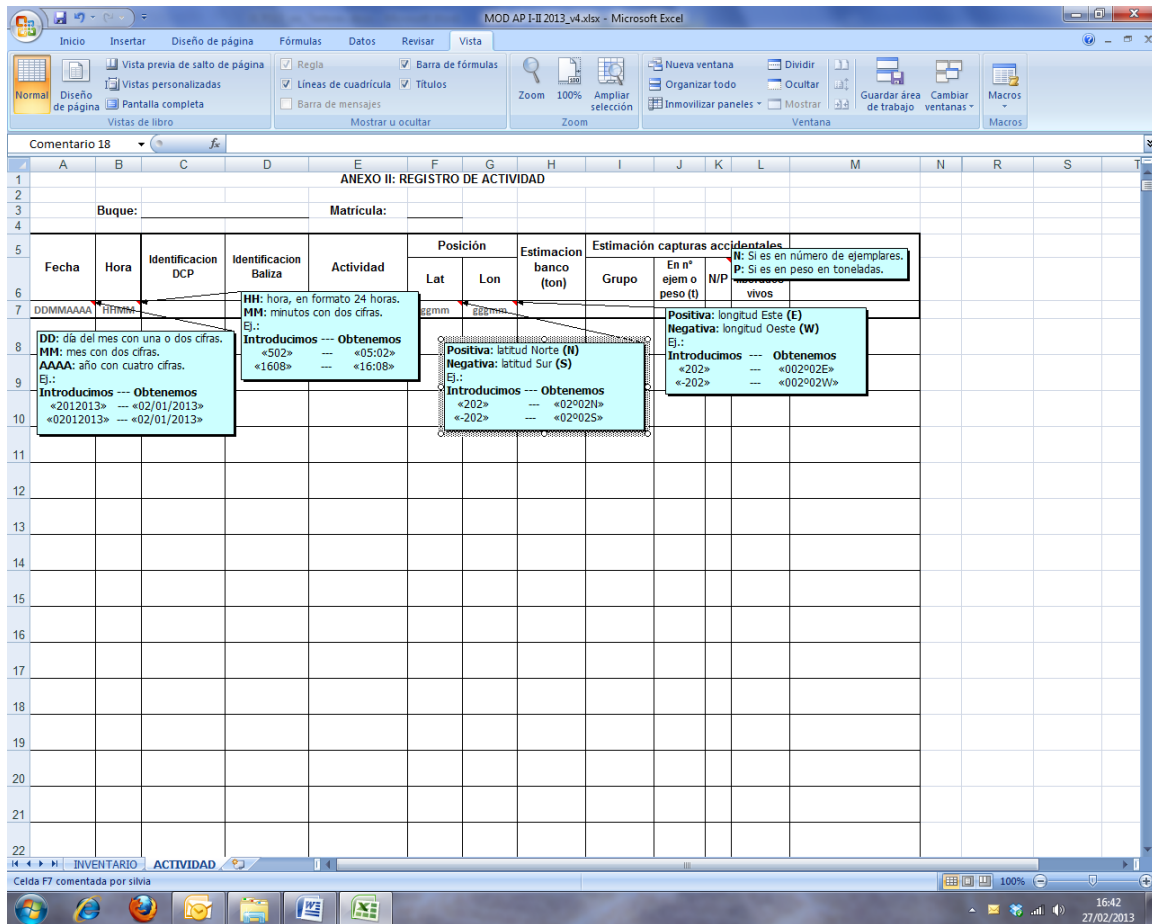
Table 8. Drop-down tables in the FAD activity form.

Groups	Activity	Bycatch
Turtles	Deployment	No.
Billfish, marlins	Verification	W
Swordfish	Set	
Frigate tuna	Collection	
Atlantic little tuna	Change of buoy	
Whale shark	Natural floating object	
Marine mammals	Loss	
	Recovered in port	