

# Using "Common Science" in Co-management

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## ABSTRACT

Within recent years there has been growing emphasis on the participation of resource users and other stakeholders in fisheries management. Participants with diverse backgrounds and perspectives are required to communicate in the process of co-management. Because of this diversity, communication is often problematic unless there is agreement about what, in principle and in simple terms, makes sense and is scientifically sound. The literature shows that barriers to communication often exist between fisheries managers/scientists and fisherfolk in particular. "Common science" embodies common sense and fisheries science. It is a useful approach for introducing co-management to fisherfolk. In this paper, the principles it utilizes are described. The application of common science in a small-scale open access fishery is briefly examined.

**KEY WORDS:** Barbados, co-management, communication

## INTRODUCTION

Co-management is "power-sharing in the exercise of resource management between a government and a community or organization of stakeholders", and ideally it offers benefits of "more appropriate, more efficient, and more equitable management" than the conventional, state-centred approach (Pinkerton, 1992:331 and 1989:5). That communication for collaboration is an important aspect of co-management is indisputable. This is so whether to generate a single shared perspective for achieving consensus, to facilitate negotiated settlements made out of common interest, or any other of the several co-management arrangements (Sen and Nielsen, 1996).

Stakeholders enjoined to communicate for the purpose of fishery co-management range from having diverse scientific backgrounds to having no prior exposure to fishery science. A key issue in co-management is institutional design (Jentoft and McCay, 1995; McCay and Jentoft, 1996). However, whatever the stakeholder arrangements, the formidable challenges to finding common ground or shared perspectives upon which basis agreements can be reached are often also dependent on the approaches to fishery science and communication. These challenges, I suggest, are fundamentally different for small island states. They are sufficiently different to require an entire re-thinking of the approach to fishery science.

This paper introduces such re-thinking under the rubric of "common

science". Common science is an approach based on common sense and simple fishery science that provides common ground for all stakeholders to contribute in a meaningful way to fisheries co-management. None of the concepts in common science are new, but the packaging may be sufficiently appealing to spark new directions in tackling persistent thorny issues.

#### THE SMALL ISLAND SITUATION

In the small island states of the eastern Caribbean, particularly for small-scale marine fisheries, the state is typically not in a dominant position of power. It may have no history of effective regulatory control prior to the notion of co-management gaining prominence within recent years.. In many cases regulations restricting fishing have been around for some time, e.g. sea egg closed season in Barbados, but neither rigorously enforced nor complied with. People in the Caribbean are accustomed to fisheries resources being open access and relatively unrestricted with little intervention from the state. They are not accustomed to the state being steward for the country's renewable natural resources. Policy and practice has been development focused on increased exploitation.

For the first time these states are introducing fisheries management set out in a management plan formulated in part through public consultation. Fishers are not easily convinced, or willing to admit , that fishery resource depletion is possible through overfishing. Many consider fisheries inherently unpredictable and unmanageable. Knowledge of fishery science and management is lacking among fisherfolk and the public (McConney, 1995).

Furthermore, the institutional capacity for state management is typically inadequate, with financial, human and physical resources being scarce. In this region, the scientists and managers, often the same person, are acutely aware of the constraints since most have been trained in North America or Europe. They know that, for a number of reasons, the fishery science that they have been taught is not feasible in their situation. Governments in small island states are less likely to expend scarce resources on fisheries research and management given that fishing is seen, not as an engine of the economy, but mainly as a social safety net and source of employment.

For eastern Caribbean fisheries departments, sharing power and responsibility in fisheries co-management is a means of survival, not choice. Without the cooperation and compliance of the fishing industry, managers in small island states stand little chance of being able to carry out their management mandate. This greater dependence of small island fishery management units on their clients emphasizes need for them to effectively communicate and collaborate with the fishing industry in order to achieve plan objectives.

In the process of introducing co-management, the scientists/managers must look closely at what approaches to fisheries science are really feasible and likely to be both successful and sustainable. Fisherfolk may see fisheries management not as fisheries science conforming to the rigours of biological and economic analysis, but as socio-political problem-solving in which their knowledge, ordinary knowledge, has equal or greater status compared to scientific knowledge. We say that we manage fish, not people, so they cannot be far wrong. Indeed, along these lines, some writers have concluded that there needs to be a new and different approach to meet the fisheries management needs of small island states within the constraints with which they are faced. These approaches emphasize people's participation and simple science.

#### CHANGING PERSPECTIVES IN FISHERY SCIENCE

Lindblom and Cohen (1979) make the distinction between ordinary and scientific knowledge. They state that people depend more on ordinary knowledge (often simply common sense and observation) for social problem-solving where they see less need for scientific knowledge. A crucial point is that scientific knowledge is a supplement to, not replacement for, ordinary knowledge. In co-management there is a need to determine an appropriate balance between scientific and ordinary knowledge in problem-solving. But the role of interactive problem-solving also needs to be considered. This is where an outcome derived from action is seen as the solution whether the problem has been "understood" or not (Lindblom and Cohen 1979). Attaining or applying scientific knowledge becomes a secondary issue. The important point being that a "problem" no longer exists. These threads run through several of the recent perspectives on the application of fishery science in small island states.

Mahon (1990) suggests that, given the uncertainty and variability associated with resource assessment, even long term management of certain species is best achieved by application of "common sense" measures and monitoring. In the small island situation this is particularly applicable to small-scale multispecies fisheries which do not generate sufficient revenue to fund conventional management. Common sense action based on readily available ordinary and scientific information is considered appropriate in such situations.

Mahon (in press) also notes that methods for assessing and managing large stocks are applicable to, but not necessarily feasible for, small stocks. Typically a disproportionate amount of attention is paid to stock assessment rather than other critical dimensions of fishery assessment and management. Management driven by stock assessment rather than objectives is reinforced by international agencies and experts accustomed to dealing with larger, higher valued stocks. As an alternative Mahon recommends that management driven approaches be employed to incorporate industry input early in the process so as to determine

what management actions are feasible, and to allocate funds and other scarce resources optimally. He provides the example of reef fisheries where data collection and analysis is daunting and perhaps not necessary, arguing that fishers could reach consensus on objectives suitable for management. The challenge is not to know what is wrong, but to obtain agreement on how to fix it. Mahon suggests a logical framework type of structured approach where mechanisms for objective decision-making would incorporate stakeholder participation and consensus building. Noting that fisheries science provides little guide on these methods, more emphasis on interdisciplinary planning and participatory processes is also recommended. At the grassroots level such methods have achieved some measure of success (Bay of Bengal Programme, 1990).

Others suggest that small-island fisheries departments need "seat-of-the-pants science" (Tim Adams pers. comm.). That is, documentation and sharing of practical experiences in fisheries management, and compilation of useful "rules of thumb" for fisheries scientists/managers, taking into account both bio-economic and socio-political factors. Again the emphasis is on practical action based on readily and cheaply available data with a measure of common sense application.

Still another perspective is that precautionary management necessary, but it will have limited application if an abundance of scientific data is still eventually demanded (Johannes, in press). In many small island cases such research would not be cost-effective. Johannes coins the term "dataless management" to describe management carried out in the absence of the quantitative information traditionally deemed essential by fishery scientists. This does not mean management without information, but here the information is obtained from local informal knowledge of the resource. He provide examples from the south Pacific in which fishers used their ordinary knowledge of ecology, sometimes supplemented by fishery research, for simple and effective management. Neis (1992) also notes the usefulness of fishers' ecological knowledge in a temperate continental small-scale fishery.

Collaboration between fishers and researchers is perhaps more important now, even where traditional management has been successful in the past, because of the increasing uncertainties and variability caused by changes in technology and economies that drive exploitation rates upward. According to Johannes, the key question is not about the minimum scientific data required to make sound decisions, but of the best action to take when scientific data are not available. It is seldom practicable for such action to be determined by scientists/managers without guidance from the resource users' ordinary knowledge and common sense.

### COMMON SCIENCE

Based on the above analysis it is possible to formulate some principles of "common science". Common science is an approach based on common sense and simple fishery science that provides common ground for all stakeholders to contribute in a meaningful way to fisheries co-management. Characteristics (in no particular order) of common science are:

- i) Addresses common property issues in fisheries management
- ii) Common sense guides practical action driven by objectives
- iii) Scientific knowledge complements, not substitutes for, ordinary knowledge
- iv) Based on situationally appropriate fishery science, using simple methods
- v) Common language rather than scientific jargon used in communication
- vi) Stakeholders' common interests are the basis for negotiation or consensus
- vii) Common or ordinary ecological and other fishery knowledge of fisherfolk is crucial
- viii) Benefit aimed at the common good of the public, rather than partisan interests
- ix) Is accessible by the common man in order to inform participation
- x) Analytical principles of science (social, natural, political etc.) are applied

Taken together, these principles create a powerful approach to fisheries management that is presently under-utilized. An example of how common science is being implemented in Barbados to introduce co-management is discussed next.

### THE BARBADOS APPROACH

Pursuant to provisions in the 1993 Fisheries Act, the Ministry of Agriculture and Rural Development in Barbados established a Fisheries Advisory Committee to advise the minister on a wide range of fisheries issues. The majority of its membership is drawn from the fishing industry. Although few Committee members were familiar with the concepts of fisheries management, the formulation of fisheries management plans for open access fisheries was its first task. In this process the principles of common science implicitly guided work. By the end of it, the principles became explicit as the way forward.

The initial Committee meetings focused on information exchange and building consensus on the objectives and format of the fisheries management plans. Simply stated objectives drove the plans. Public meetings were held to solicit the widest participation, and emphasis was placed on ensuring that the objectives and means of achieving them made sense to stakeholders. A recommendation to form fishery working groups to further the involvement of stakeholders in management planning and implementation has been accepted. In

terms of written communication, the committee ensured that the fisheries management plan was in the simplest common language.

While fishery science was not neglected, there was little emphasis placed on typical stock assessments and modeling. The thrust of action alternatives were geared to having fisher participate in data collection and interpretation of the resulting information. Size and maturity data were emphasized. Fishers are intended to supply much of the oceanographic and ecological observations that the Fisheries Division lacks the resources to obtain firsthand. Although it was difficult to find common interests, one area that stood out was the need for resilience and flexibility in the management systems more than prediction and control. This resulted in more emphasis has also been placed on the promotion of fishery organizations to play a meaningful role in governance. By using common science in co-management it is envisaged that the path towards attaining objectives may be less strewn with obstacles than with alternative approaches.

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