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## **CLIMATE FOR CO-MANAGEMENT**

Fisheries  
Interdisciplinary

### **Abstract**

This paper provides information particularly relevant to small-scale fisheries in which there is a desire to establish fisherfolk (fishing industry) organizations with the ability to participate meaningfully and effectively in fisheries management. It focuses on a situation in which individualistic social networks rather than social cohesion and community prevail in the industry, where fisherfolk organization formation has proven difficult, and where the state has a limited capacity for management. Also, in this case, resource and resource user boundaries cannot be easily defined. This climate may constrain the feasibility of institutional arrangements for fisheries co-management. An approach used to overcome these constraints in Barbados is described.

Key words: Barbados, co-management, fisheries.

### **Introduction**

In the case of Barbados, the government is introducing fisheries management as required by law and recognizes its inability to manage the small-scale, open access, commercial marine fisheries without involving the resource users. A few years ago there was insufficient information to determine whether a co-management approach was appropriate and likely to be successful. As a contribution to solving this problem, a study undertaken by the author examined the way fisherfolk organize and relate to each other (McConney 1995). It considered whether the state itself was in a position to be a meaningful co-management partner. Based on the findings, an approach to introducing co-management was recommended and is now being implemented.

In the next section, the concept of co-management is introduced, followed by a brief description of the fishery and research methods. The study results and discussion focus on social networks, formal organizations and implications for co-management. The paper ends with a summary of work currently in progress to implement the study's recommendations.

### Co-management

Co-management is "power-sharing in the exercise of resource management between a government and a community or organization of stakeholders", and theoretically offers benefits of "more appropriate, more efficient, and more equitable management" than the conventional, state-centred approach (Pinkerton 1992:331 and 1989:5). It can also be argued

that successful co-management comes closer to Hardin's recommendation of "mutual coercion, mutually agreed upon by the majority of the people affected" (1968:1247) than either state-structured regulatory regimes or quasi-property rights. Co-management is often seen as a possible route towards community-based participatory development, state decentralization and democracy.

But how universally co-management might be applied has been questioned. Kuperan and Abdullah (1994) suggest that there are limits to co-management where resource, political and socioeconomic factors hinder social cohesion or organization formation among fisherfolk. Tests across a wide range of conditions are essential. The conditions under which co-management is feasible, and the variety of collaborative arrangements that may evolve, have not yet been exhaustively researched, but the case study approach has proven useful (e.g. Jentoft and McCay 1995; Sen and Nielsen 1996). This approach is extended by the present study which contributes towards defining the climate for co-management.

### **The fishery**

Barbados is the most eastern of the Caribbean islands, being entirely surrounded by the Atlantic Ocean into which its jurisdiction extends eastward a full 200 miles. Its land area, however, is only approximately 430 square kilometres. Fishing is not a major contributor to the economy based on official statistics (e.g. 1% of GDP). But, as for the eastern Caribbean in general, the value of the fishing industry lies more in its role as a social and economic safety net, and contributor to food security, than as an engine of economic growth.

Since the small island shelf cannot support a large demersal fishery, the multifleet, multispecies fishery for migratory pelagics is predominant. All of these species appear to be seasonal, some moreso than others. For most species the main season runs from November to July when over 90% of the annual catch is landed. The Barbados fishing fleet consists of over 500 boats ranging mostly from 5 to 15 metres in length.

The pelagic fishery is not managed either for conservation or optimal utilization. It has, however, been developed largely through state intervention in the form of physical infrastructure and credit. Indeed there is increasing capital investment in open access fish capture throughout the region. This is proceeding without adequate knowledge of the potential yield, structure, or stability of shared fish stocks. Information inadequacy is a growing matter of concern to fishery administrations now grappling for the first time with fisheries management.

A new Fisheries Act (1993) gives the Fisheries Division in Barbados, through its Chief Fisheries Officer, responsibility for fishery management and planning. The latter includes formal mechanisms through which persons in the fishing industry can collaborate with the government agency responsible for fisheries in a wide variety of fishery-related areas. In early 1997 the Minister responsible for fisheries approved the first fisheries management plan for Barbados. The Fisheries Division is now in the process of implementing the plan by encouraging and facilitating a co-management approach. Before doing this, research was undertaken to assess the feasibility of co-management, and to determine the mechanisms through which to proceed with introduction.

## **Methods**

Research was conducted in Barbados involving social surveys, participant observation and document analysis. Special attention was paid to investigating the nature of social networks in the fishing industry involving various occupations such as fishers, boat owners, fish vendors and fish processors. The researcher was allowed to participate in the formation of a fisherfolk organization and document the dynamics of the process. From documents and interview, the government's track record and the attitude of key officials to fisherfolk participation in fisheries management and planning was examined. This study lead to recommendations on co-management.

The next phase of implementing the recommendations has involved action research through several mechanisms. These include discussion groups, workshops and organization formation. This research is currently in progress.

## **Results and Discussion**

### Social networks

Evidence was found of both individualistic and cooperative social networks. The co-existence of both supportive and competitive (perhaps even conflictual) strands in ties between fisherfolk was observed. Dayboat fishers at sea and ashore demonstrated the greatest tendency towards individualism and flexibility in their use of networks. This is consistent with the findings of Rodman (1971), given their struggle for physical and economic survival in the face of greater uncertainty when compared to other fisherfolk either at sea or ashore.

Iceboat fishers show a greater tendency towards cooperation than dayboat fishers. This is partly due to their interdependence for survival far at sea, and the apparent spillover effect that this has on other areas such as sharing harvest information. The latter behaviour, which results in ties between fishers on the different boat types, serves to reduce conflict, particularly between dayboats and iceboats, that otherwise might exist due to competition. The other major factors contributing to conflict reduction among fishers are: (1) partial market segmentation ashore, since dayboats sell mainly to vendors and iceboats to processors, and (2) fishing together in the offseason fisheries.

However, once ashore, most fishers adopt individualistic network strategies when faced with the price-setting power that vendors achieve through their more cooperative networks. Typically, marketing ties to vendors are strong for reasons involving credit and gender. In contrast, ties to owners are often weak or conflictual because of pre-existing socioeconomic status differences between fishers and owners. Fishers demonstrated an opposing strong desire for egalitarianism and minimization of status differences.

In comparison to fishers, the instrumental networks of owners were geared more to achievement than survival. This is consistent with the findings of Rodman (1971) as one moves up the socioeconomic ladder. It is also due to the availability of alternative income sources given the relatively high proportion of non-fishing owners, estimated to be around 70%. But the achievement orientation of owners, especially those with alternative income, is not only a pervasive source of strain in ties with fishers, but among owners themselves as well.

They exhibit the same dockside price competition observed among fishers, and the loan defaulting of some appears to have reduced access to credit for all.

Vendors have the most cooperative networks of the fisherfolk as demonstrated, for example, by their price-setting collusion and cooperation in marketing. This is done with strong social sanctions against violating norms. Although gender is an important variable, cooperative networking is more related to occupation than gender as evidenced by its presence among the male vendors at Bridgetown. Credit ties with fishers may play an important role in vendors' economic success, but details on the nature of these relationships are not easily obtained due to sensitivity about borrowing among Barbadians in general (Makiesky-Barrow 1976) and fisherfolk in particular (Tropical Agricultural Services International 1982). Thus it was not possible to ascertain the extent to which such ties are used for exploitation, although fishers claim that they are. Vendors also appear to act as bridges or brokers between processors, fishers and owners. They broker purchases of fish on processors' behalf despite their competition with them in some retail markets. They broker boat owners' relations with fishers through information exchange.

Processors' networks were distinctive in having more non-fishery members and more multistranded ties than other fisherfolk, but with no reported ties amongst themselves. Their networks were most clearly directed towards ensuring profitability for their businesses, and the use of network ties as a source of power was apparent. The basis of this power was both their economic position in terms of being able to supply credit to the industry, and their connections to government which allowed them to navigate a path through the bureaucracy in a way that owners or vendors could not. While clearly being perceived to be powerful, the nature of the processors' relations with the state remains unclear. Government appears to have acted on behalf of processors where gains in national economic terms had the potential to be greater than losses in terms of popular support from the harvest sector. It appears, however, that processors more than other fisherfolk are in the policy domain of the state where their problems become issues to be dealt with.

Familiarity with the state, and instrumental relations with it, increased from being very low among fishers, to moderate among owners and vendors, to high among processors. Fishers' perceptions and expectations of the state differed from those of other fisherfolk. They perceived a much greater contribution from fishing to the economy than did other fisherfolk. Consequently, their expectations of state support for fishing were also higher. Lack of access to documented information that fisherfolk widely accepted as legitimate and authoritative were contributing factors to confusion about the state.

There was no evidence that strategies in the pelagic fishery were geared towards fishery conservation. However, network relations were found to both increase and decrease exploitation in ways that differed between boat types and were linked to market conditions. The state was also inadvertently engaged in conservation through underdevelopment. >From the earliest records of the fishing industry, poor infrastructure and some input limitations (e.g. ice) have limited fish catches, and prevented a "tragedy of the commons" (Hardin 1968). This is countered by increasing private sector capitalization to extend fishing range and capacity. Fishers' reported tendency to be satisfied with less than maximum catches also reduced resource exploitation, although this may have been countered by increases in efficiency due to communication cooperation in harvest operations.

## Formal organizations

The significance of formal organizations rests on the premise that co-management is only feasible if fisherfolk are organized into one or a few stakeholder units able to formally share power and responsibility with the state for fishery planning and management (Pinkerton 1989).

A major factor in determining which of the fisherfolk were in favour of organization was the relative levels of social power obtained through their network ties. Fishers, having the least social power, were most in favour of collective action. They said that they wanted to be free from the constraining aspects of ties with vendors which reduced income. Furthermore, most of the fishers interviewed had an ideal of achieving “unity” in the fishing industry in which all fisherfolk would conduct their business cooperatively, without conflict. Few fishers opined that conflict within an organization comprising all categories of fisherfolk would be overwhelming due to diverse interests. Conflict with the postharvest sector was anticipated since the main reason for organizing was to acquire the collective bargaining power necessary to secure higher ex-vessel prices.

No fisherfolk thought that fishers were likely to organize themselves. Fishers perceived that their networks were deficient in the resources necessary to achieve successful organization, and that they had to rely on owners to initiate collective action despite conflictual relationships. Fishers stressed illiteracy and lack of education amongst their ranks as barriers to organization.

Most owners, because of their individualistic network strategies for economic advancement, did not desire organization formation or show commitment to sustained collective action. The latter was demonstrated by a high level of free-ridership in the organizations which had failed in the past. Owners were aware that often the relations between fishers and non-fishing owners were not cooperative. They knew fishers resented them visibly aspiring to higher socioeconomic status. On the other hand not all organization-minded boat owners wanted fishers to be included in an organization with them. They thought that fishers would not participate meaningfully. Owners with a connection to fishing, either by being current or former fishers or by being from a fishing family, appeared most interested in organizing. Few of the recent non-fishing owners interviewed showed much interest. As with fishers, owners listed dissatisfaction with prices as the main reason for organizing.

Vendors generally saw no need to have an organization of their own unless it was for the management of fish markets. Except for a few at Oistins, they saw high potential for conflict in multistakeholder organizations, and did not hold fishers’ ideal of unity. Many were supportive of boat owners forming an organization to represent themselves particularly against the power of the processors to dictate ex-vessel fish prices. Vendors said that in order to be taken seriously by government and other stakeholders, any harvest sector movement had to be led by owners since fishers had no capital investment in the industry.

Processors agreed that fierce market competition amongst themselves made a body of their own unworkable, but neither was it necessary nor wanted since each processor felt able to succeed on his own. From past experience, a joint negotiating position in dealing with the government was easily achievable in the case of a threat to their common business interests. Unity among fisherfolk, and multistakeholder bodies were thought unrealistic, but they

claimed to support harvest sector organization. They saw in this the potential for dialogue that could lead, for example, to greater production and profit for all through increased landings volume, not prices.

Regarding state involvement, the first attempts to form fisherfolk organizations were government-inspired, starting with savings societies and cooperatives in the 1960's. The more recent initiatives came from within the industry itself. However, all attempts to form fisherfolk organizations in Barbados have failed after a few months or years. The organizations investigated included cooperatives, a union, a company and associations. All but the union were entirely harvest sector oriented, and female participation in all was low or absent. It was found that network relations with persons outside organizations, such as vendors and processors, had greater potential for constraining or destabilizing, than assisting, harvest sector organizations. Poor management also contributed to failure. Socioeconomic factors such as the distrust and conflict between owners and fishers described previously played a role in their demise. Most respondents thought that government did not do enough to promote and support fishing industry organization.

In terms of networks of organizations, there is a potential conflict between fish landing sites wanting to retain their autonomy by forming site-specific organizations, and the opposing view that there should be only one organization representing all stakeholders and fishing sites in the harvest sector. Fear was expressed that several organizations would, each on their own, be too small and weak to be effective in negotiations with the state about benefits for the fishing industry. Differences in interests suggest that a single or umbrella organization may not meet the needs of the various landing sites. The magnitude of this problem is generally not appreciated in the harvest sector. Consequently, the formation of inter-organizational networks may be impeded by the notion that the harvest sector should form only one representative organization which is a more difficult task.

### Implications for Co-Management

The implications for co-management of the social strategies described above must be examined from the perspectives of both the fishing industry and state in relation to their capacity for management. Fisherfolk, particularly in the harvest sector, have been unable to organize themselves into effective stakeholder groups capable of negotiation with the state, and collective action has tended to occur mainly in response to crisis. Given the high opportunity cost of sustained participation (Bay of Bengal Programme 1990), and the prevalence of individualistic competition rather than cooperation in the apparently marginally viable harvest sector (Burtonboy 1988), this is not surprising. The foundation of social cohesion on which many of the conditions in favour of co-management rely is absent in the Barbados pelagic fishery. As a result, one is left to seek other factors in favour of co-management.

Regarding orientation toward management, fisherfolk apparently have no conservation ethic with regard to the pelagic fishery as no reason has existed for it to arise. There is only slight concern over flyingfish since much of the fish is caught in spawning condition. The distributions of the pelagic fishery resources caught by local fishing boats are largely speculative, but all range outside of Barbados' potential EEZ. There is no sense of resource ownership among fisherfolk. Indeed this has led to fishing access disputes with neighbouring countries. The international and regional harvest stakeholders are not well known due to the

lack of information on the resource, and this adds to the uncertainty. There is evidence from the demersal fishery that stimulating a conservation ethic may be possible if fisherfolk are made aware of the issues involved and allowed to make input (Mahon and Drayton 1992), but because of the nature of the resource, this may not happen as easily in the pelagic fishery.

Furthermore, the state is not in an authoritative position in relation to the industry, particularly in terms of enforcement and the scientific resources necessary to continually research and adjust a control and command type of regulatory framework. In order for the state to engage in any type of management, the compliance and cooperation of the fishing industry will be necessary. In Barbados, within the bureaucracy, the Fisheries Division lacks status and power. Co-management will not be feasible if the Fisheries Division is marginalized. To remain small, but become more effective, it will need to collaborate with fisherfolk. Relations between the state and industry are not such that co-optation is likely to be successful. Selective consultation a few fisherfolk will not achieve the level of legitimacy required. This is borne out by international experience (McGoodwin 1990). Since the Division's jurisdiction is much smaller than the resource distribution, its role in regional management arrangements must also be considered.

The fishery planning experiences investigated indicated that the state was only weakly committed to consultation with the fishing industry. State officials had reservations about the industry playing a role other than a purely advisory one through people who represented not a constituency of fisherfolk, but particular individual expertise and experience. This perspective is reflected in the requirement for a Fisheries Advisory Committee under the 1993 Fisheries Act. The planning experiences also reveal an absence of creative, collaborative problem-solving. Progress in collaboration is largely dependent on stakeholders (within both the state and industry) being able to negotiate on the basis of mutual interests, rather than be purely adversarial as in the past. The study found that fisherfolk may not be initially accepted as full co-management partners even if the state had the requisite management capability. An approach which incrementally prepared the industry and state for co-management seemed most appropriate.

The impetus to engage in co-management comes from the uncertainties associated with the fishery resource. Both fishers and the state are deficient in fishery resource information, and their deficiencies differ in ways that could make information exchange mutually beneficial. Given its scarce supply of human, technical and financial resources, the Fisheries Division is likely to remain constrained in planning and management capability. Information on species distribution suggests that only management on a regional or larger scale is likely to be effective. The management of shared stocks introduces a high degree of uncertainty about the attainment of the necessary geopolitical coordination. Therefore, flexibility is needed for state and industry to adapt to widely variable and unpredictable fluctuations in species abundance or availability from both natural and human causes. This suggested that collaborative planning between the state and the industry would be mutually beneficial.

The study recommended an initiative aimed at improving the trust and cooperation within the fishing industry, and between it and the state, through information exchange. The uncertainty surrounding the fishery, and the weakness of the state, provide a strong incentive for the harvest sector and government to introduce co-management starting with the relatively simple and straightforward exercise of joint data collection and analysis. There was sufficient

available ordinary (fisherfolk) and scientific (state) knowledge to start the process inexpensively.

## **Work in progress**

### Fisheries Advisory Committee

In Barbados the Fisheries Advisory Committee (FAC), constituted under the Fisheries Act, was appointed in 1995 with four of the seven members being drawn from the fishing industry. They represent the occupations of inshore and offshore fishers, fish vendor and fish processor. Although membership is based on individual qualities, people who were formal or informal leaders of fisherfolk were chosen. The FAC meets monthly under the chairmanship of the Chief Fisheries Officer with the other two members being a private sector fisheries consultant and a representative of the government's Coastal Zone Management Unit (CZMU). The Committee's first task was to devise the fisheries planning process and prepare a comprehensive fisheries management plan. This task involved consultation on fisheries management planning with interest groups and the public. In 1997 the Minister responsible for fisheries, as required by the Fisheries Act, approved these plans. The plans are now to be implemented mainly through regulations, institution building and public education.

### Fishery Working Groups

To further institutionalize community-based management, the FAC advised the Minister to supplement and expand its formal consultative base by establishing three fishery working groups (FWGs) as secondary advisory sub-committees. These are being set up in order to expand the opportunities for the fishing industry to make direct input into policy decisions. The groups are proposed to work on fishery resources, the harvest sector and the postharvest sector. At least one member of the FAC and an officer of the Fisheries Division are to be members of each group for the purpose of linkage. Other members are to be drawn from the private sector, particularly fishery and fishery-related NGOs. This is now possible due to recent increases in the number and activity of fisherfolk organizations.

### Fisherfolk organizations

Assistance has been provided for the development of fisherfolk organizations necessary to institutionalize community-based co-management. Formal organizations are especially important in Barbados where fishing villages are not well defined geographically. Due to the character of cooperative law in Barbados being geared more towards credit unions than producer cooperatives, associations have been more successful. Not being bound by law they have been more flexible to meet the needs of their members.

An adviser on fisherfolk organization development working with counterpart Fisheries Division extension staff, this has facilitated about 5 primary fisherfolk organizations developing, becoming properly constituted, and having their leaders receive training and assistance in formulating operational plans. The fisherfolk organizations' committees of management have devised initiatives to show quick and meaningful results to their members. This progress has prompted proposed changes in the fisheries legislation to register fisherfolk associations and provide them with financial and other incentives to consolidate their establishment and roles as partners. Various concessions are to be offered through the



organizations, rather than be accessible on an individual basis as in the past, in order to foster the development of social capital. Organization members, NGOs and government attended a workshop on co-management.

The recommendation for collaboration with the fishing industry in data collection has led to resource specific workshops being convened. Reef fishes, lobsters and sea urchins were targeted for possible community-based co-management. Several projects, some in close collaboration with the Coastal Zone Management Unit, have focused on mechanisms to provide resource user groups with management authority. Efforts are also now underway to form a secondary (i.e. umbrella) organization. This would assist in coordinating and facilitating the operations of the community-based organizations at the various landing sites.

In this region of the Caribbean there are several shared stocks of pelagic species exploited entirely by small-scale fisheries. Attempts have been made since 1994 to link community-based fisherfolk organizations in Barbados with those in neighbouring countries that share the resources. In the next phase it is hoped that a tertiary regional organization can be encouraged in the near future to assist with the bottom-up co-management of the region's shared resources. At a meeting of fishery officers and fisherfolk organization representatives on fisheries management planning in the region it was agreed that, without a viable regional fisherfolk organization, reaching scientific and political agreement on shared resources would be very difficult. A network of community-based fisherfolk organizations may be most instrumental for the co-management of these fisheries.

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Paper presented at the Seventh Common Property Conference of the International Association for the Study of Common Property, Vancouver, British Columbia, Canada, 10-14 June 1998.
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