

MOVING FROM SINGLE-SPECIES MANAGEMENT TO ECOSYSTEM MANAGEMENT IN REGIONAL FISHERIES MANAGEMENT ORGANIZATIONS

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Even though reference to the modern framework of ocean governance begins with the 1982 United Nations Convention on the Law of the Sea (UNCLOS),¹ it certainly does not end there. Indeed, at the early part of the Twenty-First Century we have a growing network of international organizations and treaty regimes, and, of course, nation-states that play a role in ocean governance. These actors are driven by a variety of objectives, most especially the need to balance conservation and consumption of living marine resources.

In addition, in the Twenty-First Century those organizations tasked with ocean governance, principally regional fisheries management organizations (RFMOs), must satisfy a variety of stakeholders and constituents that range well beyond the classic nation-state. These include environmental Non-Governmental Organizations (NGOs), commercial interests, native aboriginal users, as well as other conservation and management organizations.

Ocean governance is increasingly informed by a growing list of legal concepts that are often ill-defined and difficult to apply in practice. These include the Precautionary Approach, the duty to cooperate and the duty to apply the best available scientific evidence. Another of these new guiding principles is the duty to apply ecosystem-based conservation and management.

Ecosystem-based management has steadily gained currency in recent years. This is especially so since the drafting of the UN Fish Stocks Treaty in the mid-1990s.² While ecosystem management is hard to define, it is essentially a more holistic approach to ocean governance. It proceeds from the notion that human actions such as fisheries and pollution have consequences up and down the food chain. Fisheries practices, for example, affect the entire

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1. United Nations Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, 21 I.L.M. 1261 (1982) (entered into force Nov. 16, 1994) [hereinafter UNCLOS].

2. Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, *opened for signature* Dec. 4, 1995, U.N. G.A. Doc. A/CONF.164/37, *reprinted in* 34 I.L.M. 1542 (1995) (entered into force Dec. 11, 2001) [hereinafter Fish Stocks Treaty].

ecosystem and are not simply limited to target species. Ecosystem management takes into account the wide-range of horizontal and vertical ecological relationships that exist between and among marine organisms.

The much more classic approach is “single species” management. In single species management an RFMO will set a catch quota for tuna or cod in a certain region of the ocean. Under a single species management model, an RFMO may also adopt measures relating to the reduction of unintended catch (bycatch), but rarely does much more than that. The thinking behind single species management is not wrong per se, but is quite linear. Reduced to its most basic form, single species management would dictate that where there are too few cod, less cod will be fished. Where cod are abundant, more will be fished.

The evolution toward an ecosystem-based approach with respect to the conservation and management of ocean resources is grounded in UNCLOS. Article 61 of UNCLOS, entitled “Conservation of the Living Resources” of the Exclusive Economic Zone (EEZ), recognizes that proper conservation and the determination of Maximum Sustainable Yield should take into account “the interdependence of stocks.”³ Article 61(4) requires coastal states to “take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.”⁴ The equivalent language is found in Article 119 which is entitled, “Conservation of the Living Resources of the High Seas.”⁵

More recently, ecosystem-based management was endorsed in the Food and Agriculture Organization’s Code of Conduct for Responsible Fisheries.⁶ Article 6.2 of the Code of Conduct provides:

Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development. Management measures should not only ensure the conservation of target species *but also of species belonging to the same ecosystem or associated with or dependent upon the target species.*⁷

3. UNCLOS at art. 61.

4. *Id.* at art. 61(4).

5. *Id.* at art. 119.

6. Food and Agriculture Organization, *Code of Conduct for Responsible Fisheries*, U.N. Doc. 95/20/Rev/1 (Oct. 31, 1995), available at <http://www.fao.org/DOCREP/005/v9878e/v9878e00.htm> (last visited Dec. 6, 2006).

7. *Id.* at art. 6.2 (emphasis added).

Other key articles of the Code of Conduct reinforce this commitment to ecosystem management.⁸ These articles demonstrate the growing concern for habitat protection, reduction of bycatch, and recognition of the impacts of fishery practices on associated and dependent species.

Ecosystem management also flows naturally from obligations to preserve biodiversity found in the Convention on Biological Diversity (CBD).⁹ Most directly, ecosystem management is suggested by obligations to achieve *in-situ* conservation of biological resources.¹⁰

In terms of the application of the ecosystem approach, it is undeniable that there is considerable disagreement among states, policy makers, and scientists over its precise meaning and application. Even so, there is general agreement that it includes such matters as:

- 1) Habitat protection (this might include pollution control and even the duty to address global warming);
- 2) The reduction of bycatch through unnecessarily destructive fishing practices; and
- 3) The increase of scientific study to better understand the complex biological relationships that exist in the marine environment.

RFMOs, which are sometimes the first and last line of defense in high seas governance, are today adopting recommendations and resolutions that value the wider marine ecosystem. In other words, RFMOs are moving beyond the more traditional setting of catch quotas and total allowable catch. The regime that is most often credited with an application of ecosystem management is the Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR).¹¹ The CCAMLR treaty entered into force in 1982 and is one of several Agreements that comprise the Antarctic Treaty System.¹² Unlike many other agreements, the CCAMLR Treaty embraces ecosystem management in the text of the treaty itself. Article 2(3) of the CCAMLR Treaty provides:

3. Any harvesting and associated activities in the area to which this Convention applies shall be conducted in accordance with the

8. See *e.g.*, *id.* at arts. 2(i), 6.6, 6.8, 7.6.9, 12.5 and 12.10.

9. Convention on Biological Diversity, *opened for signature* June 5, 1992, U.N. Doc. DPI/130/7, *reprinted in* 31 I.L.M. 818 (1992) (entered into force Dec. 29, 1993).

10. See *id.* at art. 8.

11. Convention on the Conservation of Antarctic Marine Living Resources, May 20, 1980, 1329 U.N.T.S. 47 (entered into force Apr. 7 1982) [hereinafter CCAMLR Treaty].

12. Commission on the Conservation of Antarctic Marine Living Resources, *available at* <http://www.ccamlr.org> (last visited Jan. 31, 2007).

provisions of this Convention and with the following principles of conservation:

(a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment. For this purpose its size should not be allowed to fall below a level close to that which ensures the greatest net annual increment;

(b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in sub-paragraph (a) above.¹³

Discussions of CCAMLR and its commitment to ecosystem management are often sidetracked by discussions of its relative success or failure with regard to its management of its most visible resource: the Patagonian Toothfish, more commonly known as the Chilean Seabass. Even before its management of Toothfish, CCAMLR was actively engaged in the management of krill, which is a key component of the Antarctic food chain.¹⁴

CCAMLR often draws criticism for the poor status of Antarctic Toothfish stocks. This status, however, is more likely attributable to Illegal, Unreported, and Unregulated fishing in its convention area than any failure of ecosystem-based management. Questions about the Toothfish aside, CCAMLR deserves praise for adopting ecosystem-based management as one of its guiding principles.

In both CCAMLR and other RFMOs where ecosystem management is applied, important questions must be answered before it can be fully implemented. First, how can we develop a complete list of interested constituencies who will have a say in the application of the ecosystem approach? In addition to scientists, policy-makers, and industry representatives, shall we also include environmental NGOs? If so, who shall determine which ones have earned a right to participate? Can we practically take into account the consumers of the resource, including traditional and aboriginal users?

Another significant hurdle that must be overcome is how to address problems presented by scientific uncertainty, and the implementation of the Precautionary Approach into ecosystem-based decision-making. Implementing the Precautionary Approach is a significant challenge in the more linear model of single-species management. These challenges are only multiplied when

13. *Id.* at art. 2(3).

14. See WORLD WILDLIFE FUND INTERNATIONAL REPORT, POLICY PROPOSALS AND OPERATIONAL GUIDANCE FOR ECOSYSTEM-BASED MANAGEMENT OF MARINE CAPTURE FISHERIES 18 (2006), available at http://assets.panda.org/downloads/ebm_report.pdf (last visited Mar. 17, 2007).

decision-makers must factor in potential consequences to associated and dependent species as required by ecosystem-based management.

While it is undeniable that as RFMOs evolve they are progressively adopting ecosystem-based management as a guiding principle, there is little doubt that we are moving towards this approach as a normative concept in ocean governance in the Twenty-First Century. Even so, substantial questions must be answered before it can be implemented successfully. While the concept of ecosystem management is laudatory and optimism about what it can potentially accomplish is justified, it remains to be seen whether or not it provides a superior model for ocean governance.