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A Global Representative System of Marine Protected Areas

Introduction

Marine Protected Areas (MPAs) are not a new concept. Some forms of them have existed—adjacent to island countries at least—since before the time that the relevant communities recorded events in writing.

What is new is the development of a global sense of urgency about the condition of the world's seas and the recognition that MPAs can address some of the threats arising from human activities directly, and all of them indirectly.

This article does not attempt to recount the history of the development of MPAs or the programs that are intended to create them. Its aim is to describe the present MPA program of IUCN-The World Conservation Union and its World Commission on Protected Areas (WCPA) and the concepts that underlie that program. However, it should be recognised that the current program builds on a long history of effort and achievement by people in the IUCN from its earliest days (it was created in 1948) and in other institutions.

The WCPA MPA network consists of people who have expertise in various aspects of MPAs and who are prepared to donate their time and effort to achieving the IUCN marine

goal and objectives. WCPA has a policy of working with other people and networks with similar aims. I hope that this article will contribute to further collaboration between like-minded people in the cause of marine conservation and to an extension of the existing network, either formally or informally.

Sometimes in this article I have expressed my views very directly. I have done this to avoid the misunderstanding which can arise from subtlety. I hope that readers are not offended by this lack of diplomacy.

The Goal and Vision

At its 17th General Assembly in 1990, IUCN adopted a primary marine conservation goal in Resolution 17.38, as follows:

To provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas and through the management in accordance with the principles of the World Conservation Strategy of human activities that use or affect the marine environment (Kelleher and Kenchington 1992).

This primary goal deliberately identifies MPAs as a means to an end, rather than an end in themselves. The language of this goal clearly recognises that the overall vision is one where *all* areas of the world are subject to a code of human behaviour that ensures that ecological processes and conditions are not insidiously (or blatantly) degraded by human activities. Because almost the entire surface of the world drains into the sea, there are virtually no areas which are excluded from this goal.

The unstated implication of this language is that we in IUCN should be working towards the establishment of systems of integrated ecosystem (or bioregional) management that cover the entire global surface, with MPAs being integrated into these systems. It is only through integrated management of entire ecosystems that the adverse effects of sectoral management can be avoided, namely the externalisation of costs (such as environmental degradation) and the internalisation of profits.

IUCN's MPA program is being carried out in this context. While small, highly protected MPAs are vital to the eventual attainment of the goal, it is recognised that, if they are not embedded in ecosystem-wide management systems, they will be extremely vulnerable to external destructive influences, particularly pollution. For this reason, large, multiple-zoned MPAs (such as biosphere

reserves) which include highly protected (no-take) areas can contribute a lot towards integrated ecosystem management. Of course, no MPA will achieve its aims if it is not managed effectively.

What is an MPA?

The IUCN and the World Wilderness Congress have defined an MPA as "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which have been reserved by law or other effective means to protect part or all of the enclosed environment" (Kelleher and Kenchington 1992).

Because this definition and the general definition of protected areas developed by IUCN deliberately use very general language, so as to encompass all types of protected areas, it has been necessary to classify protected areas into different types according to their primary management objective. Site management objectives are treated as of supplementary value. This was first done in 1978 by IUCN's Commission on National Parks and Protected Areas (CNPPA; recently renamed WCPA) and published by IUCN. In 1994, IUCN published a revised, simplified categorisation prepared by its WCPA.

Very briefly, the categories and their primary objectives can be summarised as follows.

The various categories comprise areas managed mainly for:

- I. Strict protection (Strict Nature Reserve / Wilderness Area)
- II. Ecosystem conservation and recreation (National Park)
- III. Conservation of natural features (Natural Monument)
- IV. Conservation through active management (Habitat/Species Management Area)
- V. Landscape/seascape conservation and recreation (Protected Landscape/ Seascape)
- VI. Sustainable use of natural ecosystems (Managed Resource Protected Area).

Detailed explanations of these categories with terrestrial and marine examples can be found in *Guidelines for Protected Area Management Categories* (IUCN 1994).

These categories apply equally to protected areas of land and sea. It is important to note that they do not assess management effectiveness—this is a separate (but necessary) exercise—and that all categories are considered by WCPA to be important.

From the definition and the description of categories it is clear that an MPA can vary in size from a small area in which nearly all human activities are prohibited to a vast area which allows for a variety of human activities, usually defined by zoning. One form of the latter is the biosphere reserve. Such MPAs can encapsulate the marine component of an entire coastline or of a coastal area which has been defined under an Integrated Coastal Management (ICM) regime.

Origin of the Current IUCN/WCPA Program

Although there had been considerable work by IUCN (and CNPPA, the forerunner of WCPA) on MPAs in the preceding years, the lessons from some of which were incorpo-

rated in *Marine and Coastal Protected Areas: A Guide For Planners and Managers* (Salm and Clark 1984), in 1986 both organisations concluded that the attention given to protection of the world's seas, including the creation of marine protected areas, lagged far behind the corresponding progress on land. The position of Vice Chair (Marine) was created in the WCPA with the task of accelerating the development of a global representative system of marine protected areas, as an important part of an overall program which would achieve the IUCN's primary marine goal. The system was and is intended to include a representative example of every major biogeographic type in the world's coastal seas. It is now being extended to the high seas.

Why Do We Need MPAs?

Although the lessons derived from the adverse experience of countries which have maintained areas available to the public for private use, without ownership, have long been recognised and encapsulated in phrases such as "the tragedy of the commons" (Hardin 1968), the world has been slow to apply these lessons to the sea and its resources. The almost universal failure of sectoral management to avoid overfishing and collapse of fish stocks has shown how powerful are the incentives for selfish and destructive actions in relation to resources which are not owned by a person or a group.

Marine protected areas provide a mechanism for establishing *de facto* ownership of marine resources. They establish geographic and behavioural boundaries to which everyone should be subject. This is especially true where the benefits flow to local communities, which then have many of the incentives for sustainable use that are normally conferred by real ownership.

It has been usual over the past two decades for most conservation organisations to focus on the contributions of protected areas to conserving biological diversity, almost to the exclusion of the vital roles that they can play in protecting biological productivity and improving human welfare. Fortunately, this is changing. The almost universal failure of protected areas to perform their designed functions in the face of opposition or apathy from local communities has led to widespread recognition that protected areas must meet the needs of these communities if they are to survive.

IUCN shares this view. Its program on MPAs aims at helping local communities in their struggles for survival, while contributing to the maintenance or restoration of ecological quality. Experience has shown that these dual aims are likely to be achieved only when local communities are largely responsible for the designation, design, management, monitoring and assessment of the

MPAs in their vicinity. Real benefits must flow to them. In today's world of relatively rapid economic growth, increasing consumption of natural resources and, in most developing countries, very rapid increases in human population, the Malthusian principles are everywhere evident. People cannot place emphasis on biological diversity and benevolence towards nature when they are struggling to survive.

The Present IUCN/WCPA Program

The overall goal of the program has been described. In order to move towards the attainment of this goal, the following course has been pursued. This process is described because, although many people find organisational issues boring, they are often crucial in meeting objectives. It is hard to refrain from making the unpopular comment that, despite the widespread condemnation of bureaucracies, they have often made the difference historically between highly energetic chaos and coordinated action.

The program consists of the following principal, interdependent elements:

- The division of the world's coastal seas into a small number (18) of major biogeographical regions.
- The division of each region's and country's marine coastline into its biogeographic zones.

- The identification of existing MPAs, and thus of the gaps in representation of biogeographic zones.
- The determination of highest priorities for new MPAs or for establishing effective management in existing ones.

The organisational actions that have been taken or are in progress include:

- The writing, publication, and widespread distribution of simple, inexpensive guidelines which describe the approaches that have been successful in establishing and managing MPAs in various social and ecological situations (Kelleher and Kenchington 1992). This document does not attempt to address ecological theory and methodology. Detailed treatment of biophysical issues can be found in such publications as Salm and Clark 1984.
- The recruitment of working group leaders for the 18 coastal regions and one for the high seas and the establishment of regional working groups, consisting of scientists and managers, government and non-government people.
- The establishment of working groups in the countries of each region.
- The establishment and empowerment of networks of professionals and activists concerned with MPAs, to work with the working groups.
- The provision of assistance and encouragement to working groups in

their work.

Principles and Policies

The *Guidelines for Establishing Marine Protected Areas* are based on the following observations and principles which have been derived from experience from many coastal areas subject to human pressures. These principles apply specifically to MPAs, but they are relevant to any management system whose aim is ecologically sustainable development.

- The entire marine ecosystem under consideration and the mainland area that affects it should be treated as a single system, integrating ecological, social (including cultural), and economic issues. The area should be managed in accordance with the principles of Integrated Coastal Management (ICM).
- Commitment to the overall project from all major stakeholders will be necessary.
- Commitment will be achieved primarily through inculcating a sense of ownership among stakeholders by involving them meaningfully in education, planning, administration, research, monitoring, and enforcement.
- Identifiable benefits must flow to local communities from the project.
- Stakeholders include state and federal governments and their relevant agencies; local communities; traditional, recreational, and commercial fishers and their representative agencies; women's groups; church groups; and other NGOs.

agencies; women's groups; church groups; and other NGOs.

- All processes of decision-making, management and enforcement should be both "top-down" and "bottom-up."
- Scientists and managers must work together continually, not sporadically, if they are to learn to understand their respective "languages," capabilities, constraints, and incentives, and to work together in achieving scientifically sound solutions to the problems being addressed.
- A specific operational structure will be necessary to achieve integration. This structure and its operations should be designed to encourage trust among all of the stakeholders.
- The creation of new organisations should be minimised, consistent with achieving the primary goal.
- Existing legislation, organisations, and their resources should be used to the maximum extent practicable, rather than always seeking new legislation and organisations.

In almost every country in the world there is strong competition between the government agencies responsible for fisheries and those responsible for environmental protection. This is perhaps the greatest inhibition to progress in achieving successful MPA (or ICM) establishment and management. It is understandable in terms of human nature, and specific actions are necessary if

the destructive effects of this phenomenon are to be reduced.

In order to achieve cooperation between these important agencies, so that their complementary objectives (which can be summarised as focusing on biological productivity and biological diversity, respectively) can be achieved efficiently, it is desirable for MPA work to be carried out by working groups that are both interdisciplinary and interdepartmental, consisting of staff from both government departments, as well as research agencies and NGOs with relevant expertise and responsibilities. A system of rewarding scientists based on their contributions to sustainable development of a particular MPA or marine ecosystem and the associated mainland area should be developed to replace, at least partly, the traditional reward system based on published papers.

Where Are We Now?

In summary, considerable progress has been made towards achieving those elements of IUCN's primary goal referring to MPAs, but there is still a very long way to go. Thousands of MPAs have been established. Many more are proposed. Some are well-managed and some exist in theory only.

The coming into effect in 1994 of the Convention on Biological Diversity and the UN Convention on the Law of the Sea has established an international foundation for MPAs

energy apparent in this field that continues to increase, together with a general acceptance of some fundamental principles, such as the need for community “ownership” of MPAs, that give grounds for a degree of optimism.

In 1995, IUCN, the World Bank, and the Great Barrier Reef Marine Park Authority published *A Global Representative System of Marine Protected Areas* (Kelleher, Bleakley, and Wells 1995). This four-volume report identified the 18 major coastal marine biogeographic regions, divided the regions into their principal biogeographic zones, listed the existing MPAs in each country’s jurisdiction, identified the highest priorities for establishing new MPAs or for converting paper parks into effective MPAs, and proposed a series of actions considered necessary to achieve the primary goal stated above (which is not confined to MPAs).

Since then, progress has been highly variable. Some countries, such as Canada, have produced beautifully crafted systems plans, but have had limited success in implementing these, although significant progress seems imminent. Others, such as those in Southeast Asia and the Baltic, are moving with determination and commitment to involve local communities in establishing MPA systems that provide both ecological and economic benefits. Progress in some countries is such that the report is al-

ready out of date—a most desirable situation.

The Future

The IUCN MPA program is one of many being carried out or coordinated by different organisations around the world. It is deliberately structured to work in cooperation with other compatible programs rather than in competition with them.

The semi-hierarchical structure of the IUCN program is there only to achieve coordination, cooperation, and communication, and to facilitate assessment of progress and changing priorities. The hope is that there will continue to develop informal and formal networks of people with interest and relevant skills in all parts of the world, co-operating to achieve protection and sustainable use of the seas.

The *Global Representative System* report will require periodic revision. Whether this will result in publication of paper reports in the future remains to be determined. The current version is already available on the Internet through Australia’s Department of Environment Web site <www.environment.gov.au/portfolio/gbrmpa/mpa/regions.html> and its data are available from the World Conservation Monitoring Centre in Cambridge, England, on <www.wcmc.org.uk>. It is at least conceivable that paper versions will become largely unnecessary as electronic data access continues to increase globally.

We are considering revising *Guidelines for Establishing Marine Protected Areas* to take account of the experience in MPAs that has been gained in various parts of the world over the past seven years, and to improve their ease of use.

As the uniqueness of every ecosystem or habitat area becomes more apparent, we can expect that the goal of a fully representative system of MPAs will become more refined. There will always be scope and need for additional MPAs to represent ecological processes or features that are revealed by increasing scientific knowledge and understanding.

Conclusion

Most of the world's people live close to the sea, and depend greatly on its living resources. Coastal seas are being degraded through a combination of increasing human popula-

tion, the demand for more resources, destructive fishing practices, increasingly sophisticated fishing technology, the failure generally of conventional fishing management strategies, and pollution.

The ultimate solution to this worldwide problem probably lies in integrated ecosystem management, extending from the headwaters of watersheds to the edge of the continental shelf. Marine protected areas can serve as the core of such regimes, providing a buffer against failures in conventional management and against natural disasters.

The shift from top-down decision making to fully democratic processes involving all levels of community (top-down and bottom-up) is likely to be the key to achieving IUCN's primary goal of marine conservation and use.

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