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Best Practices for High Seas Fisheries Management: Lessons Learned

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Summary

- Ecosystem-Based Management (EBM), used in concert with the Precautionary Approach (PA), shows promise for improving management of marine resources on the high seas.
- An examination of the approaches, operational benchmarks (process, methodology or reference points) and best practices of 12 Regional Fisheries Management Organizations (RFMOs), all with direct regulatory authority, provides insight into guidelines for more effective high seas management through the adoption of EBM and PA.
- Best practices include an overarching mandate with a broader ecosystem focus, precautionary principles and the use of the best available science in management decisions as well as precautionary decision rules, a comprehensive research programme and effective enforcement.
- While RFMOs have made progress in identifying EBM and PA management measures, implementation has been slow. In order for there to be meaningful improvement in high seas ocean governance, new means for effectively deterring Illegal, Unreported and Unregulated (IUU) fishing activities will have to be identified. Such measures would include addressing the socio-economic drivers of IUU fishing, as was suggested in the final report of the ministerially led Task Force on IUU Fishing on the High Seas in March 2006.

Introduction

Regional Fisheries Management Organizations (RFMOs) have been portrayed as ineffective at managing high seas fish stocks around the world. Inadequacies of single-species management, the traditional approach used by these organizations, and a focus on commercial production, not conservation are cited as two reasons for their ineffectiveness. New approaches such as Ecosystem-Based Management (EBM) and the Precautionary Approach (PA) are being advocated as the means for improving fisheries management.

While these approaches show promise, they will be no more effective than single-species management unless the socio-economic drivers that hinder single-species management are addressed (e.g., lack of political will to follow through with scientific advice when establishing management measures and the 'free-rider' problem, whereby management effectiveness is undermined by both Non-Contracting and Contracting Parties' unwillingness to adhere to management measures). Some practical steps for addressing these concerns have been identified as a result of the work of the High Seas Task Force on Illegal, Unreported and Unregulated Fishing (IUU).¹ If solutions can be found to promote more effective compliance and enforcement then EBM and PA, which represent a more comprehensive approach to marine resource management, may be successful.

EBM and PA: a way forward for improved governance

EBM acknowledges that fishing and other activities take place within complex communities of organisms and habitats and that fishing is only one of many human activities which affect these marine environments. EBM considers cumulative impacts of different sectors on the ecosystem. In the fisheries management context the main goal of EBM is sustainability of catches without compromising the inherent structure and functioning of the marine ecosystem.² EBM also requires explicit accounting of socio-economic considerations and development of socio-economic indicators.

In general, PA is intended to

- (1) avoid the tendency to address problems only in arrears after substantial economic and ecological losses have occurred by using prudent foresight to guide resource use;
- (2) promote a more equitable balance between short-term considerations (which often lead to overfishing) and long-term considerations; and

- (3) counteract the effects of current high economic discount rates which provide a strong incentive to overfish, maximizing the discounted net benefits from a stock by *de facto* preferring present consumption over future consumption.³

A major concern over the use of EBM is that in order to manage complex marine ecosystems, an even greater amount of data about ecological relationships and the impact of human activities will be required than is needed under single-species management. However, when used in concert with PA, EBM can be an effective tool for managing fisheries resources. PA requires prudent foresight when data and information are lacking. If little is known about the state of a resource or the potential effect of a human activity such as fishing, then provisional measures are to be imposed (i.e., it is best to limit the activity until such time as it can be determined to be sustainable).

Best practices based on EBM/PA identified in many RFMOs

While clearly more needs to be done to improve the effectiveness of RFMO management on the high seas, some progress has been made by individual RFMOs to promote EBM and PA internally. This has been mostly in response to the United Nations Straddling Fish Stocks and Highly Migratory Fish Stocks Agreement (UN Fish Stocks Agreement) which was adopted in August 1995 and entered into force on 11 December 2001. The UN Fish Stocks Agreement articulates general principles for high seas fisheries management, including the introduction of PA which states: 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation' (Principle 15 of the UN Conference on Environment and Development (UNCED)). The Agreement also defines measures to curtail illegal fishing and proposes management mechanisms. Table 1 provides a summary of current management measures in place within various RFMOs. However, it does not evaluate how effectively these measures are being implemented.

In analysing the management actions taken by RFMOs a set of 'Best Practices' is apparent. These Best Practices include EBM/PA management objectives, PA decision rules and reference points, access control schemes, bycatch reduction strategies, habitat protection measures, interim measures and recovery plans, capacity reduction schemes, ongoing evaluation and adaptive management, Code of Conduct implementation, comprehensive research programmes including experimental fisheries, and effective enforcement and compliance schemes (see Table 1).

TABLE 1: RMFO MANAGEMENT MEASURES

	CCAMLR	CCSBT	GFCM	IATTC	ICCAT	IPHC	IWC	NAFO	NASCO	NEAFC	SEAFO	WCPFC
Overarching objectives												
Decision rules												
Limit reference points												
Target reference points												
Management measures												
Access control												
Bycatch reduction (target & non-target species)												
Habitat protection												
Interim measures/recovery plan												
Capacity reduction scheme												
Evaluation & adjustment												
Voluntary Code of Conduct												
Research programme												
Experimental fisheries												
Monitoring & enforcement												
Monitors compliance												
Detection of ancillary impacts												
Penalties for non-compliance												

Key	
	Implemented
	Developing not applied or applied for some species
	No measures in place or insufficient information to evaluate or not applicable
CCAMLR	Convention for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
GFCM	General Fisheries Commission for the Mediterranean
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IPHC	International Pacific Halibut Commission
IWC	International Whaling Commission
NAFO	Northwest Atlantic Fisheries Organization
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	North East Atlantic Fisheries Commission
SEAFO	South-East Atlantic Fisheries Organization
WCPFC	Convention for Conservation and Management of Highly Migratory Fish Stocks in Western and Central Pacific Ocean

EBM/PA management objectives

Since most RFMOs were established prior to the adoption of the UN Fish Stocks Agreement, there is a need for the majority of RFMOs to expand their overarching management objectives to include EBM and PA concepts. The Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) and Inter-American Tropical Tuna Commission (IATTC) provide examples of broadened management objectives which recognize the importance of accounting for ecosystem considerations, precautionary principles and promotion and use of the best available science in management decisions. In addition, the newly established Western and Central Pacific Fisheries Commission (WCPFC) and the South-East Atlantic Fisheries Organization (SEAFO) include ‘precautionary language’ in their respective conventions.

PA decision rules and reference points

A marked shift in current fisheries management by RFMOs would include more widespread use of formal PA decision rules for determining conservative catch rates and adoption of biological and catch reference points (target and limit).

For instance, CCAMLR applies a three-part decision rule to its krill fisheries. Through a complex formula, CCAMLR scientists predict two possible scenarios for krill biomass under different catch rates. Managers then apply the more conservative catch rate to ensure that the fish stock does not fall below a previously agreed minimum level which would prevent rebuilding or result in stock decline.

In addition, some RFMOs have defined decision rules to broaden the scope of existing single-species management approaches. Conservative decision rules ensure that a portion of agreed Total Allowable Catch (TAC) is set aside to account for food web needs and the uncertainty of removals from non-managed fisheries.

Several RFMOs have defined target reference points in order to maintain a constant exploitation yield or ensure that only a certain level of fishing mortality occurs (e.g., CCAMLR, Convention for the Conservation of Southern Bluefin Tuna (CCSBT), International Pacific Halibut Commission (IPHC), Northwest Atlantic Fisheries Organization (NAFO) and North East Atlantic Fisheries Commission (NEAFC)). Some have even identified rebuilding targets for fish stocks. In particular, Maximum Sustainable Yield (MSY), the most commonly used method for managing fish stocks, is being defined as a target for rebuilding fish spawning stock size (SSB). This represents a departure from traditional fisheries management whereby MSY has been used as a management target for fishing effort. In other words, under PA, fishing effort must stay below the level that would be expected to yield MSY (MSY is a limit – a high level to be avoided) so the spawning stock can remain or be rebuilt to the MSY level.

Other limit reference points have been defined by RFMOs such as that fish stock size can not fall below minimum/average historical biomass. The International Whaling Commission (IWC) defined limit reference points for use should its ban on commercial whaling ever be lifted. IWC established a limit

reference point which restricts fishing mortality when stocks fall below a predetermined proportion of carrying capacity (i.e., 54%).

Access control schemes

The majority of RFMOs have some form of access control in place which includes a combination of allocation schemes, closed areas/seasons, vessel and gear licensing requirements, and moratoria on fish stocks which are determined to be overfished and on certain gear technologies.

Bycatch reduction strategies

Key to addressing bycatch is for RFMOs to adopt standards and protocols to ensure consistency by all Contracting Parties for bycatch data collection and reporting requirements. However, only a handful of RFMOs have actually adopted such standards and protocols.

Typically RFMOs curtail bycatch and discards by shifting seasons and/or areas to avoid high incidence of bycatch species and by imposing fish minimum size and mesh/hook size requirements. However, in some cases, RFMOs fail to apply minimum size and mesh/hook size requirements in concert. This undermines the goal of allowing smaller fish to escape. For instance, if only a minimum fish size is imposed and a lot of undersized fish are caught, these fish must be thrown overboard and invariably suffer high mortality rates. However if both minimum fish size and appropriate gear restrictions are identified, then juvenile fish can escape, presumably without injury.

A few RFMOs also require that Contracting Party fishermen undergo safe handling training to enhance fish survival. This would be a good practice for other RFMOs, particularly to enhance recovery rates of moratorium fish stocks.

CCAMLR serves as a model for its efforts to monitor and remediate impacts on associated and dependent species (e.g., establishing TACs for bycatch species and tying them to TACs for management species). When bycatch TACs are reached, areas are closed to fishing even if the directed catch TAC has not been reached. In addition, IATTC, which also serves as Secretariat for the International Dolphin Conservation Programme (IDCP), has a somewhat broader ecosystem focus than most RFMOs. Along with addressing bycatch of tuna species, it has also adopted measures to reduce dolphin and sea turtle bycatch in directed tuna fisheries.

A number of RFMOs, most notably CCAMLR, CCSBT, IATTC, IPHC, IWC and SEAFO, have developed innovative methods to reduce entanglement of seabirds and marine mammals (e.g., restrictions on

night-time fishing or limits on the amount of time fishing gear can remain in the water, offal discharge requirements and the use of noise-making devices or 'pingers' and brightly coloured streamers as deterrents, etc.).

Habitat protection measures

Unfortunately, habitat protection measures have been poorly addressed by many RFMOs. In its resolution 59/25 of 17 November 2004,⁴ the United Nations General Assembly requested states and RFMOs, *inter alia*, to regulate bottom fisheries and the impact of fishing on vulnerable marine ecosystems in waters beyond national jurisdictions (e.g., seamounts, hydrothermal vents and cold water corals). As a result of this UN request, several RFMOs are in the process of identifying vulnerable habitats within their respective management areas. NAFO, NEAFC and SEAFO imposed bottom trawling closures on seamounts. However, SEAFO is one of the few RFMOs to go further: it has not only implemented studies of the closed area resources but also conducted experimental fisheries in the area to assess and mitigate potential impacts.

A worthwhile investment for RFMOs would be to conduct comprehensive mapping schemes to identify all habitat types within RFMO Convention Areas. When sensitive habitats are identified, RFMOs should also impose greater habitat protection measures (e.g., gear restrictions/modifications and area closures) to help rebuild depleted fish stocks or protect others from being overfished. For high seas fish stocks, some of which are pelagic, their habitat is such that degradation and changes to the water column need to be considered. CCAMLR developed a pollution monitoring programme to identify potential sources and, where possible, impose mitigation measures which could serve as a model for other RFMOs.

Interim measures, adaptive management plan and recovery plans

There are very few cases where RFMOs have developed interim measures prior to permitting implementation of full commercial fisheries. However, CCAMLR recognizes that fisheries need to be managed from the time they start. In CCAMLR terms, a 'new' fishery constitutes a species or area that has not previously been fished or an established fishery where there is an intention to use a new fishing technique. There is a requirement at the 'new' fishery stage to collect information on the target as well as dependent species, and the catch or effort (or both) may be limited. In CCAMLR parlance, a new fishery lasts for one year unless no catch is taken, at which time it retains its classification. In the second year, the fishery

becomes an 'exploratory' fishery with a new set of restrictions and requirements. CCAMLR's conservative approach and data collection requirements provide for both a full assessment of the fishery and stock(s), and fishery development. A data collection plan must be followed and a research and fishery operation plan produced. All such plans are reviewed each year by the Scientific Committee. CCAMLR's toothfish, crab and squid fisheries are managed in this manner in some areas.

CCSBT is the only organization to pre-specify what should happen when TACs generated by the Management Plan (MP) are considered to be 'highly' risky or inappropriate, to incorporate regular review and MP revision and to establish performance measures. This type of adaptive management is essential for effective EBM management.

An area where RFMOs fall short is in the development of adequate rebuilding plans. Some have actually defined rebuilding plans, but have failed to effectively implement or enforce them, and thus catch rates have exceeded levels necessary to achieve rebuilding targets. In other cases, moratoria have been imposed but bycatch of the moratoria species in other commercial fisheries undermines stock rebuilding.

Capacity reduction schemes

Overcapacity has been identified by the UN as a major problem worldwide. The issue is essentially one of having too many vessels or excessive harvesting power in a growing number of fisheries. The existence of excessive fishing capacity is largely responsible for the degradation of fishery resources, for the dissipation of food production potential and for significant economic waste.⁵ In 2002, IATTC adopted a Capacity Management Scheme with a defined overall capacity goal for its Convention Area (i.e., freezing fishing capacity at the 1998 level). Other RFMOs also are exploring methods to control capacity.

Code of Conduct implementation/socio-economic considerations

The 1995 Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries (Code of Conduct) provided many of the management principles that were adopted in the UN Fish Stocks Agreement and has been used to help guide the implementation of the Agreement. The Code of Conduct is a voluntary tool which aims to establish guidelines and recommendations for responsible fishing and to complement and strengthen current international fisheries law.

A number of RFMOs have implemented measures to reduce

- (1) bycatch of non-target species such as seabirds, sea turtles and sharks;
- (2) fishing capacity; and
- (3) IUU fishing, which are in line with the goals of the FAO Code of Conduct.

However, only the General Fisheries Commission for the Mediterranean (GFCM) has taken concerted steps to ensure that its Contracting Parties are familiar with and practise the Code. GFCM is working to improve the management of fishing activities in conformity with the Code. To this end, a number of activities have been undertaken including development of research programmes focused on fishery economics (e.g., to establish administrative and financial measures leading to the promotion of sustainable and responsible aquaculture production and the creation of specific credit lines favouring responsible aquaculture practices).⁶ NASCO and GFCM have defined socio-economic indicators. Since social and economic considerations also are inherent in the Code and effective EBM, other RFMOs must undertake efforts to understand socio-economic drivers.

Comprehensive research programme

As a basis for EBM, Comprehensive Ecosystem Monitoring Programmes need to be developed by RFMOs with clearly defined standards and protocols for data collection. These monitoring programmes must include not only biological data for target and associated and dependent species, but also information on habitats, social economics, and biological/chemical/physical processes. In addition, data must be collected on natural and human-induced, cumulative and climate change impacts. CCAMLR and IATTC provide examples of where comprehensive ecosystem monitoring programmes and research agendas have been adopted. For instance, both organizations' research plans extend well beyond just collecting basic biological data on target species. Data also are collected in order, *inter alia*, to complete biological assessments of non-targeted species, better understand relationships between target species and non-target species, and identify and protect important species habitats.

Effective enforcement and compliance schemes

Inadequate monitoring and enforcement are often cited as key contributing factors in fishery management failings. Under EBM/PA management a number of measures should be imposed, some of which are already being employed by RFMOs.

These include but are not limited to:

- Real time observer coverage;
- Vessel Monitoring Systems (VMS);
- Catch/Trade Documentation Schemes (prohibition on landings and transshipments from Non-Contracting Parties) with established mechanisms for exchanging data among RFMOs;
- Criteria for affording non-Contracting Parties Cooperating Status with the potential for a small set-aside of quota allocation;
- Data collection standards and submission of national reports to RFMOs;
- Joint inspection schemes (Contracting Parties and independent inspectors); and
- Black lists and trade restrictions/sanctions to publicly identify and punish countries which undermine RFMO management measures.

Catch Documentation Schemes are among the most promising programmes put forth by RFMOs to encourage legal fishing. By identifying the origin and

documenting the legality of fish at the point they are landed, port state authorities provide the market with a certification that the fish they are purchasing were caught in a manner consistent with their conservation. CCAMLR, CCSBT and ICCAT have been able to compile considerable information on unreported catches through their various programmes.

Conclusions

While some progress has been made in adopting EBM and PA measures, most RFMOs still have a long way to go in this regard. In order for there to be meaningful progress, fundamental changes must be made in the way RFMOs operate, including changes in management and science mandates, goals and priorities to better address ecosystem considerations. New strategies for addressing short-term economic needs will have to be identified. At the same time, adequate management measures must be imposed and enforced to ensure long-term sustainability of commercial fish stocks and future economic opportunities.

Endnotes

¹ M. Lodge, *Managing International Fisheries: Improving Fisheries Governance by Strengthening Regional Fisheries Management Organizations*, Chatham House Briefing Paper, Energy, Environment and Development Programme, EEDP BP 07/01, March 2007.

² M. Mooney-Seus and A. Rosenberg, *Regional Fisheries Management Organizations (RFMOs): Progress in Adopting Precautionary Approach and Ecosystem-Based Management*, Report prepared by Fort Hill Associates LLC on behalf of HTSPE and High Seas Taskforce on IUU Fishing, 10 February 2007.

³ United Nations, *The Precautionary Approach to Fisheries with Reference to the Straddling Fish Stocks and Highly Migratory Fish Stocks*, United Nations, General Assembly, United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 14–31 March 1994, A/CONF. 164/INF/8 26 January 1994, p. 9.

⁴ General Assembly 59/25, paras 66–69.

⁵ S. Pascoe and D. Gréboval (eds), *Measuring Capacity in Fisheries*, FAO Fisheries Technical Paper No. 445, Rome, FAO, 2003.

⁶ www.fao.org/docrep/005/x3764bx3764b00.htm.

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Chatham House Independent Panel on Improved Governance of RFMOs

This Briefing Paper is being produced in conjunction with an independent high-level panel on improved governance of RFMOs, which was established by Chatham House in August 2006.

The panel has been commissioned by the Governments of Australia, Canada, New Zealand and the United Kingdom in partnership with the international conservation organizations WWF International and IUCN. Its purpose is to develop a model for improved RFMO governance based on an analysis of best practices worldwide. Chatham House has been selected as the host institution in order to demonstrate that the panel is independent of any of the commissioning governments and organizations but at the same time ensure that the quality and integrity of the panel's work meet established and objective standards of excellence.

The panel stems from the work of the ministerially led Task Force on IUU Fishing on the High Seas (the High Seas Task Force), which presented its final report in March 2006. Its primary aim is to promote better governance on the high seas. The panel's report will also provide guidance for assessing RFMO performance in relation to international fishery instruments. It should therefore facilitate some measure of comparability and comprehensiveness in assessing performance, but should also address important new and emerging issues of concern:

- How can an ecosystem-based and precautionary approach to management be applied? What lessons can be learned from other sectors?
- What market-related measures could members of RFMOs apply better and how do they fit in with WTO requirements?
- How can flag states that do not enforce controls be dealt with? Is there scope for elaborating a requirement that to fish in the area, flag states must be able to show satisfactory performance standards? Should further measures be implemented to address fishing by vessels flying under flags of non-members?
- What is the scope for building on the FAO model port state scheme in RFMO measures?
- What are the best options for decision-making?

Other Chatham House Briefing Papers prepared under this project include:

Managing International Fisheries: Improving Fisheries Governance by Strengthening Regional Fisheries Management Organizations
Michael Lodge, March 2007

Best Practices for High Seas Fisheries Management: Lessons Learned
Marjorie L. Mooney-Seus and Andrew A. Rosenberg, May 2007

Forthcoming RFMO panel report:
Recommended Best Practices for RFMOs

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