

CONFERENCE MINISTERIELLE SUR LA
COOPERATION HALIEUTIQUE ENTRE LES ETATS
AFRICAINS RIVERAINS DE L'OCEAN ATLANTIQUE



MINISTERIAL CONFERENCE ON FISHERIES
COOPERATION AMONG AFRICAN STATES
BORDERING THE ATLANTIC OCEAN

COMHAFAT/ATLAFCO

REPORT OF THE FISH AGGREGATING DEVICES (FAD) STUDY WORKSHOP IN THE ATLAFCO CONVENTION AREA

02 FEBRUARY 2022

I-INTRODUCTION

- On February 02, 2022, ATLAFCO organized the videoconference on the restitution of the study on fish aggregating devices (FADs) in the ATLAFCO convention area

1. Attended this meeting, about fifty participants, representing:

- the Member States involved in the tuna fishery: **Angola, Benin, Côte d'Ivoire, Ghana, Morocco, Senegal and Togo**
- Regional and sub-regional organizations: The sub-regional fishing commission SRFC, Long Distance Advisory Council to the European Union, (**LDAC**)
- civil society: Media Observatory for Sustainable Fisheries in Africa (**MOSFA**), Organization of Associated Producers of Large Freezer Tuna Vessels (**OPAGAC**) and Organization Of Frozen And Deep-Frozen Tuna Producers (**ORTHONGEL**),
- Representative of the Japanese Embassy in Morocco
- Experts and resource persons also took part in the work of this meeting.

2. The list of participants is given in **Appendix II**.

II-OPENING AND INTROCUCTION OF THE MEETING

-In his introductory speech, **Mr. Abdelouahed BENABBOU**, Executive Secretary of ATLAFCO, on behalf of **Mr. Sidi Tiémoko TOURE**, Minister of Animal and Fishery Resources of Côte d'Ivoire and President of ATLAFCO, thanked the participants for having responded favorably to the invitation, which testifies to the interest given to the theme of videoconferencing. In this regard, he recalled that the meeting is devoted to the restitution of the study on the use of fish aggregating devices in the ATLAFCO region, specifying that this study was commissioned by ATLAFCO in 2021, and entrusted to the IRD, a research institute for French development. He added that the execution of the study was motivated by:

-The interest shown by scientists, managers and fisheries politicians alike in the use of FADs and the concerns expressed as to their impact on the various aspects of the sustainable development of the tuna fishery and of the marine ecosystem and

-The need to have a diagnosis of the situation and also agree on a roadmap to include the use of FADs in the exercise of responsible fishing. **Mr. BENABBOU** recalled the objectives of the workshop which are:

- Restitute/validate the final report and the conclusions of the study ;
- Analyze in a participatory manner the shortcomings/observations noted;
- Identify the desired and feasible changes and the concrete obstacles for the implementation of study recommendations;
- Develop and validate a concerted action plan;
- Have a good knowledge of the use of FADs in the region ATLAFCO;
- Disseminate the conclusions and recommendations of the study.

III-AGENDA

-The agenda as adopted is attached (**Appendix I**).

IV-CONDUCT OF THE MEETING

-In accordance with the agenda, the consultant representative of the IRD, **Mr. Yannick BAIDAI**, made a presentation of the different modules and conclusions of the study, followed by discussions led by the participants.

-Modules of the presentation:

- 1-Presentation of the context of the study and its objectives,
- 2-The dimension of the use of FADs in the ATLAFCO convention area,
- 3-The impacts of their use on the various fisheries in the area,
- 4-The impacts of their use on the fishery resources present in the ATLAFCO convention area, on marine biodiversity and on pelagic and coastal habitats,
- 5-The impacts of FADs on the economy and food security of communities in ATLAFCO States,
- 6-Evaluation of FAD management options, aimed at mitigating their effects and guaranteeing the good health of deep-sea marine ecosystems and the sustainability of ATLAFCO States' fisheries,

1- CONTEXT OF THE CONSULTATION

The ATLAFCO convention area is home to a very large stock for multiple fish species. This stock includes both the resources limited to the EEZ of each Member State and outside their area of jurisdiction. This area is also a confluence for migratory species that move constantly either to go to their spawning grounds or in search of food. Operators do not always intervene within a legal framework and resort to means that allow them to carry out effective fishing. As a result, they resort to the use of all instruments or devices that can cause the concentration of fish.

Faced with the pressure exerted on resources, the stocks of all species are experiencing a sharp decline. Thus it has been observed that at the level of the tuna fishery there is recourse to the use of Fish Aggregating Devices (FADs). This technique makes it possible to attract the tropical tuna population to concentrate around the Gulf of Guinea. For more than ten years, scientists, managers and NGOs have been sounding the alarm about the harmful consequences that can result from the irrational use of these FADs. They point out that these techniques are likely to harm both the target species and the species caught incidentally and that this technique should be practiced in accordance with the Code of Conduct for Responsible Fisheries (adopted by the FAO in 1995). There is therefore a risk that the waters of the ATLAFCO convention area will be threatened by overexploitation of their fishery resources. The tuna RFMOs have set up a working group to study the use of FADs, but so far the results of its work have not resulted in recommendations that can come into force.

- CONSISTENCE AND OBJECTIVES OF THE STUDY

It is in this context that the Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean (ATLAFCO) contracted in **2021, the Research Institute for Development (IRD)** to carry out an evaluation of the use of these fishing's tools within its convention area. The general objectives of the mission were to consolidate existing information on the use and impacts associated with FADs in the ATLAFCO Convention area and to propose ways to regulate their use in a sustainable manner. To this end, this project has been structured around five major axes, namely:

- (i). Compile existing information on the extent of FADs use in the ATLAFCO convention area;
- (ii). Examine the impacts of their use on the yields of the various fisheries in the area
- (iii). Examine the impacts of their use on the fishery resources present in the ATLAFCO convention area, on marine biodiversity and on pelagic and coastal habitats,
- (iv). Examine the impacts of FADs on the economy and food security of communities in ATLAFCO States;
- (v). And assess the management options of drifting FADs aimed at mitigating their effects and guaranteeing the good health of offshore marine ecosystems and the sustainability of the fisheries of ATLAFCO States.

2-Dimension of use of FADs in the ATLAFCO convention area

Fish Aggregating Devices (FADs) refer to artificial floating structures specifically designed to exploit the aggregative behavior of pelagic species around floating objects in order to facilitate their capture. Driven by rapid technological progress in their field, the use of drifting FADs by purse seine fleets has become widespread since the mid-1990s, with the deployment of thousands of instrumented FADs in all tropical oceans. Currently, almost all deployed FADs are equipped with satellite buoys providing real-time information to fishermen on their location as well as on the biomass of fish associated with them. Combined with the aggregative nature of FADs, the substantial improvements in buoy technology have offered remarkable operational ease to fishing vessels, materialized by an increased probability of successful fishing sets and a significant optimization of tuna search strategies.

Despite their now predominant place in industrial tuna fishing strategies, the massive use of FADs and their high efficiency raise a number of concerns both in terms of their repercussions on the depletion of exploited stocks and the multiple ecological consequences associated with them. associates.

The assessment of the extent of FAD use in the Atlantic in general, and in the ATLAFCO convention area in particular, highlighted the fragmentary and imprecise nature of data on the numbers of FADs used by fleets before 2013. Most of the information on the use of FADs during this period is based on indirect information and extrapolations supported by various assumptions, which notably made it possible to calculate that between 17,000 and 20,000 FADs had been deployed in the Atlantic, during the year 2013. After this period comes a continuous strengthening of the regulatory requirements of the International Commission for the Conservation of Atlantic Tunas (ICCAT) in terms of reporting data on FADs exploited by fishing vessels. These data indicate that the average FAD deployment effort has increased from an average of 26,000 FADs per year over the period 2013-2017 to 18,000 FADs during 2018-2019. However, their non-uniform character from one year to the next, resulting from the variable compliance with reporting obligations by the different fleets, does not allow any

interpretation of this apparent dynamic. More than a third of these declarations of FAD deployment and monitoring activities by purse seiners and baitboats in the eastern Atlantic Ocean are concentrated in the Exclusive Economic Zones (EEZ) of African coastal States, with a marked seasonality at the level of the deployment zones, the main ones of which remain the EEZs of Angola, Mauritania, Gabon, Senegal, Cape Verde, Equatorial Guinea and Sao-Tome and Principe.

3. IMPACTS OF FADs USE ON FISHERIES OPERATING ON THE EASTERN ATLANTIC FRONT OF AFRICA

Since the beginnings of the purse seine tuna industry in the Atlantic, the waters of several African coastal states have been privileged areas for the practice of fishing under floating objects. Thus during the year 2019, around 87% of the catches of major tunas made by purse seiners in the waters under the jurisdiction of coastal States came from fishing under FADs. Corresponding to approximately 48% of the total production of purse seiners in the Atlantic, these proportions clearly underline the predominance of these tools in the fishing strategies of vessels operating in these areas, and more generally in this ocean.

On the other hand, pilot surveys carried out along the Ivorian coast have revealed that this use of FADs by industrial fleets generates only negligible levels of direct interactions with the offshore artisanal fisheries operating in these areas, mainly due to differences within scales of spatial operations and species targeted by the two fisheries. Nevertheless, FADs are generally associated with a higher volume of bycatch than fishing targeting free schools, as well as a potential risk of disruption of ecology, natural behavior and species distribution. However, some taxa considered as bycatch by industrial purse-seine tuna fisheries are of commercial or food interest to local fishermen, or could represent viable candidates for sustainable exploitation by these fisheries. With the possibility of their impacts on the stocks and the natural behavior of these species, FADs could be likely to indirectly induce significant disturbances in the exploitation patterns and strategies of artisanal fishermen. The many uncertainties about the ecology of the associated species, as well as the insufficiencies of the monitoring and data collection systems of the artisanal fisheries of these coastal States, however, considerably hamper the examination of the plausibility and the importance of this type of interaction.

4. IMPACTS OF THE USE OF FADs ON FISHERY RESOURCES, MARINE BIODIVERSITY AND PELAGIC AND COASTAL HABITATS

The massive use of FADs on fisheries resources and pelagic and coastal ecosystems is manifested by various categories of impacts. It is estimated that they pose a risk of overexploitation of fishery resources, mainly juvenile bigeye and yellowfin tuna caught in association with skipjack under floating objects.

In addition, FAD fishing is the least selective of the purse seine tuna fishing strategies, with a volume of by-catches evaluated on average at 8% of the total catches in the Atlantic, i.e. 4 times more than that of the free benches. These catches consist mainly of small tunas, other bony fishes and sharks. FADs are also the basis of cryptic mortality linked to the entanglement

of animals in their constituent structures. This appears to be of particular concern for sensitive species such as sharks and turtles, for which it was estimated that this phenomenon would induce mortality 5 to 10 times greater than that resulting from accidental captures. However, major developments in the design of FADs, in particular with the use of non-meshing structures or materials, could have considerably limited the extent of this phenomenon. A reassessment of the effect of these changes is essential here.

Also, about 10% of FADs deployed in the Atlantic run aground along the West African coast, particularly in the Gulf of Guinea, creating a potential risk for coastal habitats. The remaining FADs end up sinking, de facto contributing to the pollution of the oceans and the seabed, due to the synthetic materials of which they are made.

Finally, it is possible that the intensive use of FADs could negatively influence the mechanisms of habitat selection and the fitness of associated fish species. This eventuality, known as the “ecological trap”, still debated in scientific circles, nevertheless deserves to be taken into account in accordance with the precautionary principle, in the various strategies for mitigating the effects of FADs.

5. SOCIO-ECONOMIC IMPACTS OF FADs ON COMMUNITIES IN ATLAFCO STATES

For the African coastal States of the Eastern Atlantic front, industrial tuna fishing represents an undeniable source of socio-economic benefits. Indeed, the financial compensation provided for by the fishing agreements constitutes for some of these countries, substantial parts of their public budgets. While for others, export earnings from fresh or processed tuna products play a major role in balancing the trade balance. In the main tuna hubs of West Africa, the tuna sector appears to be highly integrated into national economies, where it actively participates in the creation of jobs and wealth. For example, it is estimated that all the activities revolving around tuna activities provide employment for around 35,000 people with a strong representation of women, particularly in the canneries.

Industrial purse seine tuna fishing, in particular that under FADs, supports the development of a sub-regional sector for the marketing of tunas, supplied by a portion of the catches of purse seiners, qualified as "false fish" or "false tunas". . “Falsefish” refers to major tunas that are damaged or below the sizes accepted by canneries and bycatch species. An effective tool for avoiding the waste of fishery resources, the "false fish" sector has acquired over the years a major role for the food and economic security of local communities, and also in various countries of the hinterland. West African, to which part of the "false fish" is redirected.

Examination of these various aspects reveals that, given the current dependence of FADs in industrial tuna fishing strategies, a paradigm shift by coastal States with regard to the use of these devices in waters under their jurisdiction could result in major harm in terms of socio-economic benefits for these countries. In this sense, the definition of management methods aimed at the use of FADs that reconciles the interests of the various stakeholders while preserving the viability of pelagic ecosystems and the sustainability of tuna fishing operations is of crucial importance.

6. CONCLUSIONS AND RECOMMENDATIONS TO MANAGE/MITIGATE THE EFFECTS AND USE OF FADS

This responsibility is institutionally borne by ICCAT, which has made significant progress in the management of FADs in recent years. Its initiatives in favor of a more sustainable use of personal data are mainly organized around regulatory provisions aimed at:

- **Improve the collection and provision of data relating to the use of FADs by the various flags;**
- **Control the use of FADs through limitations imposed on the number of active FADs per vessel, and spatio-temporal closures of fishing under these devices;**
- **Mitigate environmental impacts arising from the entanglement of non-target species, loss and strandings of FADs, through regulatory requirements on the use of non-entangling FADs and the promotion of a transition of fleets to FADs designed with materials biodegradable.**

The analysis of the regulatory system deployed by ICCAT has however made it possible to identify points for improvement likely to contribute to more effective management of FADs, particularly with regard to the socio-economic and environmental challenges of African coastal States. One of the most important points relates to **the need to intensify the efforts undertaken to improve the current level of precision of the data provided on the use of FADs**. Indeed, many studies have shown that the detailed data collected by fishermen on FADs could prove to be decisive in scientifically supporting the management of these fishing tools. **The adoption of an adequate system for marking and identifying FADs** also appears to be essential to guarantee optimum efficiency of current ICCAT actions aimed at monitoring their exploitation. **The development of strategies for the recovery and disposal of FADs at the end of their life** is also one of the key elements to be taken into account in order to improve the current mechanisms for managing these devices. In this regard, the internalization of the environmental costs caused by FADs appears to be an essential condition to be considered in order to guarantee the performance of these strategies.

This report also identifies research priorities on FADs in relation to the socio-economic and environmental issues of the coastal States of the African Atlantic seaboard. It highlights **the need for greater research efforts towards improving knowledge of the ecology of other pelagic bony fishes associated with FADs**. In the same line, **carrying out an exhaustive assessment of the impacts of FADs on artisanal fisheries and on other socio-economic aspects** specific to African coastal States is one of the central elements to be prioritized for the implementation of future adaptive management. DCPs.

- **THE DISCUSSIONS AND DEBATES THAT ACCOMPANIED THE CONSULTANT'S PRESENTATION LED TO THE ADOPTION OF THE FOLLOWING RECOMMENDATIONS:**

Summary of recommendations to manage/mitigate the effects and use of FADs

This summary is divided into two main areas:

(i) **management recommendations** for more sustainable use of FADs recorded in Table 1, and
(ii) **the research priorities** to be considered for the strengthening of scientific knowledge relating to FADs and their effects, especially with regard to the socio-economic and environmental aspects of the African coastal States of the Eastern Atlantic (Table 2).

Table 1: Summary of recommendations and proposed management options to manage/mitigate the effects of FADs

Goals	Examples of potential instruments for implementation
Improved provision and availability of FADs data	<ul style="list-style-type: none"> - Strengthen the current ICCAT regulatory provisions relating to the quality of FAD activity data provided by CPCs by collecting finer resolution data (eg one position per day) like other tuna RFMOs. - Incorporate FAD data submission requirements into fisheries agreements (private and public) with coastal states - Define a transnational organization intended for the centralization, storage and dissemination of this data (eg ICCAT, ATLAFCO)
Reinforcement of FADs use control measures	<ul style="list-style-type: none"> - Agree on more precise rules for the activation or deactivation of buoys (e.g. only allow the activation of buoys on board the vessel, prohibit their deactivation except in predefined cases such as loss or recovery of the buoy /FAD) - Combine the limitations on the number of active FADs per vessel with a restriction on the number of buoys that can be acquired annually per vessel
Improved monitoring and traceability of deployed FADs	<ul style="list-style-type: none"> - Adopt an adequate system of marking and individual identification of FADs
Implementation of FADs recovery and end-of-life strategies	<ul style="list-style-type: none"> - Develop partnerships with authorities or coastal communities for the development and implementation of systems capable of intercepting FADs before they run aground (eg FAD-WATCH in the Indian Ocean); - Create eco-organisations for the recovery of end-of-life FADs - Introduce compensatory mechanisms for the remediation of environmental damage linked to FADs (e.g. funding by fleets of recovery and end-of-life activities for their FADs)
Deployment of additional efforts vis-à-vis the impacts of FADs on bycatch, particularly bony fish other than sharks and rays	<ul style="list-style-type: none"> - Assess more precisely the state of health of the populations of these species - Consider the possibility of retaining on board and landing non-target bony fish
Strengthen the mechanisms for monitoring compliance with the provisions relating to the design of FADs	<ul style="list-style-type: none"> - Control by independent bodies of the conformity of FADs built on land with respect to design requirements (non-meshing, biodegradable - Develop operational programs at sea aiming to assess in-situ the risks of cryptic mortality of the FADs used (e.g. marking of sharks, underwater observations of randomly sampled FADs, assessment of the level of meshing of organisms in the FADs recovered)

Table 2: Summary of research priorities to consider for sustainable use FADs

Goals	Research Questions / Methodology
Improved knowledge on the associative behavior of pelagic species around FADs	<ul style="list-style-type: none"> - What are the real effects of drifting FADs on the ecology of associated species (eg the possibility of the occurrence of an ecological trap situation)? - What is the real impact of fishing with drifting FADs on stocks of juvenile yellowfin tuna and bigeye tuna? - What FAD density thresholds would make it possible to guarantee more sustainable tuna fishing (from a halieutic, socio-economic and environmental point of view)?
Comprehensive assessment of the impacts of the use of FADs on artisanal fisheries	<ul style="list-style-type: none"> - What is the nature and intensity of interactions between drifting FADs and artisanal fisheries in the coastal states of the eastern Atlantic? - What is the influence of the massive use of FADs on the capture and capture of the species targeted by small-scale fishermen (eg modification of the movements and migratory patterns of species, depletion of stocks, etc.)? - What could be the potential of anchored FADs for the development of artisanal fisheries in ATLAFCO Member States?
Comprehensive assessment of the socio-economic impacts of scenarios for reducing the use of FADs in the EEZs of coastal States	<ul style="list-style-type: none"> - Arbitration by calculating the costs and benefits (or the opportunity cost) resulting from different scenarios for reducing the use of FADs in the waters under the jurisdiction of ATLAFCO Member States.

OTHER COMMENTS AND SUGGESTIONS FROM PARTICIPANTS:

- 1) The drafting of a draft of recommendations and proposals for management measures for the attention of ICCAT on the sustainable use of FADs which recalls the context, the explanatory memorandum;
- 2) Similarly, send recommendations to the ICCAT Scientific Committee, along with research priorities to be considered for sustainable FADs use;
- 3) Identify the recommendations that could be supported by ATLAFCO;
- 4) Extend the study of the impact of FADs and their interaction with artisanal fisheries to other ATLAFCO countries, such as Senegal, Ghana, Mauritania;
- 5) Extend the study to anchored FADs and recommend recommendations for regulating their use;
- 6) Improve the availability of information on FADs by analyzing the procedures for mobilizing FADs and their authorization, the collection process, the current circuit of information, identifying gaps and proposing actions guaranteeing the systematic availability of information on FADs;
- 7) Strengthen the capacities of States in terms of data collection and Communication of Personal Data Information;
- 8) Conduct an assessment study of the global fishing capacities operating in the ICCAT zone for a judicious estimate of the number of FADs to be deployed;
- 9) Due to their mobile nature, FADs can drift in the maritime areas of several countries. Hence, regulation and supervision within the framework of ICCAT, a transnational, binding framework, remains more appropriate and more effective than management within the framework of national legislation.

At the end of the meeting, the participants thanked ATLAFCO for having carried out this relevant study, which brought appreciable clarifications on the FADs, and appreciated the effort made by the consultant and the contribution of the study and the recommendations adopted to improve the management of FADs.

Mr. Benabbou for his part, reiterated his thanks to the participants and the members of the cabinet for the quality of the debates and the results of the meeting which kept all its promises.

Annex II: Workshop Agenda

February 02, 2022

09:45-10:00	Opening/Introduction of the meeting
10:30 – 12:30	P RESENTATION OF THE STUDY'S FINDINGS , consultant
	1-Presentation of the context of the study and its objectives, 2-Present the dimension of the use of FADs in the ATLAFCO convention area, Discussions 3-The impacts of their use on the various fisheries in the area, Discussions 4-The impacts of their use on the fishery resources present in the ATLAFCO convention area, on marine biodiversity and on pelagic and coastal habitats, 5-The impacts of FADs on the economy and food security of communities in ATLAFCO States, Discussions
12:30 - 14:00	RECOMMENDATIONS AND ACTION PLAN,
	6-Assessment of FADs management options, aimed at mitigating their effects and guaranteeing the good health of deep-sea marine ecosystems and the sustainability of ATLAFCO States' fisheries, consultant Workshop discussions and recommendations
14:00	Closing of the meeting

NB Time GMT

Annex I: Attendance list

COUNTRY/ORGANIZATION	LAST NAME FIRST NAME	TITLE	E-MAIL
Embassy of Japan-Morocco	Mr. Nobushige Shimizu	Representative	n.shimizu17@gmail.com
Angola	Mr. Venancio	Director of Gabinete de Intercambio ,	venanciogomes68@gmail.com
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	Mr Wenon Dossa	Head of Aquaculture Development Support Service (C/SADA) Fisheries Production Department (DPH) Ministry of Agriculture, Livestock and Fisheries (MAEP)	dwenon@yahoo.fr
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		Division (DDARH/DPM)	
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