

SOME IDEAS RELATING TO FISHERY SUSTAINABILITY

by

*Anthony Charles*¹⁶⁵

Summary

This brief ‘paper’ is not so much a paper *per se* but rather an annotated collection of eight ideas that this author has found useful in thinking about factors of unsustainability in fisheries, and paths to sustainable solutions. More details on the material here may be found in Charles (2001).

Resilience

Discussions of sustainability are being increasingly linked with the concept of resilience. The idea of resilience was first introduced to describe the capability of ecosystems to absorb unexpected shocks and perturbations (whether due to natural or human actions) and ‘bounce back’, without collapsing, self-destructing or otherwise entering an intrinsically undesirable state. As Holling (1973, p.17) wrote: “*Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables and parameters, and still persist.*” The concept of resilience applies beyond ecosystems, implying that not only the relevant ecosystem, but also the human and management systems are able to absorb shocks, such that the system as a whole sustains (on average) a reasonable flow of benefits over time. Thus the various components of sustainability have resilience counterparts, which must equally be taken into account. In a fishery, we can envision resilient fishing communities, a resilient economic structure in the fishery, a resilient ecosystem in which the fish live, and resilient management institutions. A key issue, then, is: What policies and management approaches contribute both to sustainability and to resilience in fisheries? For example, Folke and Berkes (1995, p.132) argue that to build resilience into institutions, “*The task is to make institutional arrangements more diverse, not less so; to make natural system – social system interactions more responsive to feedbacks; and to make management systems more flexible and accommodating of environmental perturbations*”.

Attitudes

Unsustainability in fisheries has been blamed on a wide range of factors, including over-fishing predators, cold water, destructive gear, government management, stock assessments problems, and politics. But underlying much of this, a common thread appears: the prevailing *attitudes* in the fishery - attitudes about nature, about management, and about how the fishery should function. Attitudes are popularly viewed as something *personal* (for example, whether or not there is a ‘conservation ethic’ among fishers), but in fact attitudes arise equally importantly at an *institutional* level (e.g., in fishery science, in the design of management measures, in industry, and in fishery organizations) – where they have the greatest impact on fishery decision making. Such attitudes may have been driving forces in unsustainable fisheries. Charles (1995) discusses some of these attitudes, under the headings: ‘burden of proof’ (application of the Precautionary Approach), ‘conservation can wait’ (use of built-in processes that delay conservation actions), and ‘the system works’ (a belief in the fundamental validity of the fishery management system). Related to these are the *Illusion of certainty* and the *Fallacy of controllability*, discussed below.

¹⁶⁵ Pew Fellow in Marine Conservation, Saint Mary's University, Halifax, Nova Scotia, Canada.

Illusion of Certainty

While the great uncertainties inherent in fisheries are well documented, some management systems exhibit a tendency to ignore major elements of uncertainty, so that far from recognizing and working within the bounds of this uncertainty, management may create an ‘illusion of certainty’ that leads to the opposite result. Suppose, for example, that in quota management, we set a TAC, sub-divide it among sectors or fishers, and treat the resulting allocations as fixed within the fishing season. This process may suffer from an illusion of certainty, in that an impression is created of the TAC as a well-established ‘pie’ that can be cut into several precisely-determined shares, and that is sacrosanct, with fishers literally ‘banking’ on these shares. This perspective, downplaying inherent uncertainties in the fishery, has led to conservation problems in the past. In contrast, an approach of ‘living with uncertainty’ might involve adaptive management approaches, in which fishing plans, and individual ‘fishery business plans’, are designed to adjust to unexpected changes in the natural world.

Fallacy of Controllability

Fisheries can be only partially, and imperfectly, controlled. Unfortunately, this reality is by no means universally recognized - a ‘fallacy of controllability’ is often in place, reflecting a sense that more can be known, and more controlled, in fisheries than can be realistically expected. For example, successful quota management requires an ability to enforce the quota, and an ability to prevent dumping of fish that may lead to discrepancies between landings and catches, among other things. However it is not uncommon to implement a TAC without having satisfied these preconditions. The resulting lack of control the manager has over the actions of fishers and, by extension, over the quality of fishery data collected, may lead to unsustainability. Overcoming the fallacy of controllability leads us to focus on the challenge of developing management measures to optimize overall sustainability of inherently uncontrollable fisheries.

Robust Management

In a world where the limitations on what is possible through fishery management are beginning to emerge clearly, one ingredient in moving toward sustainability and resilience lies in pursuing *robust management* – providing ‘reasonable’ success in meeting society’s objectives, even if (a) our current understanding of the fishery (notably the status of the resources), its environment and the processes of change, turns out to be incorrect, and/or (b) the actual capability to control fishing activity is highly imperfect. In other words, a *robust* management system is one in which obtaining reasonable performance from the fishery (i.e., an acceptable level of success) does not depend on perfect knowledge of the structure and dynamics of the system, nor of all variables. Clearly this is not easy to achieve: moving toward robust management would seem to require more than minor changes – indeed, a re-thinking of the philosophy of management, and a re-assessment of current management approaches.

Management Portfolios

A wide array of management measures is available in fisheries, each with its advantages and disadvantages. An over-emphasis on any single measure is unlikely to lead to sustainability and resilience, as there will always be some situation in which any such method fails – whether dumping and highgrading with quota management, an inability to control enough fishery inputs with effort management, or excessive exploitation on unprotected parts of the stock (or distinct sub-stocks) with closed seasons and closed areas. The point is that any single management measure cannot be considered ‘safe’. A portfolio (set) of mutually-reinforcing management tools is needed, selected on a case-by-case basis, taking into account society’s objectives, biological aspects of the resource, human aspects such as tradition and experience, the level of uncertainty and complexity in the fishery and the predicted consequences of the various instruments.

Efficiency

Misinterpretations of the idea of efficiency can lead to policy decisions that fail to properly balance the various components of sustainability. A proper view of efficient policies are those that ‘do the most with what we have’ – those that best meet society’s objectives given the existing constraints. Hence, the pursuit of efficiency is desirable, by definition. However, pursuit of efficiency is meaningless, and potentially misguided, without clearly defining what objectives we are pursuing. In particular, it is sometimes thought that efficiency means generating the most profits (or rents), but this is *not* the case *unless* the fishery has no other goals (e.g., employment, community health, safety, etc.). In other words, it is only when we decide the balance among the many fishery objectives that we can properly refer to what makes an ‘efficient’ fishery. Without this, claims of greater ‘efficiency’ for one policy over another may merely reflect the personal preferences of those advocating the policy.

Economic/Livelihood Diversification

Economist Ian Smith (1981: p.22) pointed out long ago that often fishery management programs “*fail to deal adequately with fishermen who are displaced*” and that accordingly policies to deal with over-exploitation and over-capacity by reducing the number of fishers may well aggravate the fishery problem. The challenge of livelihood diversification is by no means simple, yet efforts in this direction seem critical to the success of programs for sustainable fisheries. Such efforts will typically be composed of within-fishery and non-fishery actions. First, within the fishery, it can be useful to encourage multi-species fishing, in which each fisher utilizes a range of fish resources, in contrast to policies that lead to specialization in single-species fisheries. By diversifying across sources of fish, the individual fisher reduces risks, and the collective pressure to over-exploit may also be reduced. Second, looking beyond the fishery *per se*, it can be useful to encourage multiple sources of livelihood for fishers (with fishers holding a range of jobs in addition to fishing). This is common as a traditional practice in many seasonal fisheries, and lets fishers avoid total reliance on fishing for their income, reducing the pressure they would otherwise face to obtain a livelihood entirely from the fishery, and thus reducing pressure on the fish stocks. Third, there is a need to diversify the coastal economy, by creating new, sustainable economic activity outside the fishery sector (e.g., fish farming, coastal tourism). This enhances the range of available livelihood choices and tends to increase income levels outside the fishery, so it is more attractive for fishers to leave the fishery, and incentives for others to enter are reduced.

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Report and documentation of the

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INTERNATIONAL FISHERIES INSTRUMENTS AND FACTORS OF
UNSUSTAINABILITY AND OVEREXPLOITATION IN FISHERIES**

Mauritius, 3–7 February 2003



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GCP/INT/788/JPN

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PREPARATION OF THIS DOCUMENT

With financial support from the Government of Japan, an FAO project, GCP/INT/788/JPN, was initiated in 2001 to address issues related to factors of overexploitation and unsustainability in fisheries. The aim of the project is to improve fisheries management through better knowledge of factors leading to unsustainability and overexploitation in fisheries, and to improve the framework for the implementation of international fisheries instruments.

A first workshop on factors contributing to unsustainability and overexploitation in fisheries was organized in the context of this project in Bangkok, Thailand, from 4 to 8 February 2002 (“the Bangkok Workshop”).¹

A second workshop on the implementation of international fisheries instruments and factors of unsustainability and overexploitation in fisheries was held in Mauritius, from 3 to 7 February 2003 (“The Mauritius Workshop”).

This document contains the report of the Mauritius Workshop, discussion papers containing eleven case studies and notes submitted to the workshop by participants. This document, and in particular the conclusions adopted by workshop participants, will serve as a basis for further analytical work aimed at improved fisheries management and a more effective implementation of major international fisheries instruments. Such work will be pursued in 2003, and the final aim of the project is the organization in 2004 of a major international conference on factors of unsustainability and the effective implementation of international fisheries management instruments.

The document was compiled and edited by Ms Judith Swan, Consultant, and Dr Dominique Gréboval, Senior Fishery Planning Officer (FAO Fisheries Department) and Technical Secretary of the Workshop.

Distribution

Participants in the Workshop
FAO Fisheries Department
Fisheries Officers in FAO Regional Offices

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ABSTRACT

An international workshop was organized in order to identify factors of unsustainability and overexploitation in fisheries and review major issues in the implementation of international fisheries instruments. The workshop referred closely to the results of a first workshop held in Bangkok in 2002 (*The International Workshop on Factors Contributing to Unsustainability and Overexploitation in Fisheries*). It aimed more specifically at answering the following three major questions: What are the major obstacles to the implementation of major legal instruments? What are the main lessons learned and the possible paths to solutions for improved implementation? What are the possible gaps that may exist in these instruments to guide the international community in improving the management of marine fisheries?

The workshop was based on a review of eleven case studies, each relating to one of the following categories of fishery: large volume small pelagics; tuna and tuna-like species; large volume demersals; and coastal fisheries.

This document contains the report of the workshop, discussion papers containing case studies and notes submitted to the workshop by participants. This document, and in particular the conclusions adopted by workshop participants, will serve as a basis for further analytical work aimed at improved fisheries management and a more effective implementation of major international fisheries instruments.

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