CHAPTER 18
GETTING THE SCALE(S) RIGHT IN OCEAN FISHERIES MANAGEMENT: AN ARGUMENT FOR DECENTRALISED, PARTICIPATORY GOVERNANCE

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Abstract

The focus of this chapter is on the problem of scale in fisheries governance. This is the problem of what is the appropriate scale of the marine ecosystem for fisheries management purposes. Current fisheries management regimes largely bypass this problem by focusing their attention on scale-less, single species populations. But such an approach rests on an inadequate mental model that ignores the complexity of the marine ecosystem. By contrast, the ecosystem-based approach offers an alternative mental model that deals with this complexity, not by bypassing it, but by scaling down to local ecosystem levels, which are best managed by decentralised, co-management governance arrangements that make full use of resource users' knowledge and also ensure accountability.

18.1 Introduction

Management of ocean fisheries is usually carried out at a broad geographical scale, often at the level of the nation state or some broader scale international political entity. There are numerous reasons one might cite for this choice of scale – for example, the absence of finer scale political boundaries; the costliness of ocean observing; the difficulty of conceiving and managing an ecology that is poorly known and understood; the need to match the scale of science with the scale of political authority; and the scientific belief that fish stocks are generally mobile and range over large areas (Degnbol 2001). Whatever the reason, most developed nations are caught up in institutional arrangements that require that they act as if a broad-scale, single-species approach is appropriate for the management of fisheries.

As our understanding of ocean ecosystems expands, there is growing reason to be sceptical about the scale of these institutional arrangements and their derivative scientific perspective. The current turmoil in fisheries science is telling evidence of the breadth of this scepticism. There are basically two reasons to be sceptical: an empirical reason and a theoretical reason. The empirical reason is the very poor results – the major failures – that generally obtain in ocean fisheries management (Pitcher and Pauly 1998). The theoretical reason is the serious difference between the holistic concept of the ocean held by ecologists, and the discrete, single species fish population model used as the conceptual basis for most management (Hutchings 2000*)*. These empirical and theoretical reasons challenge some of the basic assumptions implicit in the design of our management institutions, and in the policy instruments such as quotas and individual transferable quotas (ITQs) which are generally favoured among managers and economists.

T. S. Gray (ed.), Participation in Fisheries Governance, 307–318.

Our conception of the biological structure and processes of the ocean is critical to our interpretation of the way human activity impacts the ocean, and to our sense of what we need to learn and do to manage those impacts for sustainability. The conventional scientific view is one that attempts to find a workable solution given political realities; the costly measurement and observation problems encountered when working in the ocean; and our fundamental computational and conceptual limitations. As a result, almost by default, conventional fisheries management science has simplified the complexity of the ocean into a series of scale-less (or single scale), independent, single-species models driven by assumptions of density-dependent, equilibrating processes. Every scientist ('every' may be too strong a generalisation) realises that this is a gross simplification of the ocean. The operative question, however, is whether it is an adequate simplification – that is, one that captures the essence of fish population dynamics and provides us with guidance about human behaviour that is appropriate for sustainability.

This question of operability is not easily resolved. For example, the manifest failures of fisheries management cannot necessarily be explained as the result of the inadequacies of this science. It is a commonly held view among scientists and others, especially those who have been the architects of conventional management, that the science is basically correct and that the failures we observe are simply the result of a lack of political will: that is, politicians and managers are unwilling to do what scientists deem necessary (Rosenberg *et al* 1993; Ludwig *et al* 1993). This proposition is not easily subject to scientific proof, nor is any proof generally thought to be necessary.

An alternative explanation for the failures of fisheries management is rooted, not in the idea that there is insufficient political will, but rather in the idea that both our science and governance processes are designed around a conceptual simplification that seriously mischaracterises ocean ecosystems. This proposition is also not easily proved but it is certainly worth exploring, not least because it forms a critical part of the argument for co-management. In this chapter, I explore this proposition, first, by presenting an alternative mental model of the important processes in ocean ecosystems, focusing especially on its relevance for the governance problem; second, by providing an interpretation of how current fishing regimes affect the ocean based on that model; and, third, by suggesting how we might reorganise our governance institutions and re-direct our science – really our overall approach to learning – so that we are better able to adapt to a spatially and temporally complex biological system.

18.2 An alternative mental model of the system

Conventional theories of fisheries management rely upon a mathematically elegant conception of ocean processes. The ocean system is viewed as a collection of independent, scale-less populations driven by density-dependent processes that create strong equilibrium tendencies. Because of those tendencies, the impacts of human interventions in the system are assumed to have predictable outcomes. This predictability implies control and the ability to manage each population for sustainability. In this chapter, I challenge these assumptions, and outline an alternative mental model of the structure and dynamics of an ocean system. This alternative model