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**Institutional Arrangements for Coastal
Management in the Caribbean**

**Experiment 2: Testing the Uptake of Co-management Tools and
Messages in Training Natural Resource Mangers**

**BARBADOS CASE STUDY:
THE SEA EGG FISHERY**

A SUMMARY OF LESSONS LEARNT

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About this document

This summary of lessons learnt was developed from the Barbados case study: the sea egg fishery, Caribbean Coastal Co-management Guidelines Project, Caribbean Conservation Association as an output of Experiment 2: *Testing co-management tools and messages for Training Natural Resource Users and Managers*, which forms part of the DFID funded research project “**Pro-poor Policies and Institutional Arrangements for Coastal Management in the Caribbean**”. The goal of the project was to ensure that integrated coastal management Research in the Caribbean is promoted and benefits those who depend on the resources of coastal areas, especially where there is poverty. The purpose was to test the uptake of products of a previous DFID funded project R8134: Caribbean Coastal co-management guidelines, focussing on establishing and sustaining successful co-management of coastal resources in the Caribbean. This summary of lessons learnt is aimed at the users and managers of coastal resources in the Caribbean and will be most useful for teaching students with an undergraduate degree, or training others with some prior experience in coastal resource management..

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Executive summary

The sea urchin fishery of Barbados has a long history of command-and-control regulation, primarily closed seasons, which have largely been ignored by participants in the fishery. It is a low capital fishery for nearshore sedentary animals that are vulnerable to overfishing. In many ways it seems to be a prime candidate for community-based coastal resource co-management, and in St. Lucia this has been tried with some success. However, Barbados has proven to be quite different in terms of attitudes towards property rights and access, patterns of settlement and community, and attitudes towards regulation. In recent years there have been increasing efforts by several governmental and non-governmental agencies to introduce aspects of co-management. The focus has been mainly upon collaboration in data collection, driven by the fisheries authority, and local and foreign academic researchers.

The fishery has historically been socially and culturally important to the fishing industry and consuming public. Even today it is a vital source of household income for fishing families and fishers off-season suite of livelihood opportunities. Yet, exacerbated by overfishing, the fishery has gone through a series of boom and bust cycles that have become particularly severe since the 1980s. The low periods have prompted multi-season closures, but persistent illegal fishing and high levels of effort during open periods have contributed to little or no sustainable gains being realised. Enforcement, compliance and the reluctance to treat the contravention of the fishery regulations as a serious offence have all contributed to the uncertainty in this fishery.

One of the key conditions for this pre-implementation case to succeed with consultative or collaborative co-management is the strengthening of the capacities of the fisheries authority and fisherfolk organisations to work in management separately and together. For the fisherfolk organisations this means gaining the confidence and active participation of members, while the capability of government enforcement agencies and the judiciary to enhance enforcement would encourage industry participants to view the State as a serious and committed co-management partner.

Lessons learnt

In this document we present the conclusions or lessons learnt about co-management based on the Barbados Sea Egg Fishery case study. The lessons learnt are presented under headings which represent the key characteristics of successful co-management institutional arrangements. Emphasis is placed on understanding the conditions for successful co-management as perceived by the stakeholders at the case study research sites. The choice of conditions is also supported by empirical evidence from initiatives at more advanced phases of development in other regions of the world. Effort was also directed towards promoting the uptake of concepts and practices that may lead to co-management success. Information collected for use in this case study came mainly from document analysis, key informants, semi-structured interviews, questionnaire surveys, and workshops with all stakeholders. The documents included a few scientific papers, but were mainly popular or grey literature such as newspaper articles, project reports and other unpublished items. Key informants ranged from fishers of many years experience to research scientists and fishery managers. Due to the exploratory nature of the investigation and the emphasis on perceptions, mainly semi-structured and flexible interviews were used in informal settings such as in shops or on the beach. Questionnaires were administered to small convenience samples of respondents (N=40) at Oistins, Silver Sands and Conset Bay.

Type of co-management

The research framework summarises the main types of co-management as consultative, collaborative and delegated. The case study outlines several attempts at co-management, none of which sought to delegate authority to the resource users to any appreciable extent. However, the CZMU demonstration and Fisheries Division pilot projects both had strong elements of collaboration. If the Fisheries Division had successfully nurtured the divers association that resulted from the former project, and followed through on its pilot project annual work planning, then collaborative co-management may have been established. All of the attempts have been at least consultative, especially in obtaining the ecological knowledge and observations of fishers. At present there is no co-management of the sea egg fishery because none of these initiatives has been sustained.

Phase of co-management

Based on the above, the co-management of the sea egg fishery in Barbados could be regarded as remaining at a pre-implementation stage. Government and resource user stakeholders realise the need for change, they have discussed it, and they have tried to develop new management approaches in a limited way through discrete projects. In none of these initiatives has the new approach been sustained long enough or over a wide enough cross-section of the fishery to be institutionalised.

Boundaries

The jurisdictional geographic areas of the Fisheries Division and CZMU are defined in law and the fisheries management plans propose a management unit for the fishery that coincides with the waters of Barbados. Specific sea urchin fishing grounds and the communities of fisherfolk who use them are less well defined since they tend not to be discrete, but definition is possible.

The technological boundary between (illegal) SCUBA divers and free divers is decreasing, as more people seem to be adopting the technology to remain competitive. The technological gap

was a factor in the non-SCUBA divers pressing for its prohibition in 1996 but, with enforcement of the SCUBA regulation being absent, this factor in favour of conservation and management is eroding.

The main concern for co-management, however, is the fairly clear preference for open access and free movement between fishing grounds by anyone. Limited licensing and territorial use rights will be difficult or impossible to introduce until this socio-cultural outlook changes. Thus the boundaries that most favour the development of good management and co-management are the most problematic. In the absence of support from the industry it is unlikely that attempts to impose either limited entry or spatial management will succeed due to low compliance and enforcement. Changing attitudes towards these boundaries is a fundamental requirement.

Membership and stakeholders

The above is linked to issues of membership and stakeholders, with the latter being well known, but membership being fairly open. The main illustration of the possibility in closing membership is the view of some full-time fisheries that the opportunistic harvesters should be allowed only enough urchins for personal consumption so that they do not compete with the commercial harvesters and their more indiscriminate harvesting practices would have less impact on urchin populations. Without closing membership in the fishery to limit or exclude the opportunists there is little chance of co-management being established since this category of harvester is dynamic and not easily identified as a group with which to have dialogue, even if they were interested.

Resource use problem

The resource use problem is very clearly identified among fishery scientists and managers who see overfishing as the major issue. However some divers persist in proportioning too much of the cause of decline to pollution and disease where the evidence, repeatedly presented, does not support these as being critical for this species at this time. There is also the view that prevails mainly among the older fisherfolk that there is no problem since population fluctuations are normal and an act of God. If this attitude prevails, there will be little interest in co-management. Therefore action should be taken to reinforce the acceptance of scientific evidence and confidence in fishery management being feasible.

Management objectives

Management objectives for this fishery are clearly stated in the fisheries management plans, but are known only by a handful of people in the fisheries authority because the plans have not been promoted. In the brochure recently developed by the Fisheries Division and BARNUFO to increase public awareness about management there is no mention of the objective. There is no evidence that the fisheries authority is systematically working towards achieving the stated objective. This weakens the basis for co-management and should be addressed as a matter of urgency given the view that government is not serious about managing the fishery.

Scale of management

The national scale of management in the fisheries management plans is appropriate to both the resource and the resource users given patterns of settlement in both cases. It is unlikely that community-based co-management will develop in this fishery.

Management adaptation

In theory the system of regulations and notices in the Official Gazette that can be placed on the Minister's directive is very flexible and adaptable. Evidence is seen in the swift extension of the

harvesting season as the Minister piloted the decision through Cabinet and the legal formality within a week with no or limited interaction with fisheries authorities or organisations. However, the counter-evidence is that ten years after the Fisheries Act being passed several regulations that are fundamental for fisheries management still remain in draft with no known deadline for coming into force set by policy-makers. Therefore adaptation may only apply when there is an existing legal framework and circumstances favour the needs of decision-makers.

Cooperation

Cooperation in coastal zone management as a whole appears to be situation and subject specific. There is perhaps no less cooperation among fisheries stakeholders than among those involved in other coastal uses but, apart from certain watersport operators, most user groups appear to be more effectively internally organised than fisherfolk. The reasons given for fisherfolk doubting the role of organisations in management of this fishery illustrate issues to be overcome in improving cooperation. Between stakeholder groups there appears to be willingness for the fisheries authority and fisherfolk to cooperate, but the mechanisms and modes of cooperation are poorly developed and inconsistent in application. Occasional surveys, meetings and beach visits have not been sufficient to develop the apparent potential for cooperation. Cooperation will most likely improve through more sustained positive interaction.

Leadership

It is clear that leadership potential exists, as demonstrated by the longevity and activism of BARNUFO. However, overall leadership is lacking in the fisherfolk organisations for a number of reasons including skills and the time required to lead while at the same time pursuing a fishing livelihood. As developed in McConney (1995), there is also a spirit of egalitarianism and fear of power abuse or personal aggrandisement that restrains good leaders from demonstrating their abilities. Leaders also experience high levels of free-ridership prevalent in the industry and do not consider the resulting distribution of work to be equitable. Evidence of good leadership in the government agencies may be suppressed by limited capacity to perform numerous competing tasks since this dissipated the focus that a good leader normally exhibits. The low power of the fisheries authority within the public service structure and Ministry of Agriculture may also mask the quality of leadership since both good and bad leaders may appear to be equally ineffectual.

Collective action

Several of the variables discussed above support the conclusion that the quality and persistence of collective action within stakeholder groups is very uneven. Crisis driven responses are prevalent in both government and industry, and in the latter these often feature collective action. The weakness of the fisherfolk organisations suggests that much will have to be done to promote sustained collective action if co-management is to be institutionalised.

Conflict management

Barbadian society is renowned for being relatively free of serious conflicts, although recent commentaries on increasing crime and public calls for conflict resolution suggest that this may be changing. Within the sea egg fishery there was little evidence of conflict, and no evidence of formal mechanisms for its management should conflict arise.

Effective communication

In general, much conflict can be avoided through effective communication. Barbados is a small society and porous community boundaries favour informal communication islandwide as shown by the relatively free sharing of information on fishing among fishers. However, misinformation

also travels fast and effectively as illustrated by the 1980s mass mortality of the black-spined sea urchin due to disease being linked to the declines of sea eggs. Effective communication does not exist uniformly between the fisheries authority and fishing industry. The former is accused of secrecy. The fisherfolk want to see more fisheries officers in the field for one-on-one exchanges as their culturally preferred mode of communication. Even it were possible to increase these interactions given the limited human resources of the Fisheries Division, it may actually weaken the conditions that could favour co-management. With individual attention from the fisheries authority there would be less reason for fishers and others to form the groups required for efficient co-management. While acknowledging strong preference for personalised communication, more effort must be placed on acceptance of more institutionalised and collective communication channels.

Effective coordination

Communication is a prerequisite for coordination. The evidence of ineffective coordination reflects deficiencies in communication, and this occurs amongst all stakeholders. In particular, it has not been possible to coordinate the implementation of the fisheries management plans in a manner that promotes co-management. However, there appears to be willingness to coordinate between the Fisheries Division and BARNUFO that is significant. This needs to go beyond the isolated events and projects implemented to date and take on a more strategic character in order to transform the fisheries into one that is more amenable to the co-management that appears to be a shared interest.

Trust and respect

The participating stakeholders ranked this variable quite low, but the reoccurrence of events and projects in which partnerships are formed for implementation suggests that there is a fair degree of trust and respect. However, with this variable perceptions are particularly important. If stakeholders perceive that there is little trust and respect, then they are likely to behave on the basis of this perception. The demand of the industry for greater presence of fisheries officers asking for their input on the beaches and wherever they work is seen as evidence of demanding more trust and respect for the inputs of the resource users. While the knowledge of fishers seems to be universally respected by authorities and policy-makers, there may be less trust and respect for them as partners in management given the deficiencies in their organisation.

Organisational capacity

The above speaks directly to organisational capacity being relatively weak among most of the sea egg fishery stakeholders. The Fisheries Division lacks the human resources to do the basic surveys required to inform management decision-making on a regular basis. As long as funds are available it is reasonable to expect that the Fisheries Division will continue to solicit the assistance of fishers in conducting quantitative fieldwork, or at least ask for their observations. The fishers seem likely to wish to continue with this, and some results suggest that this is as far as they wish to go in the management process (in terms of investing their time and resources) as long as the government makes management decisions that they agree with. Fishers can perform these tasks without being organised, so it is only the approach of the Fisheries Division to them through BARNUFO that make this important as an exercise in co-management. The Fisheries Division also does not have the capacity to support the structures and operations of fisherfolk organisations. This is a serious constraint that must be overcome.

Financial resources

The CZMU is better off financially than the Fisheries Division given its steady flow of major externally funded projects. The Fisheries Division has a small budget, but there is no evidence

that lack of funds seriously hinders sea urchin management. The constraint may be that the government's financial system is neither sufficiently quick nor responsive. In the case of the CCA-funded pilot project it was agreed that BARNUFO should be the recipient agency in the partnership due to the Fisheries Division's experience in trying to make urgent expenditures. Fisherfolk organisations have minimal financial resources. The flow of financial resources to conduct the fishery investigations will need to be improved.

External agents

The external agents in this case were funding sources and research institutes. All have been supportive of co-management, and there appears not to be any great dependency upon them. There is no need for continued interventions by external agents. However they would be most useful in promoting fishery co-management at the policy level since this is an area in which local stakeholders have relatively little influence.

Net benefits

Fisheries and coastal management are still new initiatives and participation in them is recent. It is too early to tell whether benefits will exceed costs in the long run. As workshop respondents pointed out, the main concern now with this fishery is to ensure that overfishing does not keep eroding the resource sustainability aimed for by the management agencies. At the individual level, as long as there is acceptance that the fishery is boom and bust by nature, and fishers can get considerable revenue during boom periods since demand always exceeds supply, then the individuals may not perceive the benefits of management to be significant unless they can free ride. This is perhaps why a sea egg council may be the only formal structure that will work for co-management. The individual outlay can be expected to be minimal in this arrangement.

Representation in decision-making

There are significant gaps in representation in the formal decision-making structures. Fisherfolk have not sought to use their organisations as vehicles for representation. BARNUFO is a secondary body, and there are no primary organisation members that have taken up the sea urchin fishery as an issue within this structure. BARNUFO's interest in the fishery is more of an informal and personal nature on the part of its executive officers. However, BARNUFO is represented on the Fisheries Advisory Committee that, by law, is constituted to advise the Minister on fisheries management and development. As shown in the companion case study, this is a weak institution and the Minister may exclude the FAC, BARNUFO and the Fisheries Division in his decision-making as appears to be the case in the season extension. If the arguments to Cabinet are correct, however, the fishers were quite effective in making representation directly to the policy maker. This may demonstrate very effective participatory democracy, but does little to assist the establishment of co-management institutions that can structure such representation. A key factor for success is to make existing or modified formal structures more relevant.

Enforcement

At present it is not possible for the regulations that govern sea urchin harvest to completely address the requirements of a formal co-management arrangement, and without the passage of the additional regulations it is unlikely that either enforcement or compliance will be optimal. The existing regulations are sufficient, however, to facilitate the sustainability of the resource if well enforced or complied with. According to fisherfolk, enforcement must precede compliance by the weight of the law being felt on a regular basis. This must include successful prosecutions resulting in penalties that are not trivial in relation to the revenue potential of illegal harvest. It is not likely that the enforcement agencies will receive significant strengthening in capacity just for

this or any other fishery. Therefore more emphasis needs to be placed on engaging the general public and applying social sanctions within the industry. A precedent worthy of note is the turtle fishery, but this has the advantage of an internationally high conservation profile and low demand as a food item.

Property rights

No property rights exist in law or customary practice in this fishery. Given the preceding observations on boundaries and memberships it will be difficult to develop property rights.

Sharing decision-making

Coincident with representation, decisions are typically not shared in formal structures since the FAC is ineffective as an institution of policy engagement. Relatively few decisions that are not purely technical or scientific are made at the level of the fisheries authority alone. There appears to be willingness at the Fisheries Division level to share decisions with the industry. Both of these parties perceive that only by combining forces can they develop the power necessary to influence policy. They need to find a mechanism to get more of their joint advice into the public arena where policy-makers tend to pay more attention.

Decentralisation and delegation

There is very little decentralisation and no delegation of responsibility and authority by the state to either resource users or the management agency. Limitations in capacity and the legal framework are barriers to decentralisation and delegation. The fisheries regulations need to make provisions for delegation of authority to fisherfolk organisations in order to promote collaboration. These provisions may then be used as leverage to strengthen the organisations provided that there is willingness and leadership to respond. However, if co-management remains consultative the requirements in these respects will be minimal.

Social and cultural fit

It was felt that there is not yet a very good social and cultural fit for fisheries co-management due to the novelty of civil society participation in governance and the persistence of dependency fostered by patronage politics that followed the colonial period. This outlook is changing as more citizens demand a say in how the country is run via letters to the newspapers, call-in radio programs, town hall meetings and other popular mechanisms. However, there is still a large gap between the aspirations of the fishing industry for co-management reported in several studies and the actual effort made by the fisherfolk to move in this direction. Co-management initiatives remain largely driven by government and this does not suggest that the social and cultural imperative to establish management partnerships is firmly established at the grassroots level.

Priority action

Property rights, perceptions of benefits, development of trust and delegation of responsibility and authority were said by workshop participants to be key areas in which action was urgently needed. One of the ways in which these could be tackled together would be through the promotion of the fisherfolk council of community leaders that many saw as the only likely formal co-management structure for this fishery under present circumstances. Action needed is to demonstrate co-management in order to achieve a common understanding of what it is. Efforts towards establishing and sustaining the council should be within the capacities of the industry and fisheries authority.

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