

Piloting an Engagement Strategy to Support Co-Management of the Caribbean FAD Fishery

Programa Piloto para el Establecimiento de una Estrategia de Fortalecimiento en el Co-manejo de las Pesquerías Asociadas con Dispositivos de Concentración de Peces en el Caribe

Expérimentation d'une Stratégie D'engagement pour Soutenir la Cogestion de la Pêche Caraïbienne aux DCP

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ABSTRACT

Fisheries are an important source of food, income and cultural identity for many Caribbean coastal communities. While reef fisheries resources in the Caribbean are frequently overexploited, pelagic resources may generate alternative economic benefits to coastal communities and possibly divert pressure from reef fish resources. The key to the efficient harvesting of thinly-distributed pelagic fishery resources is the use of fish aggregation devices (FADs) – man-made structures that float on or just below the surface of the ocean and attract pelagic fish. Historically, FADs were deployed by individual fishers or close-knit groups who then managed exploitation of the aggregated fisheries resources. More recently, governments and other organizations have deployed larger arrays of public FADs that are not associated with exclusive use rights in an attempt to make the technology more widely available. Public FADs may, however, be exploited less efficiently and also give rise to new conflicts related to crowding, misuse and possibly overfishing. This project partnered Counterpart International, the Caribbean Regional Fisheries Mechanism, Florida Sea Grant, and the Dominica and St. Vincent and the Grenadines Fisheries Divisions to implement a participatory engagement strategy to strengthen cooperation among fishers and between fishers and government stakeholders. The aim was to enhance local outreach capabilities and offer recommendations that can assist the efforts of Caribbean governments to support co-management of their developing FAD fisheries.

KEY WORDS: Co-management, stakeholder engagement, fish aggregation device

INTRODUCTION

The use of fish aggregation devices (FADs) in the Caribbean is becoming more widespread as small island nations attempt to shift exploitation of reef fisheries to more plentiful off-shore pelagic fishery resources (Gomes et al. 1998). FADs are man-made structures made to float on or just below the surface of the ocean. These structures are typically kept in place by buoys and ropes tethered to large concrete blocks that are dropped, sometimes thousands of feet, to the sea floor. FADs attract pelagic fish, such as tuna, dolphinfish, and marlin that may associate with the structure for days or weeks. By concentrating fish in a known location, FADs increase the efficiency of fishing and are widely employed in artisanal and industrial-scale tropical, pelagic fisheries (Klima 1971, Wickham 1973). Usually, FADs are deployed by individual artisanal fishers or close-knit groups who then manage exploitation of the aggregated fish to optimize economic returns and other benefits. Such FADs effectively restrict access to the aggregated fishery resources, which is economically beneficial to the fishers deploying the FAD but can lead to conflict with others. More recently, Caribbean island governments and other organizations have deployed larger arrays public FADs that are not associated with exclusive use rights in an attempt to make the technology more widely available, while reducing access conflicts. This system of public FADs is intended to support open-access fishing and replace restricted-access FADs, which are deployed and maintained privately by individuals or small groups of fishers.

So far, FAD development programs and research have focused on the design (Friedlander et al. 1994, Kingsford 1999), deployment (Feigenbaum et al. 1989) and recruitment characteristics (Kingsford 1992, Beets 1989) of the FAD infrastructure but comparatively little attention has been given to developing co-management strategies to normalize the use of FADs and sustain the pelagic fishery resources that are being targeted by fishers that use these devices. FAD programs thus pose governance challenges at three spatial levels: local (deployment and use of individual FADs); national (spatial distribution and planning of public FAD deployment within exclusive economic zones - EEZs); and regional (management of fishing effort within the distribution area of the exploited stock). Caribbean-based co-management efforts have largely been undertaken at national and regional levels through the establishment of fisherfolk organization networks (Lay 2011, McIntosh et al. 2010). At the local/community level, there also exists a need to strengthen synergies between government and fisher stakeholders through socially-oriented engagement processes that emphasize participatory decision-making

(Caribbean Regional Fisheries Mechanism 2008). Especially needed are practical non-regulatory interventions that build information sharing, collaboration and trust among fisherfolk and local government stakeholders at the local/community level as necessary precursors for organizing and supporting national and regional co-management capacity development.

In 2012, the Florida Sea Grant Program (FSG) partnered with the Caribbean Regional Fisheries Mechanism (CRFM), Counterpart International, and the Dominican and St. Vincent and the Grenadines Fisheries Divisions to initiate a pilot project to strengthen information sharing, cooperation and trust between government and fishers, as necessary precursors to building an effective co-management framework towards a more sustainable use of FADs. The pilot engagement process was implemented on Dominica because fishers there have a 30-plus year history of using FADs. The intent is to share the Dominica experience with the broader Caribbean community through partnerships with the Dominica and St. Vincent and the Grenadines Fisheries Divisions and the CRFM.

ENGAGEMENT STRATEGY

Characterizing FAD Governance Arrangements

This project examined the role that Caribbean fisheries officers and extension professionals can play in capacity building by identifying mechanisms to strengthen cooperation between fisherfolks and key government agencies through participatory decision-making. During 2012 the project team, with assistance from Fisheries Division officers, held informal meetings with government (e.g., Cooperative Division, Fisheries Division), fishers and leadership affiliated with national and local fishing cooperatives on Dominica and St. Vincent and the Grenadines. Those meetings helped to identify fisheries-related issues particularly those pertaining to the developing offshore FAD fishery. Of particular significance was the identification of various governance arrangements that characterize artisanal FAD fishing. Governance arrangements include private, small group, and public forms and can be represented as a continuum of more restricted access to open access conditions (Figure 1).

Private FADs are deployed and maintained by an individual under a condition of limited / restricted access. The locations of most private FADs are kept confidential so fishing is controlled by the ‘owner’ of the FAD. Another common circumstance is for FADs to be set and maintained by small groups of fishers who work cooperatively to harvest the aggregated fishery resources. More recently, governments have begun to deploy and maintain arrays of public FADs where access is open to all.

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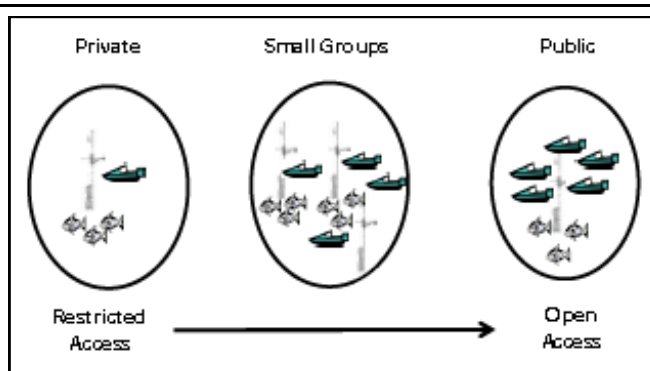


Figure 1. FAD governance arrangements.

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Participatory Decision-Making

Study locations were selected to be representative of different geographic regions on Dominica and are characterized by fishers who use private, small group and public FADs.

A series of meetings were held with more than 100 FAD fishers at three landing sites on Dominica (Dublanc, Marigot, and Fond St. Jean) in order to discuss management implications, and solicit input from FAD fishers about opportunities to improve FAD fishing profitability, sustainability and co-management (Figures 2, 3, and 4).

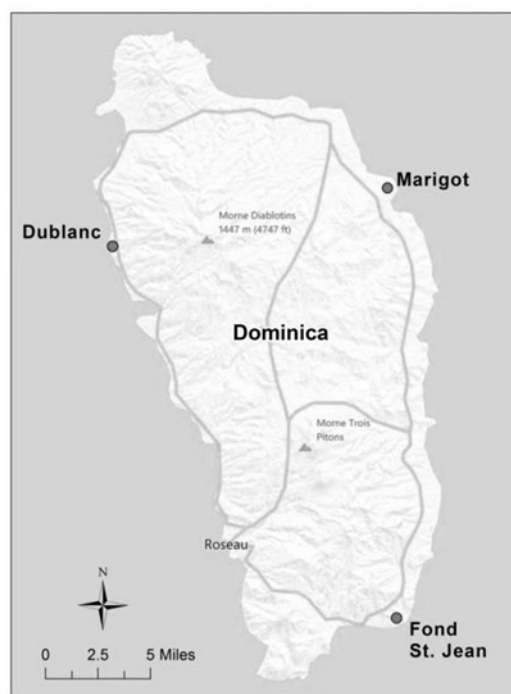


Figure 2. Dominica study locations.



Figure 3. Marigot Meeting - Introductions.



Figure 4. Dublanc Meeting - Reporting Out.

Small group discussions centered around three themes:

- i) Challenges to achieving optimal use of FADs,
- ii) Co-management options that can increase catch and economic returns to FAD fishers, and
- iii) The role of fishers and the fisheries division in implementing co-management options.

The first topic of discussion centered on challenges to achieving an optimal use of FADs. There was general consensus among FAD fishers who attended the meetings that the following conditions erode the profitability, sustainability and co-management of the FAD fishery:

- i) There is a lack of cooperation among fishers with respect to the deployment, use, and maintenance of FADs. For example, individual fishers, particularly those who have purchased licenses to use public FADs, do not believe that it is their responsibility to help maintain FADs. Thus, public FADs are not adequately maintained to the same degree as are private FADs.

- ii) There exists a need for information sharing and communication among fishers, particularly with respect to which FADs are producing and which are not, and education on proper FAD fishing techniques.
- iii) Despite government efforts to promulgate regulations to make all FADs available for public use there remains a very strong belief among some fishers that the exclusive right of individuals to maintain private FADs should be recognized and poaching offenses enforced.
- iv) Fishers do not let public FADs “rest” sufficiently to maintain consistent numbers of larger fish in the vicinity of the FAD. As a result, fishers tend to take too many small fish that remain for use as bait or subsistence, compromising the long-term sustainability of the pelagic FAD fishery.
- v) Too few public FADs have been deployed to optimally accommodate the number of FAD fishers. This creates a situation of crowding and conflict at FADs and lowers the economic return to fishers who must compete with many others for a share of the resources attracted by public FADs.
- vi) A regulatory framework that only promotes an open-access concept may not be optimal. It discourages individual or group-based entrepreneurship that relies on exclusive access rights and reduces the benefits derived by individuals and small groups of fishers collaborating to deploy and maintain their own FADs.

The second topic of the small group discussions focused on options that could support the co-management of FAD fishery resources to improve FAD fishing success. The following co-management options were identified:

- i) Greater inputs from government to deploy, monitor, and repair public FADs. This includes the desire among fishers for more FADs and consistent updating and communication by the fisheries division, which could take the form of a quarterly newsletter or scheduled meetings.
- ii) A “code of ethics” and similar self-regulatory guidance to promote safety, FAD fishing education, increased cooperation, and to improve information sharing (e.g., themes could include letting FADs rest, leaving small fish, poaching/piracy on private FADs, actions to optimally use public FADs). Two common suggestions were the need to observe a “first come first serve” ethic while fishing a public FAD: Fishers should be advised to “move on” if confronted with a situation where there were already three or more boats of fishers working a FAD. It was also suggested that owners have the first right to exploit resources around a private FAD.

- iii) A strategy to manage the timing of fishing could help to reduce conflicts and improve fishing success. This could take the form of separate licensing for full or part-time fishers, or allocating specific fishing days and times based on the type of license purchased.
- iv) A flexible regulatory framework that recognizes the intrinsic benefits of supporting both exclusive right (private FADs operated by individuals or small groups) and open-access (public FADs open to all licensed fishers) choices.
- v) Spatially separate FADs to balance use, reduce conflicts, and increase the chances of catching fish. A common suggestion was to disperse use and accommodate both private and public FADs based on distance to shore (e.g., public FADs would be deployed in near-shore waters less than 20 miles out; private FADs could be deployed offshore greater than 20 miles out).

The third topic of conversation involved a discussion of the roles of fishers and the fisheries division in co-managing FAD fishery resources. A review of the discussion suggests the following opportunities for stakeholder collaboration.

- i) Fishers and the Fisheries Division can collaborate to develop a “code of ethics” for FAD fishers and encourage self-compliance with FAD fishing principles through outreach and education. This may include education and training on proper FAD fishing techniques and dealing with issues of poaching/piracy on private FADs.
- ii) The Fisheries Division can implement a regulatory framework, such as licensing, to attain the

optimal ratio of boats per FAD and to reinforce self-compliance with FAD fishing principles (i.e., code of ethics).

- iii) Fishers can promote individual accounting and primary data collection so that FAD use, catch effort, and profitability can be monitored.
- iv) The Fisheries Division can collaborate with fishers too increase communication and cooperation among fishers. There is an opportunity to develop systems to help inform fishers about the location of FADs, where the fish are, who is out, and where fishing activities are planned.
- v) The Fisheries Division can partner with fishers to optimally locate and space FADs to disperse fishing pressure: Offer more public FAD options closer to shore so that fishers can access more than one FAD on a trip if the first choice is not producing or is being visited by a large numbers of fishers.

Introducing and Evaluating a Coordination Tool

A Daily Activity Planner (DAP), which is commonly used in businesses to track the activities of employees, was adapted for use by FAD fishermen (Figure 5). The concept of the DAP as a coordination tool arose from initial meetings with fishers who identified the need for better information sharing and cooperation. The DAP was conceived to address two needs identified by FAD fishers and government stakeholders. First, the DAP was introduced as a non-regulatory intervention to foster positive interactions between fishers and government. Second, the DAP was intended as a practical tool for fishers, who typically act independently, to share information about their fishing trips. In this way, fishers who use it would

Figure 5. Daily Activity Planner.

ideally make decisions on when and which FADs to fish based on knowledge of which FADs other fishers intend to visit. The objective being to reduce competition and increase individual catches and profitability by distributing FAD use so that fishers do not concentrate around the same FADs at the same time.

Community-based liaisons were hired to facilitate use of the DAP among focus groups of fishers at the three study sites. The liaisons were overseen by a fisheries officer assigned to the project by the Dominica Fisheries Division. The DAP was printed as a large-format poster with a special coating that could be used with erasable magic markers. Digital cameras were provided to the local liaisons who took images of the DAP after each day's use.

Follow-up meetings were held with community liaisons and focus groups of FAD fishers who agreed to use the DAP for a trial period. In this way, the DAP provided an outreach opportunity for government fisheries officers to cooperate with fishers in a collaborative context. The meetings also provided an opportunity for fishers to comment on the utility of the DAP as an information sharing tool that can support FAD fishery co-management efforts. The following questions helped to frame the discussions, which lasted about one hour each.

- i) What are the most pressing issues that affect FAD fishing in your community?
- ii) What are the benefits from using the DAP that may address pressing FAD fishing issues?
- iii) What factors limit broader use of the DAP?

RESULTS AND DISCUSSION

Follow-up interviews with focus groups of FAD fishers identified a primary social issue facing the artisanal FAD fishery that involves addressing territorial use disputes at both individual and community levels. Fishers on Dominica have been deploying private FADs as individuals or in small groups since the early 1980s. The placement of government sponsored public FADs is relatively recent. Given the considerable investment made by some fishers in this technology it is only natural that they would strongly believe in their right to some degree of ownership of the FAD they place and the fish that it attracts. The government policy that advocates open or free access to FAD fishery resources is not supportive of traditional fishing practices that involve the establishment of private FADs by individuals or small groups. As a result, owners of private FADs are frustrated by fishers who make a living poaching or pirating fish around their FADs without offering fair compensation or without making a similar investment in FADs that can be accessed by others in the community. Moreover, although poaching is not desired, fishers who deploy their own FADs consider it less of an offence for fishers who belong to their community to poach and not contribute to the materials and upkeep of FADs, and more of an offence when fishers from outside the community are seen poaching. The issue

of poaching is exacerbated by the lack of government resources to deploy and maintain enough public FADs to reduce competition at FADs considered to be private.

One matter that limited the broader utility of the DAP is that fishing is inherently unpredictable. Fishers were generally frustrated by the lack of durability and dependability of FADs, which can be found one day but disappear the next. Moreover, even when using FADs the fishing can be erratic. For example, the fishers who were interviewed indicated that they typically determine which FADs to use based on where the schools of targeted fish are located or thought to be located. One day the fish might be associated with one FAD and the next day associated with another. As a result, fishers typically depart and return at different times of the day and fish different days of the week. This makes it difficult for fishers to meet as groups to collectively discuss and organize fishing activities. Fishers will naturally go to the FADs where they have had success on the previous day or where they think the fish will be the next day regardless of whether others intend to visit the same FAD or not.

Moreover, many Dominican FAD fishers are strongly independent. They work in pairs or in small groups. As such, many fishers are reluctant to share information on where they have been catching fish because they feel that this would put them at a competitive disadvantage. A subset of Marigot fishers, mostly from the Kalinago ethnic group, are an exception to the norm in that typically they each deploy and maintain their own private FADs, but they have an unwritten understanding that allows others to use their FADs in exchange for access to FADs placed by others. In this sense the Marigot fishers do exhibit a degree of community-level cooperation in that they share a common value in wanting to deploy and maintain FADs. This results in there being a greater choice in FADs to access on fishing trips, which likely yields more stable catches. Marigot FAD fishers also indicated that their form of arrangement permits adequate information exchange among them as to which FADs are producing and which are not at any given time. These factors tend to keep use-conflicts lower among Kalinago FAD fishers making a DAP less needed there.

RECOMMENDATIONS AND CONCLUSIONS

All fishers recognize the effectiveness of FADs in attracting offshore pelagic fish. Most also would agree that there would likely be no reason to fish at certain locations if it weren't for an individual's investment in a FAD placed there. As such, FAD owners believe that they should be given some territorial rights as either individuals, small groups or as a community to the resources that their FADs attract. Discussions with FAD fishers suggest that although poaching is not desired, fishers who own private FADs consider it less of an offence for fishers who belong to their community to poach and more of an offence when fishers from outside the community are seen poaching. While the

rights of an individual to have legal access to fish at their private FAD is not recognized and controversial, fishers may be more supportive of community-based rights to FAD fishing territories. With this in mind, the following recommendations for opportunities are offered.

- i) There exists an opportunity through outreach to re-affirm an ethic among fishers who use FADs to either (1) place their own FADs or (2) compensate the person who places the FAD.
- ii) Related to (1) above, there exists an opportunity for a government program that matches funding for materials for fishers who want to deploy FADs, either as individuals, as small groups or as communities. This would offer some compensation for allowing open access to FADs. This also would allow limited government resources to be spread more widely. It would also support entrepreneurship by providing assistance to fishers who want to deploy FADs on an individual basis or cooperatively.
- iii) There exists an opportunity to quantify local versus non-local FAD use as the basis for establishing policies to recognize or legitimize some level of territorial use rights to either individuals, small groups, or possibly to communities.
- iv) There exists an opportunity to more deeply evaluate social conventions that characterize informal FAD governance arrangements as the basis for developing policy and management frameworks that legitimize customs deemed to be beneficial in reducing conflicts (e.g., explore limited territorial use rights in fisheries (TURFs) as applied to FADs).

In conclusion, issues preventing optimal use of FADs stem from conflict between two fundamental requirements:

- i) The desire among some fishers for some level of exclusive use rights (individually or collectively) who invest in the deployment and maintenance of FADs, and
- ii) The desire of government to provide equitable access to the wild fisheries resources which the FADs are designed to aggregate for the benefit of fishers who have invested in them.

Although this conflict is often polarized, most fishers appear to recognize informally that FAD owners should be entitled to benefit from their investment, and that this entitlement is limited by the fact that others are also entitled to a fair share in the fisheries resources. This suggests that it may be possible to design “compromise solutions” that would provide recognized and enforceable but limited exclusive rights to FAD owners. For example, exclusive fishing rights may be awarded to FAD owners for a period of three or six months after FAD deployment, upon which time fishing on the FAD might become open to

the public. Another possibility might be to allow small groups of fishers to gain exclusive fishing rights for FADs they deploy, thereby incentivizing the formation of such groups and reducing barriers to entry into FAD fishing.

ACKNOWLEDGEMENTS

The authors are thankful for the positive and helpful contribution provided by the Caribbean Regional Fisheries Mechanism and local Dominican and St. Vincentian Fisheries Divisions, who sourced local venues, organized workshops and helped to facilitate the meetings with fisherfolk and government stakeholders. A special note of thanks is due to Counterpart International, the Inter-American Bank, the Paul and Maxine Frohing Foundation for providing the funding necessary to conduct the project. This publication was supported by the National Sea Grant College Program of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), Grant No. NA10-OAR4170079. The views expressed are those of the authors and do not necessarily reflect the view of these organizations.

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