World Commission on Protected Areas (WCPA)

Incorporating Marine Protected Areas into Integrated Coastal and Ocean Management: Principles and Guidelines

Charles Ehler, Biliana Cicin-Sain,
Stefano Belfiore (editors)

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Incorporating Marine Protected Areas into Integrated Coastal and Ocean Management: Principles and Guidelines

Edited by
Stefano Belfiore, Biliana Cicin-Sain, Charles Ehler

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FOREWORD

The 5th World Parks Congress (WPC), held in Durban, South Africa, in 2003, made an important contribution to fulfilling the global goal to establish "comprehensive, effectively managed, and ecologically representative national and regional systems of marine protected areas" by 2012. This goal, accepted by the World Summit on Sustainable Development in 2002, was accepted by the Convention on Biological Diversity in 1994. In its Message to the Convention on Biological Diversity, the WPC underscored that MPAs provide "benefits beyond boundaries" and thus are essential to conserving marine biodiversity:

> "In accordance with the principles embodied in the Ecosystem Approach, ensure that protected area systems are linked to, supported by, and integrated with efforts to conserve and sustainably use biological diversity across the broader landscape/seascape."

However, the World Conservation Monitoring Center notes that today only about 4,000 MPAs exist worldwide covering about half of one percent of the world's ocean surface. Most MPAs are very small and located in waters close to the shore. Many are not managed effectively.

The World Commission on Protected Areas, recognizing that comprehensive MPA networks must be integrated within a broader framework of ocean and coastal governance, has prepared these principles and guidelines as an essential tool for MPA management, network planning and coastal management.

During our preparations, including two workshops, nine case studies, and preparation of a background paper, we discovered that both the theory and the practice of MPA management has tended to emphasize the dynamics of governance and management of the MPA itself, while merely noting the importance of external factors linking the MPA to the broader coastal and marine area. Notwithstanding the widespread recognition of the connection between MPAs and other parts of the ocean and coastal zone, little work is found in the MPA literature identifying the ecological and social and economic linkages between MPAs and external areas, nor in examining alternative approaches for linking governance regimes in MPAs to broader coastal zone management in areas outside the MPAs.

Fortunately, we found that the management community, working with these issues on a daily basis, has begun to develop operational approaches to address these concerns. This publication, building on nine case studies, will assist MPA managers, system planners, coastal managers and other professionals in the coastal and marine area by underscoring good practices and providing guidance to maintain the linkages that bind MPAs, the wider coastal area, the development of governance arrangements, and the enhanced use of management tools.

With almost exponential growth in coastal and marine uses anticipated over the next decades, we must be certain that the "benefits beyond boundaries" remains a consistent management theme to achieve MPAs goals for conservation and sustainable use.

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Stefano Belfiore, Biliana Cicin-Sain, Charles Ehler

INTRODUCTION

Purpose of the principles and guidelines

These principles and guidelines are intended to promote better understanding and recognition of the linkages between marine and coastal protected areas (MPAs) and the wider coastal and marine area and the need to establish effective incentives and institutional arrangements to manage MPAs in the broader context of integrated coastal and ocean management (ICOM) frameworks. The guidelines also suggest ways to implement, in an enhanced way, existing management tools so as to improve the incorporation of MPAs into the planning and management of coastal and marine areas.

More specifically, the principles and guidelines address management issues related to: (1) the impacts of coastal and marine uses on MPAs; (2) raising awareness and political recognition of the role played by MPAs in the coastal and marine area; (3) the consideration of MPA interests in sectoral policies that have an influence on the coastal and marine area; (4) the representation of MPAs within the institutional arrangements for coastal and marine areas; and (5) and the assessment of the effectiveness of management of MPAs in the context of adaptive management.

This publication is primarily aimed at MPA managers to assist them in making appropriate linkages to the broader coastal and marine area in which any MPA is embedded. The principles and guidelines can also be useful to other actors in the coastal/marine area, in particular ICOM managers and policy makers and managers of coastal and marine biodiversity and habitats.

The principles and guidelines are meant to be implemented in conjunction with other guidance instruments developed by institutions concerned with the conservation of coastal and marine biodiversity and coastal and marine management. The principles and guidelines pay particular attention to the recent mandates emanating from: (1) the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, August 26 – September 4, 2002; (2) the recommendations of the 5th World Parks Congress (WPC), held in Durban, South Africa, on September 8-17, 2003; and (3) current work on coastal and marine management developed under the Convention on Biological Diversity (CBD).

This effort is considered particularly timely as the protection of coastal and marine biodiversity, in spite of the worldwide growth of MPAs, is achieving only limited results. This situation is due to, in particular, various human pressures impinging on MPAs by other uses of the coastal and marine area, the limited coordination among sectoral policies, and the absence of institutional arrangements to manage coastal and marine areas in an integrated way.

Background and context

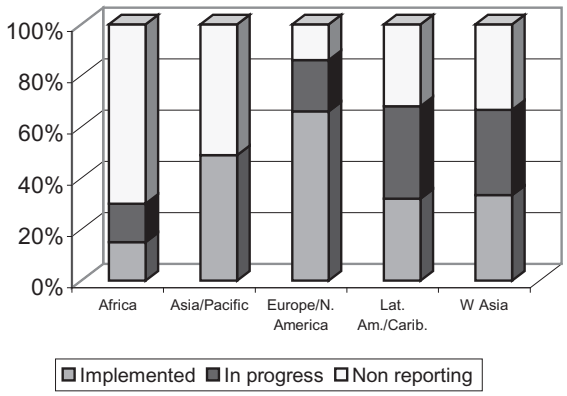
These principles and guidelines have been developed with the assistance of a group of experts convened by the World Commission on Protected Areas (WCPA) - Marine of the World Conservation Union (IUCN), in collaboration with the U.S. National Oceanic and Atmospheric Administration (NOAA) - National Ocean Service's International Program Office (NOS/IP). A group of experts met at an international workshop on "Linking Marine Protected Areas to Integrated Coastal and Ocean Management" held in Baltimore from July 12-14, 2003, in conjunction with the international conference "Coastal Zone 2003." They considered a background paper on *Linking Marine Protected Areas to Integrated Coastal and Ocean Management: A Review of Theory and Practice* (authored by Biliana Cicin-Sain and Stefano Belfiore) and eight presentations on the linkage between MPAs and ICOM in specific countries (Australia, Belize, Denmark-Germany-Netherlands, Kenya, Mexico, Philippines, Tanzania,

and the USA) and discussed general principles and guidelines in several working group sessions. A second workshop was held on September 10 at the 5th WPC in Durban. Following a preliminary draft of the principles and guidelines developed by the group of experts at the workshop, the current draft was prepared by the workshop Secretariat — provided by NOS/IP and the Gerard J. Mangone Center for Marine Policy (CMP), University of Delaware — and has been revised following discussions held at the 5th WPC. The editors of this effort are particularly grateful to the preparers of the case studies and the experts and practitioners who have reviewed the document, providing substantive comments, suggestions and additions.

The work leading to these principles and guidelines is framed within the activities of the WCPA-Marine and the series of guidelines for MPA managers developed by IUCN (in particular, Kelleher 1999 and Salm, Clark & Siirila. 2000) and is an output of the 5th WPC. The document relies on the approach recently suggested by the Ad Hoc Technical Expert Group on Coastal and Marine Biodiversity of the Convention on Biological Diversity (CBD 2003a and 2003b). This approach endorses ICOM as the most effective framework to address human impacts on MPAs (Ehler & Basta 1993) and suggests a system of interconnected, spatially-defined management regimes in the coastal area (cf. also CBD 2004 and see Appendices).

Integrated coastal and ocean management and marine protected areas

Today about 700 programs in integrated coastal management have been initiated around the world (Sorensen 2002). The number of countries adopting integrated coastal management programs in recent years has increased significantly, especially since the 1992 United Nations Conference on Environment and Development (UNCED). While in 1993 there were about 59 countries working on some form of ICOM, at national and/or local levels (Sorensen 1993), in 2000, the number of countries working on ICOM had reached 98 (Cicin-Sain et al. 2000). However, there are different patterns on ICOM dissemination, in different regions of the world, with major differences found in the scope of the efforts (involving the whole coastal zone or a small portion of it), the role of national and local governments, and the extent and importance of international funding. The country reports submitted to the United Nations Commission on Sustainable Development (CSD) for the 2002 World Summit on Sustainable Development (WSSD) — reports submitted by 53% of the countries of the world (100 countries out of 190) — show that overall 56% of the coastal countries (90 countries out of 161) report having implemented or moving forward with ICOM.



Percentage of countries, by region, reporting implementation or progress in ICOM (from UN/DESA 2002)

Over 4,000 MPAs have been established around the world (WCMC 2003), covering over 164 million ha or about 1.6 percent of the world's claimed exclusive economic zones. It is not possible to say how many of them can be considered operational. Most MPAs are very small and located in coastal areas, where the potential for increasing human impacts is the greatest. Many are not managed effectively. A wide variety of economic and social activities taking place in the coastal zone and the ocean interact with each other. Many of such coastal and sea uses, including activities further inland and upland can have significant impacts on coastal and ocean areas, thus affecting the functioning of MPAs. Therefore, the management of MPAs has to be conceived in the broader context of coastal, ocean, and watershed management, paying attention at their relationships with other uses of the coastal and marine area.

Protected areas												
Fragile ecosystems	+											
Material heritage	+	+										
Urban areas	x	x	+									
Road infrastructures	x	x	x	+								
Airports	x	x	x	x	+							
Ports	x	x	x	+	+	+						
Marinas	x	x	x	+	+	/	x					
Oil and gas pipelines	x	x	x	+	o	+	+	+				
Bathing	+	x				/	x	x				
Other recreational uses	+	x	+	+	+	x	/	+		x		
Defense installations	o	o	x	x	x	x	x	x	x	x	x	
+ = beneficial relationship; x = environmental conflict; / = organizational, locational, or visual conflict; o = neutral relationship	Protected areas	Fragile ecosystems	Material heritage	Urban areas	Road infrastructures	Airports	Ports	Marinas	Oil and gas pipelines	Bathing	Other recreational uses	Defense installations

A sample matrix showing beneficial and conflictual interactions among some coastal and marine uses

Coastal and sea uses are often characterized by conflicting interactions of environmental, spatial, organizational, or aesthetic nature. While multiple-use MPAs, particularly large-scale, are actually similar to local or small ICOM programs, the adoption of ICOM approaches encompassing the management of both conservation uses and development activities can provide a more robust framework to address the ecological and socioeconomic interrelationships among coastal areas, offshore areas, and watersheds.

Approaches for linking the governance of MPAs with the governance of larger ocean and coastal areas are suggested by work undertaken under the Convention on Biological Diversity. The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to the CBD has defined the elements that comprise a national system of marine and coastal protected areas incorporated into a broader framework for the sustainable use and management of marine and coastal areas (CBD 2003a and 2003b).

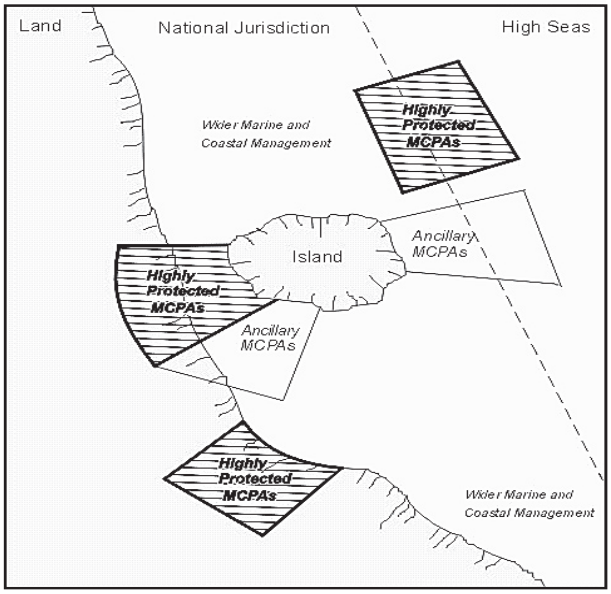
Such a system integrates biodiversity conservation goals with the need to allow sustainable uses and socioeconomic development in coastal and marine areas under the planning and management framework provided by integrated ocean and coastal management. The elements of the national system include:

a) In the primary network of highly protected marine and coastal areas extractive uses are prohibited and other significant human pressures are removed or minimized in order to ensure that the integrity, structure and functioning of the ecosystem is maintained or restored;

b) In the ancillary network of multiple-use marine and coastal protected areas human uses are managed for the joint purposes of biodiversity conservation and sustainable use and certain extractive use may be allowed;

c) A broader framework for integrated ocean and coastal management provides the planning and management context for coastal and sea uses, recognizing the linkages between coastal areas, the adjacent watersheds, and offshore zones.

The system: (a) relies on an area-based approach to the management of marine and coastal resources, (b) makes use of approaches, tools and techniques such as the ecosystem approach, zoning of coastal and marine uses, conflict resolution mechanisms and strategic environmental assessment, and (c) implies the existence of institutional and legal arrangements adequate to represent and reconcile different and often conflicting interests in the perspective of sustainable development.

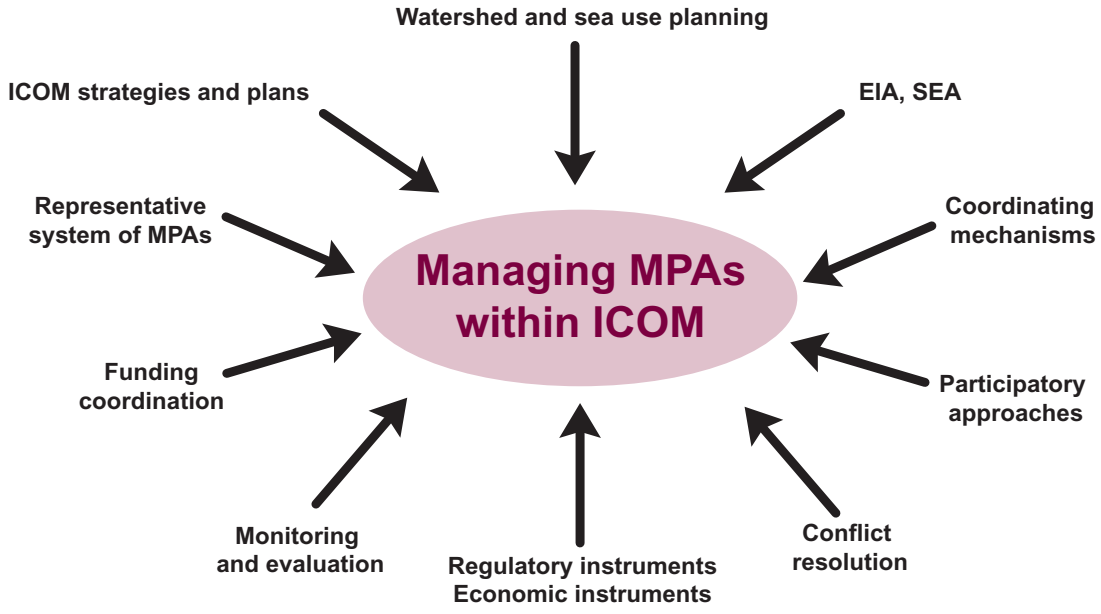


Elements of a marine and coastal biodiversity management framework (CBD 2003a)

To improve the incorporation of MPAs into a broader ICOM framework, a number of approaches and tools have been suggested in the context of the CBD and its Jakarta Mandate:

- Explore means to incorporate marine and coastal protected areas within a broader framework for multiple use planning (CBD 1995a, paragraph 11[c]):
  - Promote IMCAM (integrated marine and coastal area management) as the framework for addressing human impacts: encourage governments, communities, and users to develop and adopt integrated management measures including land/habitat use capability analysis and planning for multiple use, environmental sound land and coastal resource use practices based on the precautionary ecosystem management approaches and best management practices, sustainable tourism planning and management (paragraph 10[b])
- Promote IMCAM as the framework for addressing impacts of land-based activities on marine and coastal biodiversity (CBD 1995a):
  - Minimize or eliminate inputs of pollutants, in particular those arising from municipal waste, industrial effluents, deforestation, watershed degradation, unsustainable forms of agriculture
  - Identify methodologies and research to assess land-based impacts, in close cooperation with the implementation of the GPA [Global Programme of Action] for the Protection of the Marine Environment from Land-Based Activities
  - Consider the effectiveness of both area management and species management as tools to provide a balanced approach to use and conservation of coastal and marine biodiversity (paragraph 10[h]):
- Undertake and exchange information on demonstration projects as practical examples of IMCAM (CBD 1995b).

The figure below illustrates a variety of approaches and tools that might be needed to promote the incorporation of MPAs in broader ICOM frameworks.



A series of tools to manage MPAs in the context of ICOM

- Make use of ICM tools to improve MPA management (CBD 1995a):
  - Carry out EIA [environmental impact assessment] of all major coastal and marine development activities (paragraph 10[c])
  - Address socioeconomic needs of coastal communities (paragraph 10[d])
  - Promote rapid appraisal techniques (paragraph 10[e])
  - Address impacts of desludging and pollution by maritime vessels on marine and coastal biodiversity and adopt measures to mitigate adverse effects (paragraph 10[g])
- Crucial components of IMCAM are relevant sectoral activities, such as constructing and mining in coastal areas, mariculture, mangrove management, tourism, recreation, fishing practices, land-based activities, including watershed management (CBD 1995b, Annex I[ii])

PRINCIPLES AND GUIDELINES

Overview

The nine principles and guidelines presented in this document address three main categories:

A. The strengthening of the ecological and socio-economic linkages between MPAs and the wider coastal and marine area;

B. The development of governance arrangements to incorporate MPAs into the broader framework of ICM; and

C. The implementation and enhancement of specific approaches and tools for managing MPAs in the coastal/marine area.

The nine principles and related guidelines, therefore, are grouped into the above categories. For each principle, a rationale is provided along with a number of specific guidelines.

Considering linkages, a need and an opportunity exists to link the management of MPAs to the management of the entire coastal and marine area. On the one hand, the objectives of MPAs are compatible with many other uses of the coastal and marine area and provide important benefits. On the other hand, MPAs are subject to a variety of pressures from both adjacent lands and offshore areas that need to be addressed in an integrated way. Coastal and marine protected areas play an essential function in the coastal/marine area, by providing goods and services of high economic (e.g., tourism) and non-economic value. Among the latter are: (a) the conservation of biodiversity; (b) the protection of critical habitats; (c) increased productivity of fisheries through stock regeneration; (d) increased knowledge of the marine environment; (e) a refuge for, and protection of genetic diversity of, highly exploited species; and (f) protection of cultural heritage and diversity.

Considering the second dimension, *governance*, MPAs are essential to the sustainable development of coastal and marine areas and their interests should be incorporated fully into the institutional, legal and managerial arrangements for coastal and ocean management. This requires the improvement of coordination among different sectors as well as among different administrative levels dealing with, for example, watershed management, ocean management, fisheries, pollution control, public health, tourism, and maritime transportation.

Considering the third dimensions, the tools that can be used to improve the management of MPAs, performance measurement methods, such as the use of performance indicators, can help evaluate the quality of management and assess results of the MPA itself as well as of the integration of the MPA into an ICOM framework. Environmental, socioeconomic and governance performance indicators should be established in the MPA management plan, and routinely monitored through time in the phases of planning, design, implementation, monitoring, evaluation, communication, and adaptation of MPAs, used to evaluate successes and failures, shared with stakeholders for feedback, and used to adapt management objectives and strategies over time. This document includes lessons from good practices in the incorporation of MPAs into ICOM from the experience of case studies from different regions of the world.

Case Studies

Workshop at Coastal Zone 04 (Baltimore, July 12-14, 2004)

Great Barrier Reef, Australia (Sheriden Morris); Belize Barrier Reef (Leandra Cho-Ricketts); Wadden Sea, Netherlands-Germany-Denmark (Jens Enemark); Kenya (Tim McClanahan); Mexico; Philippines (Miriam Balgos), Tanzania (Jeremiah Daffa); and Florida Keys, USA (Brian Keller)

Workshop at World Parks Congress (Durban, September 10, 2004)

Great Barrier Reef, Australia (Andrew Skeat); Egypt; Wadden Sea (Jens Enemark); Philippines (Rose-Liza V. Eisma); South Pacific (Mary Power); Tanzania (Magnus Ngoile); and Florida Keys, USA (Margo Jackson)

Guiding principles

A. Strengthening linkages between MPAs and the wider coastal/marine area

Principle 1

Connectivity between the terrestrial and marine side of the coastal area and between MPAs and the surrounding coastal and marine area should be recognized and maintained. To this end, a good scientific understanding of the ecological, socioeconomic, and cultural linkages and connectivity between ecosystems and humans in the coastal zone has to be developed. This is essential for ensuring that management of MPAs and the wider coastal and marine area is well integrated.

Principle 2

MPA management should be based on the best available knowledge and information, and much of this information is relevant to, and should draw from, the basis of broader coastal and marine area management programs.

Principle 3

Successful integration of ICOM and MPAs depends on sustained management processes and programs that will produce perceived benefits and tangible outcomes that contribute to improved quality of life and ecosystem integrity.

B. Developing governance arrangements to incorporate MPAs into the broader framework of ICOM

Principle 4

Strengthened and more effective relationships – vertically and horizontally – are needed to allow appropriate stakeholder participation at every stage of development and implementation of MPAs, and to achieve adequate linkage of MPAs with ICOM institutional structures and planning processes.

Principle 5

MPA management should be an integral part of ICOM governance: in cases where no ICOM institutions have been put into place, MPA managers will need to relate to sectoral institutions concerned with watershed management, fisheries, tourism, maritime transportation, etc.

Principle 6

Planning of individual MPAs should be participatory and integrated within broader spatial management and economic and social development frameworks to ensure their sustainability and promote creation of functionally connected networks of MPAs.

C. Fostering implementation of MPAs through enhanced policy and management tools

Principle 7

Mobilizing adequate resources and capacity is essential for successful implementation, sustainability, and integration of MPA and ICOM programs.

Principle 8

The effectiveness of MPAs and their incorporation into ICOM frameworks has to be assessed through appropriate tools, guidelines, and trained personnel. Evaluation of MPAs should be conducted at the individual site, subnational, national, and regional levels.

Principle 9

Ecologically coherent networks of MPAs, including geological and oceanographic considerations, provide a spatial management tool to prioritize biodiversity conservation and ensure maintenance and enhancement of environmental goods and services, which are essential objectives of ICOM.

Principle 1

Connectivity between the terrestrial and the marine side of the coastal area and between MPAs and the surrounding coastal and marine area should be recognized and maintained. To this end, a sound scientific understanding of the ecological, socioeconomic, and cultural linkages and connectivity between ecosystems and humans in the coastal zone has to be developed. This is essential for ensuring that management of MPAs and the wider coastal and marine area is well integrated.

Understanding ecological, socioeconomic, cultural and institutional connectivity of MPAs and MPA networks to the broader coastal and marine area is essential to the credibility, support and success of MPAs and of ICOM. MPAs are often affected by activities carried out outside the established boundaries of the MPA, including discharges of pollutants from coastal watersheds, as well as marine uses in proximity of an MPA. Also, MPAs provide the broader coastal and marine area with a number of goods and services, including conservation of biodiversity; protection of critical habitats; increased productivity of fisheries through stock regeneration; increased knowledge of the marine environment; a refuge for, and protection of, genetic diversity; and protection of cultural heritage and diversity. In other instances, the restrictions of access to resources within MPAs may affect outside users who rely on such resources, such as seasonal fishermen, to the benefit of just a small portion of the population. All these environmental, socioeconomic, and cultural linkages between MPAs and the wider coastal and marine area and users have to be recognized fully and strengthened through appropriate institutional arrangements to ensure an equitable distribution of benefits.

Guidelines

1.1 *Identify the main issues associated with the connection between land-based activities and resulting conditions in the ocean, as well as ocean-based activities dependent on the quality of coastal land and resources, in particular biophysical processes and external ecological services (such as larval dispersal and transfer of nutrients) and threats affecting MPAs from both adjacent lands and ocean areas, prioritize the relative importance of such threats, and analyze cause-and-effect relationships for the identified issues and the wider coastal/marine area, watersheds, and airsheds (e.g., pollution, tourism, bycatch, over-extraction of species with stock depletion, habitat loss, and/or disrupting ecological processes).*

1.2 *Identify priority sites for the conservation of fisheries stocks, such as breeding, spawning and nursery areas for key fish species.*

1.3 *Identify socioeconomic processes that influence the management of the MPA and the relationship with the community of the broader coastal and marine area (e.g., trading and market processes, employment and income, human population dynamics, patterns of use of coastal and marine resources), to identify and rank shared issues.*

1.4 *Document and disseminate information on tourism, fisheries and other economic, scientific, ecosystem services, cultural values and benefits of MPAs for the broader coastal and marine area.*

1.5 *Identify historic, cultural and spiritual components associated with the MPA and the subsequent influence on the management of the MPA and broader coastal and marine area (e.g., spiritual connection and traditional understanding, particularly at the community level), with a view to ensure the protection of historic and cultural values together with biodiversity conservation and sustainable resource use.*

1.6 *Apply the ecosystem approach as a strategy for the integrated management of MPAs in the broader context of the equitable conservation and use of coastal and marine resources, recognizing the essential structure, processes and interactions among organisms, including humans, and their environment and paying particular attention to the maintenance of the connectivity between watersheds and coastal and marine areas.*

☞ On the Egyptian Red Sea coast, integrated marine and terrestrial MPAs are providing a unique opportunity to manage integrated ecosystems and control upstream and coastal impacts on the marine environment… (see page 17)

Principle 2

MPA management should be based on the best available knowledge and information, and much of this information is relevant to, and should draw from, the basis of broader coastal and marine area management programs.

Research and monitoring are essential tools in MPA management, and MPAs are often spaces where relatively rich information and knowledge exist. This information, however, is often not accessible to, or applied within, ICOM programs in the coastal and marine areas in which the MPAs are situated. It is also usually biased towards biophysical information about the MPA, with less emphasis on the socioeconomic and cultural aspects. Furthermore, research and monitoring programs for MPAs often do not focus on linkages between the MPA and adjacent coastal and marine areas, or exploit the opportunities that MPAs can provide as benchmarks of the state of coastal and marine environments.

Guidelines

2.1 *Establish a shared knowledge or information base of the socioeconomic and environmental conditions of the MPA and of the surrounding coastal and marine area, as a major tool for participatory planning and management processes. Develop a geographical (spatial) information base for the coastal area, which includes cultural and social information, places the MPA in its regional context, and allows for appropriate zoning and planning (e.g., GIS, biogeographic aspects, social development planning).*

2.2 *Establish a process to define research priorities in marine nature and fisheries conservation and improve and expand monitoring programs and their application to management decisionmaking in MPAs, also through the inclusion of results in the periodic state of the coast reports, and strengthen their integration in ICOM planning and management. Ensure that periodic analysis, synthesis and interpretation of data generated by monitoring programs occur; improve communication and dissemination of results of MPA monitoring programs to MPA managers, ICOM managers and coastal communities/public; develop and implement monitoring programs in MPAs to address issues or threats of broader relevance to coastal/marine management programs (e.g., water quality); develop and implement standardized monitoring protocols that allow comparison of environmental and socioeconomic conditions in MPAs with their state in the broader coastal/marine area (e.g., benchmarks, baselines). Methods developed should reflect, and be appropriate to, local capacity.*

2.3 *Facilitate information exchange between fisheries and conservation agencies so as to improve the coherence of policy objectives and related measures.*

2.4 *Involve interested and affected communities in information collection and knowledge gathering (research and monitoring), develop common understanding of the state of MPA values (social, economic, cultural, biophysical) among MPA managers and the broader public, and thereby promote acceptance of MPA management decisions (participative research and monitoring, "learning by doing," co-management).*

☞ In the Florida Keys National Marine Park, a robust scientific monitoring program is playing a critical role to improve adaptive management of MPAs over the long term... (see page 18)

Principle 3

Successful integration of ICOM and MPAs depends on sustained management processes and programs that will produce perceived benefits and tangible outcomes that contribute to improved quality of life and ecosystem integrity.

Awareness of the interactions between the management of an MPA and its surrounding physical and human environment help to identify opportunities and constraints for an integrated approach to MPAs and the wider coastal and marine area. Involvement of the public helps build general support for positive institutional, legislative, and regulatory changes. The creation of political will and an enabling environment to support MPA networks framed in the broader coastal and marine area will allow addressing local concerns in the context of regional and global pressures and the achievement of sustainable management solutions.

Guidelines

3.1 *Initiate and maintain an open dialogue, involving all the stakeholders, regarding the identification of threats and opportunities affecting the management of MPAs within the broader coastal and marine area.*

3.2 *Identify, quantify, and communicate achieved and potential specific socioeconomic and ecological benefits from the MPAs to target audiences.*

3.3 *Secure political commitment of the relevant government authorities in the preparatory and planning processes to ensure the viability of an integrated approach to managing MPAs in a broader context.*

☞ In Tanga, Tanzania, management of coastal resources and development activities has been effectively undertaken at the local level through community-based management... (see page 19)

Principle 4

Strengthened and more effective relationships — vertically and horizontally — are needed to achieve adequate linkages of MPAs with ICOM institutional structures and planning processes and allow appropriate stakeholder participation at every stage of development and implementation of MPAs. Where needed, institutions governing both MPAs and ICOM should be linked and harmonized to create, maintain, and enhance effective and efficient coastal and ocean management.

Fragmentation of jurisdictional, institutional, and legislative frameworks is one of the primary obstacles to the effective implementation of MPAs and ICOM. While not necessarily entailing the integration of different institutions, integrated management of coastal and marine areas, including MPAs, does require coordination and harmonization of policies, strategies, plans, programs, and projects. Therefore, it is essential that MPA managers and planners develop productive relationships with those that have a stake in the conservation and sustainable use of the MPA resources. Equally important, MPA managers need to be represented in ICOM institutions and processes that deal with issues that affect them. This may involve participation in meetings, hearings, and decision-making bodies on subjects that may sometimes appear to be remote from specific MPA management responsibilities.

Guidelines

4.1 *Institutions concerned with MPAs and ICOM should conduct institutional analyses of existing traditional, legal and policy frameworks; identify gaps and opportunities for better coordination; develop and use common terminology between sectors; and integrate capacity and strengths of all stakeholders to seek consensus on a common vision and goals through a transparent and participatory process.*

4.2 *MPA managers should develop close working relationships and professional networks with ICOM and watershed management institutions and processes that address important issues within their "catchment" area. This may involve collaborative management mechanisms and nontraditional alliances and reciprocal participation in ad hoc or permanent institutional mechanisms such as coordinating and management bodies, in order to effectively represent the interests of MPAs and regularly reinforce MPA objectives and their importance for integrated coastal and marine management and watershed management.*

4.3 *With a view to improve coordination, MPA managers should develop skills and have access to resources that permit them to resolve conflicts among stakeholder groups over MPA resources, and to effectively address, in collaboration with ICOM authorities, conflicts on issues beyond MPAs that affect the management success of the MPA.*

4.4 *MPA planners, managers, and their advocates need to have the skills and resources to influence policies and regulations at relevant levels of government, and to negotiate and sign agreements — including collaborative agreements — with key ICOM entities within and outside their MPAs.*

☞ In the Philippines, provinces have played an important facilitation-coordination-replication role in coastal management, helping municipalities and providing a conduit for national resources to reach municipal level initiatives… (see page 21)

Principle 5

MPA management should be an integral part of ICOM governance. In cases where no ICOM institutions have been put into place, MPA managers will need to relate to sectoral institutions concerned with watershed management, fisheries, tourism, maritime transportation, etc.

Marine conservation and biodiversity concerns, as well as environmental goods and services, should be integrated into larger coastal and marine management issues. MPAs can effectively contribute to the sustainable development of coastal and marine areas and their interests should be fully incorporated into the institutional, legal and managerial arrangements for coastal and ocean management. Therefore, MPA management should be linked with ICOM and to watershed management, so as to better secure the conservation and sustainable use of coastal and marine biodiversity.

Guidelines

5.1 *Cooperation among ICOM and MPA institutions should be sought through the establishment of interagency committees or working groups to address specific issues of coordination or harmonization of management actions relating to MPAs and other uses of coastal and marine areas, in particular, formal and informal coordination mechanisms for marine nature conservation and fisheries.*

5.2 *When no integrative institutional arrangements are in place, the task of coordinating with other sectors should be performed by MPA managers. When ICOM frameworks are not in place, MPAs should be "inclusive" of other sectors rather than "exclusive".*

5.3 *Establish strategic alliances or constituencies with other organizations or entities, including environmental representatives of international donors and large NGOs, to promote the consideration of MPAs into sectoral decision making.*

5.4 *Promote coordination of donor-supported MPAs through a programmatic approach to the management of the wider coastal and marine area.*

5.5 *Develop monitoring and evaluation programs to assess how well MPAs are doing at building wider relationships and influencing institutions and processes that affect their management objectives.*

☞ In Belize, planning for comprehensive networks of MPAs was included under an ICM initiative, thus acting as a tool for achieving ICM goals… (see page 23)

Principle 6

Planning of individual MPAs should be participatory and integrated within broader spatial management and economic and social development frameworks to ensure their sustainability and promote creation of functionally-connected networks of MPAs.

Participatory MPA planning needs to occur within larger spatial and governance contexts to make MPA objectives relevant to a broad stakeholder base and to ensure consistency with broader sustainable development priorities. It must also identify strategic linkages outside the MPA to mitigate negative externalities that threaten MPA effectiveness.

Guidelines

6.1 *In national planning and management efforts regarding coastal and marine areas (including 200-mile Exclusive Economic Zones), consider the establishment of networks of marine protected areas in the overall context of multiple use planning and management, to protect biological diversity, restore fish stocks, protect cultural, aesthetic, and recreational resources, and for other purposes.*

6.2 *Use MPAs and networks of MPAs in ICOM programs as core management areas and make use of key planning processes that address critical threats or root causes of problems, using tools such as integrated marine and land use planning.*

6.3 *Encourage information sharing on the integration of MPAs and ICOM; for example, prepare publications and web-based communications; conduct regular meetings among MPAs and ICOM managers, policy makers, and other stakeholders to foster information exchange and professional exchanges; and incorporate MPAs into ICOM training and education curriculum.*

6.4 *Integrate MPAs into a broader strategy for the coastal/marine area as a component of integrated coastal and marine planning and management, and of watershed planning and management, ensuring that the planning process is fully participatory and involving key stakeholders.*

6.5 *Offer financial incentives through ICOM framework programs for incorporation of biodiversity and MPA components in sectoral policies and plans affecting coastal and marine areas and make existing sectoral funding instruments subject to such considerations.*

6.6 *Designate a lead coordination authority for management of ICOM and MPAs and develop mechanisms for conflict resolution between MPAs and development objectives.*

☞ In the Wadden Sea, conservation policies designed for a complex marine protected area have been embedded into a broader spatial management framework… (see page 24)

Principle 7

Mobilizing adequate resources and capacity is essential for successful implementation, sustainability, and integration of MPA and ICOM programs.

People, facilities and funds are essential for proper and full implementation and plan and program sustainability. The management of MPAs can be financed through a combination of instruments, including government support, donor funding, and user fees and charges. Tourism fees and charges, and royalties and levies on commercial operators, in particular, can provide a source of revenue. Remittance of revenues at the central level and returning of a proportion to individual MPAs can contribute to ensuring a balance between commercial use and conservation management. Collaborative initiatives on financing between MPA and ICOM authorities can help avoid competition and mutually reinforce sustainability.

Guidelines

7.1 *Develop collaborative initiatives between MPAs and ICOM to avoid competition over scarce financial, technical, and human resources.*

7.2 *Strengthen ICOM regulatory and enforcement mechanisms, for example, environmental impact assessment, permitting processes, and strategic environmental assessment of all major coastal and marine development activities, including plans and programs likely to have impacts on MPAs, to support the special area management needs to protect marine biodiversity and increase compliance of MPAs, thereby decreasing enforcement costs for MPAs.*

7.3 *Realize that how an MPA is identified, designed, and developed can have significant impacts on long-term financing needs. An MPA that has the support of a wide spectrum of stakeholders from the beginning may require fewer resources for certain activities, such as enforcement, than those MPAs developed in relative isolation from those stakeholders.*

7.4 *Ensure the financial sustainability of MPAs through effective business planning, the development of appropriate revenue-generating mechanisms, including use fee systems, innovative financing for MPA operations that builds support for regular government funding in the long run, and cost-effective approaches as complementary components of the financing framework for ICOM.*

7.5 *To improve the integration of MPAs and ICOM and optimize resources, mechanisms for sharing personnel, infrastructure, equipment, and training activities could be devised.*

7.6 *Proactively engage donor agencies to influence their funding decisions both with respect to support for MPAs themselves and with respect to sustainable development priorities, processes, and projects within the wider watershed, coastal, and ocean areas.*

☞ In Samoa, methods for minimizing costs, generating revenue and sharing benefits of MPAs were developed at an early stage of MPA design and planning… (see page 25)

Principle 8

The effectiveness of MPAs and their incorporation into ICOM frameworks has to be assessed through appropriate tools, guidelines, and trained personnel. Evaluation should be conducted at the level of individual sites, subnational, national, and regional level.

Increasing threats on MPAs make it critical that their management be effective. As MPAs are connected into networks and incorporated into ICOM frameworks, it is essential that best practices and results from MPAs collectively accomplish the objectives of the network.

Guidelines

8.1 *In addressing the reduction and loss of coastal and marine biodiversity through MPAs, apply the precautionary principle by not postponing cost-effective conservation measures due to the lack of full scientific certainty.*

8.2 *Assess economic benefits that MPAs may deliver at the local, state or national level and link these to economic development plans at the appropriate level (ICOM plans, regional development plans, national development plans, etc). Identify opportunities for enhancing MPA benefits through synergies with ICOM plans and incentive systems, and vice versa.*

8.3 *Evaluate ecological and biophysical effects (e.g., through spatial analysis, connectivity analysis, environmental quality monitoring, etc.) that determine MPA integrity and function. Link this information to gap analysis in MPA network designation and identify intervention points at the level of ICOM planning (or higher) which may enhance positive effects or mitigate negative externalities beyond the control of MPAs.*

8.4 *Actively involve civil society and other key stakeholders in MPA planning and monitoring to define stakeholder interests, identify goals and objectives, and develop consensus on appropriate management measures that achieve social, environmental, and economic goals.*

8.5 *Establish systems of evaluation and implement adaptive management among MPAs. Refine specific indicators (biological, physical, social, economic, and institutional) for measuring MPAs effectiveness and their integration into ICOM frameworks and develop guidelines on how to apply them.*

☞ In Australia's Great Barrier Reef zoning has acted as a cornerstone of planning and management and coordination of actions across different jurisdictional arrangements… (see page 27)

Principle 9

Ecologically coherent networks of MPAs, including geological and oceanographic considerations, provide a spatial management tool to prioritize biodiversity conservation and ensure maintenance and enhancement of environmental goods and services, which are essential objectives of ICOM.

Scaling up of existing MPAs and ICOM initiatives can be limited by administrative boundaries, therefore, larger scale ecological coherence is required. To this end, it is important to establish MPAs and no-take areas that contribute to networks of national and international protected areas in accordance with a strategic approach that fills gaps and conserves priority marine conservation areas. The network must strategically link broad-area integrated coastal management with fully-protected areas and multiple use/sustainable-use areas.

Guidelines

9.1 *Assess ecological distribution and connectivity of diverse habitats and species as the base to build representative networks of MPAs.*

9.2 *Develop comprehensive criteria for determining priority areas, such as requirements for species and habitat at risk, endemic species and other critical habitats, areas supporting high diversity, migratory species or representative or unique species, and genetic resources that are scientific or economically important.*

9.3 *Identify representative and critical marine ecosystems that are protected and identify gaps in the protection system.*

9.4 *Where possible, establish networks of MPAs to account for ecological, social, and economic connectivity, using ICOM as a planning tool to prioritize MPAs and MPA networks on a larger scale and help individual MPAs achieve conservation goals.*

9.5 *Use international and regional conventions, protocols and programs concerning MPAs and ICOM to help develop and implement coherent networks.*

☞ In the Gulf of California an appropriate mix of social and legal strategies is being implemented to ensure the functioning of management systems to protect regional ecosystems….
(see page 29)

CASE EXAMPLES

Principle 1 MPAs: an effective tool for managing coastal and marine areas of the Egyptian Red Sea as single units

As a developing country, Egypt's coastal zone is facing a variety of difficult challenges. MPAs have proven to be one of the most effective means to manage the coastal zone in the Red Sea. Although a country with a relatively short experience with MPA management, Egypt has made outstanding progress in developing its own capacity to manage and plan MPAs. The effective management of MPAs has had an overall positive effect on the condition and outlook for the Red Sea's coastal zone.

The effectiveness in addressing issues related to MPAs stems from finding the best and most practical solutions that are most suited to local conditions, from the political, economic and social points of view. There are currently six MPAs or coastal/marine protected areas (PAs) in the Egyptian Red Sea.

The role of MPAs in coastal zone management in the Egyptian Red Sea. MPAs cannot be managed effectively in isolation from their surroundings in the coastal zone. There are several examples of how MPAs have successfully integrated coastal zone issues in the Egyptian Red Sea.

Establishment of a network of MPAs. Egypt has succeeded to a large extent in establishing a linked network of MPAs that serve as natural buffers between nodes of development. These not only serve as a spatial planning tool, but also as an important focal point for tourism in adjacent developed areas of the coast.

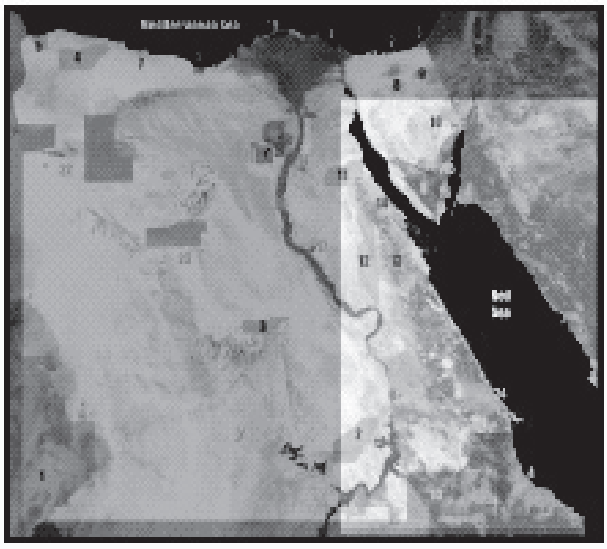
Establishment of integrated marine/terrestrial PAs. Marine/terrestrial PAs provide a unique opportunity to manage integrated ecosystems and control upstream and coastal impacts on the marine environment. There are five such PAs in the Egyptian Red Sea: Wadi El Gemal, Nabaq, Elba, Abu Galum and Ras Mohamed. Marine/terrestrial PAs managed as a single unit by a single management team

Managing the buffer zones. Adjacent zones (buffer zones) are legally recognized as an extension of a PA in Egypt. They are defined and managed by law as an integral part of the PA. Adjacent zones are areas outside a PA, which could have a significant influence on resources within the PA. They are defined and managed by the competent management authority (the Egyptian Environmental Affairs Agency - EEAA).

Examples of how MPAs can work. MPAs have shown to be an effective coastal planning, management and development tool in Egypt. Three examples provide compelling and contrasting results.

The Gulf of Aqaba. In the Gulf of Aqaba, MPAs were established early on in the 1980's and early 1990's, prior to the subsequent boom in coastal development. The MPAs were largely accepted by local stakeholders due to extensive consultations and interactions. Eventually MPAs proved to be an effective regional development planning tool and a pivotal resource base to the local tourism-based economy.

The Hurghada area. In contrast in the Hurghada area, the early absence of MPAs lead to substantive



Egypt's marine protected areas

damage to coastal resources, particularly coral reefs. Local stakeholders were not acquainted with the concept of conservation and were initially reluctant to adopt conservation measures. The current management of the situation is complex, requiring extensive mitigation measures.

The Southern Red Sea. Learning from the Gulf of Aqaba and Hurghada experiences, it was realized that conservation measures should be established early on in the southern Red Sea, before heavy development pressure takes place. The management strategy here integrates broad regional and specific PA plans and involves stakeholders early on to cultivate their support.

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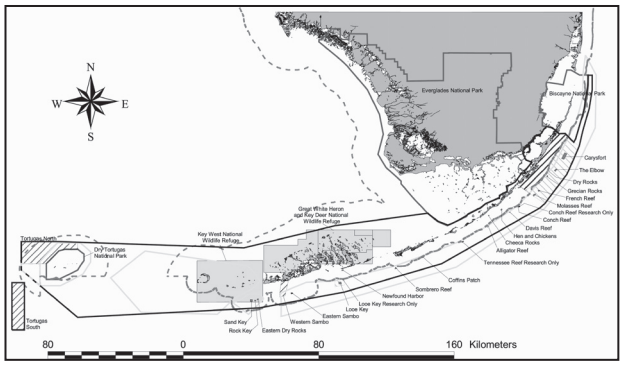
Principle 2 MPA management based on best-available knowledge and information: an example from the Florida Keys National Marine Sanctuary

The Florida Keys National Marine Sanctuary (FKNMS) in the United States is a 9,844-km^2 MPA that was designated in 1990. A comprehensive management plan was implemented in 1997 to protect and conserve marine resources in this nationally significant coral reef ecosystem. A key aspect of FKNMS management is multiple-use zoning, including a network of 24 fully protected marine zones (FPMZs; marine reserves).

The South Florida ecosystem covers 46,600 km^2, with diverse upland, wetland, and coastal habitats across the gently sloping landscape of the Everglades. Ever-increasing development, agriculture, and other human activities imperil the entire ecosystem. These threats led to the 1993 formation of the South Florida Ecosystem Restoration Initiative (SFERI). A primary objective of the SFERI is "getting the water right"



Florida Keys marine protected areas

after decades of diverting freshwater flows away from, rather than across, the Everglades. The Comprehensive Everglades Restoration Plan (CERP) was implemented in 2000 as part of the SFERI and will require more than 30 years to complete.

There are two monitoring programs in the FKNMS that: 1) examine changes associated with the FPMZs; and 2) monitor long-term status and trends Sanctuary-wide. The Marine Zone Monitoring Program has documented increases within FPMZs in the number and size of spiny lobster and certain reef fishes. Benthic species such as corals and sponges have not shown significant changes, possibly because the zoning plan was implemented relatively recently. No negative socioeconomic impacts of marine zoning have been determined.

Monitoring long-term status and trends focuses on water quality, seagrasses, and coral reef and hardbottom communities. A multivariate statistical procedure grouped 154 water quality stations according to similarities in 12 variables, and identified eight clusters of stations with distinct "signatures." There were significant trends in some variables between 1995 and 2000, which ended in 2001; such trends may come and go as data are added to the series. Seagrass monitoring has documented that seagrasses cover 80% of the FKNMS. Future sampling will elucidate temporal trends; seagrasses were lost completely at three of 30 fixed sites after strong storms in 1998 and 1999. There have been general Sanctuary-wide declines in stony coral species richness and cover, with overall mean cover dropping from approximately 12% in 1996 to 7.5% in 2002. Significant declines in coral cover occurred between 1997 and 1999,

associated with the mass coral-bleaching event of 1997-98 and strong storms in 1998. Coral cover was stable at 7.4-7.5% between 1999 and 2002 when there were no catastrophic events in the region (summary reports for all these projects are posted at http://floridakeys.noaa.gov/research_monitoring).

Results to-date indicate certain successes stemming from FKNMS marine zoning, particularly with regard to shifting food webs within FPMZs toward a more natural, unfished state. In preparation for downstream influences of CERP, multi-year baselines exist for water quality, seagrasses, and coral reefs. These data will be critical for using best available scientific information in adaptive management as the CERP and SFER Initiative proceed over the coming decades.

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Principle 3 Community participation and integrated approaches to raise capacity and achieve benefits from marine protected areas in Tanzania

The Tanzanian coastline runs approximately north-south and is dominated by three large offshore islands, those of Pemba, Unguja and Mafia. Among the countries of Eastern Africa, Tanzania has the greatest reef area equal

Tanzania's coastal regions

to 3,580 square kilometers (Spalding,et al 2001). There are fringing and patch reefs along much of the mainland coast and the offshore islands. The coastal population of Tanzania is about 23 percent of the national population and is mostly concentrated in the urban areas of Tanga, Zanzibar, Dar es Salaam and Mtwara. In the urban areas, rapid population growth, combined with poor management of the coastal area, has led to the rapid and extreme degradation of coral reefs, shoreline change, and deforestation. In the vicinity of high population areas, shallow reefs are almost completely destroyed. The large urban demand for resources from the coast also exerts pressure on the natural environment along the entire coast. For example, the urban demand for timber (poles for construction and charcoal for fuel), ornamental shells, coral for lime, lobster, crabs, octopus and all types of fish products is a driving force of growing resource exploitation in rural areas.

Concern with growing and cumulative threats to coastal and marine resources and degradation of the coastal environment led to the establishment of the Marine Parks and Reserves Unit (MPRU) in 1994 under the Ministry of Natural Resources and Tourism. MPRU has the mandate to establish marine protected areas of the Tanzania mainland to ensure their sustainable conservation. After the establishment of the MPRU,

Mafia Island Marine Park was gazetted in 1996. The Mnazi Bay-Ruvuma Estuary Marine Park was gazetted in 2000. There are also fishery management areas in the Tanga Region, managed collaboratively by local government and local communities. These were developed with the support of the Tanga Coastal Zone Conservation and Development Program (TCZCDP), with technical assistance from IUCN and funding from the Government of Ireland.

TCZCDP was established in 1994 to promote sustainable use of coastal resources in three districts: Pangani, Muheza, and Tanga Municipality and address critical coastal issues. When the programme started, low fish catches, destructive fishing practices (including dynamite fishing), and illegal mangrove cutting were the major threats. Through a participatory approach, six collaborative management areas have been delineated (Makoloweka et al. 2004). Each collaborative management area has a Collaborative Management Area Plan (CMAP), which is jointly implemented by the communities and the District Council. The plans include reef closures, enforcement, and monitoring. A reef team, comprised of villagers and district staff, monitors the impact of the reef closures. The information collected is fed back into the management process and used by the villagers to review and revise the plans. Since the TCZCDP started, dynamite fishing has declined significantly and coastal marine resources have recovered, much of this due to the CMAPs, demonstrating that management of coastal resources and development activities can be effectively undertaken at the local level. Some key lessons learned from the TCZCDP are:

- Collaborative fisheries management, with the inclusion of enforced no-take zones, can stabilize or improve the densities of commercial reef fish on both open and closed reefs, with higher densities in the closed reefs.
- Involving communities in the environmental monitoring program provide them with first-hand information of the impacts of their management interventions.
- The participatory establishment of closed reefs in Tanga encourages compliance and reduces the costs and needs for an extensive enforcement system.
- Conservation and management of coastal marine resources by local communities is an alternative to the traditional parks and reserves implemented by the central government through MPRU (Makoloweka, Kalombo, & Verheij 2004).

All local ICM programs in mainland Tanzania are supported by the National Integrated Coastal Management Strategy, which was adopted by Cabinet in 2002. The strategy stresses the need "to preserve, protect and develop the resources of Tanzania's coast for use by the people of today and for succeeding generations to ensure food security and to support economic growth" (United Republic of Tanzania 2003). One of the principles of the Strategy is that coastal development decisions should be consistent with the government's priority of poverty alleviation and food security. The Strategy offers an opportunity for the coordination of marine parks, conservation areas and reserves with a broader policy framework focused on the conservation of natural resources, on ensuring food security, and on supporting poverty alleviation and economic growth.

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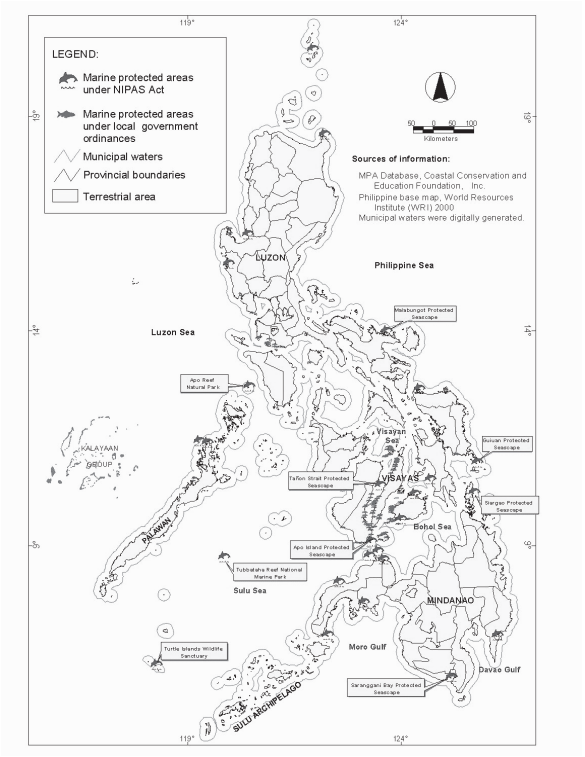
Principle 4 Strengthened vertical and horizontal relationships among stakeholders through broader coastal management initiatives in the Philippines



Philippines' marine protected areas (Licuanan & Gomez 2000)

Municipal-level coastal management in the Philippines began in the 1970s with the establishment of marine sanctuaries. Inspired by early successes, national government agencies, nongovernmental organizations, and academic institutions initiated coastal and marine conservation programs in municipalities, with marine sanctuaries and artificial reefs as the main management strategies. Coastal management initiatives were further strengthened with the adoption of the Philippine Local Government Code of 1991, which mandated the devolution of coastal resources management from national agencies to provincial and municipal governments. Since then, municipalities and provinces have been targeted as the implementing unit for national coastal management initiatives, which evolved into more integrated schemes, incorporating other sectors such as agriculture, forestry, and the tourism industry. Two recent national programs demonstrate this trend, the USAID-funded Coastal Resource Management Project (CRMP), which initiated a number of local coastal management pilot projects, and the World Bank-assisted community-based Resource Management Project, which provides direct funding to municipalities for use in locally-initiated resource management projects.

Coastal management and marine protected areas have gained popularity throughout the Philippines through a combination of national and local initiatives, creating a demand as the benefits of coastal management initiatives began to be felt by local stakeholders. A variety of promotional strategies were employed such as municipal officials' visits to other municipalities to learn or teach about marine protected areas and marine conservation.

In the devolution process, a transfer of matching resources has not accompanied the transfer of responsibilities. Thus, most municipal governments found themselves incapable of effectively carrying out their new functions. Furthermore, national initiatives are unable to provide adequate financial and technical assistance for coastal management implementation at the local level. Hence, a new approach identifies a role that provincial leadership can play in coastal management.

Borrowing from a successful program in the Province of Negros Oriental, the USAID Coastal Resource

Management Project initiated six provincial-level coastal management pilot projects in the Philippines. For each of these projects, coastal management working groups were established at the provincial-level. These groups were envisioned to become permanent units within environment and management offices as provided by a provincial environmental code. The activities of these units may be sustained by annual allocations from national economic development funds upon the endorsement of the provincial officials.

The main functions of the provincial coastal management units are to: 1) facilitate the formulation of a provincial coastal management plan in consultation with municipalities; 2) develop and implement a coordinating mechanism for coastal management in the province; 3) extend technical skills in coastal management planning, implementation and coastal law enforcement; 4) facilitate the expansion of municipal coastal management; 5) conduct environmental education and training; and 6) assist municipalities in monitoring and evaluating coastal management plans and programs.

The initial successes in these provinces point to a paradigm shift wherein provinces play an important facilitation-coordination-replication role in coastal management. Such a shift will help municipalities and cities improve their coastal management capabilities by providing a conduit for national resources to reach municipal level initiatives. It would also be a means of ensuring that national initiatives are effectively implemented at the local level while providing local information for national-level decision making. It will also play a key role in expanding coastal management in other communities such as inter-municipal collaborations for common goals and coastal resources.

In the absence of a national coastal management policy and overall coordinating body, the driving forces that push local governments to implement coastal management include:

1. Recognition and understanding of coastal and marine issues.
2. Recognized need to conserve the natural resource base for promising revenue-generating activities.
3. Perception of coastal management as a way to address poverty and a variety of coastal environmental issues.
4. Realization of the need to broaden the scope of existing marine fishery development programs to cover coastal management and environmental management.
5. Recognition that technical support is a critical success factor for sustaining coastal management initiatives in municipalities.
6. Growing political will at the local level for coastal management (DENR 2001).

These factors form part of a scenario characterized by a gradual development of conditions conducive to coastal management initiatives at the local level. These supporting conditions include the growing ability of stakeholders at various levels to carry out new roles and implement new technologies and the continuing support of academia, research institutions, NGOs, and provincial and regional offices of national organizations. The current institutional arrangement for coastal management will evolve into a more stable and effective framework authorized exclusively by national legislation, which is perceived as a factor that will improve the effectiveness and success of marine protected areas and coastal management in the Philippines (Balgos & Ricci 2002).

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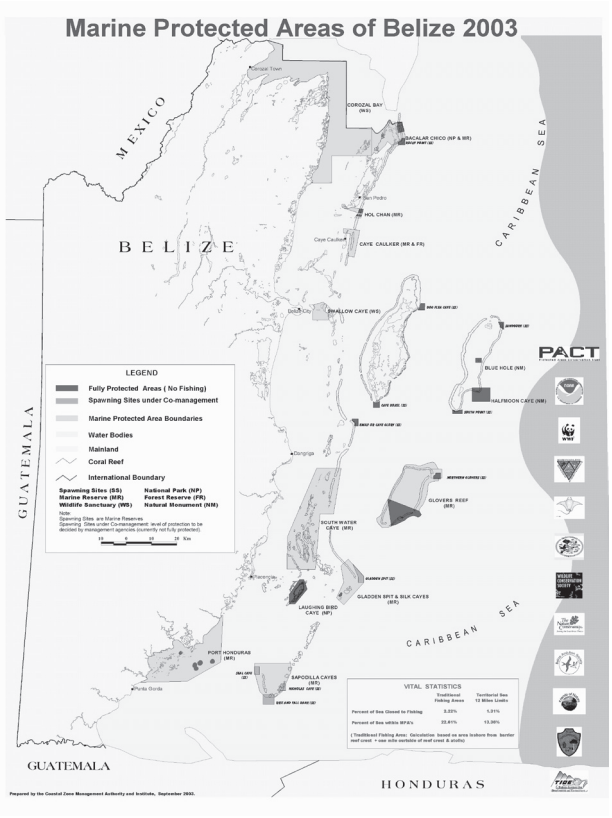
Principle 5 Marine protected areas: a tool for integrated coastal management In Belize—Belize Barrier Reef

In Belize, MPAs were initially envisioned as the means for management of the Belize Barrier Reef; however, since they did not take land-based influences into consideration, a wider approach of integrated coastal management (ICM) was chosen for coastal resource management. Under this new strategy for resource



Belize's marine protected areas

management, the current fourteen MPAs are treated as tools for achieving ICM, and therefore planning for a comprehensive network of MPAs was included under the ICM initiative. The 1998 CZM Act and the 2002 ICZM Strategy include provisions for the planning, designation and management of MPAs as a means of ensuring biodiversity protection and sustainable management of the coastal resources.

The most successful outcome from the MPA program in Belize has been increased economic benefits to local communities through development of eco-tourism in these areas and the provision of alternative livelihoods for displaced fishers. In addition, increases in stocks of commercially valuable species have been proven for properly managed no-take MPAs, such as the Hol Chan Marine Reserve and the Glovers Reef Marine Reserve. The MPA program has developed the interest and ownership of local communities for coastal resource management with development of community-based organizations such as Friends of Nature, which currently co-manage the Laughing Bird Caye National Park and the Toledo Association for Sustainable Tourism and Empowerment, which co-manages the Sapodilla Cayes Marine Reserve. There have been

negative side effects, however, through the creation of perceptions by fishers that MPAs are for enhancement of tourism only. This can be addressed through targeted education programs on MPAs and their functions and benefits to local communities.

Under the coastal planning program identified in the ICZM Strategy, the coastal regions of Belize have been zoned based on geographic and social boundaries and uses within them, inclusive of MPAs. There has been an ongoing pilot study in one of the planning regions —the Caye Caulker Coastal Planning Region—, to link development suitability with marine protected area management in that area. The proposed zoning for the MPA incorporates the recommendations within the planning guidelines for Caye Caulker. GIS databases highlight the zones of influence of both MPA and ICM planning and considerations for both are included when making decisions on environmental impact assessments. The MPA program is also linked to the ICM program through governance arrangements. The members of the MPA Advisory Committee are often the same players on the Coastal Advisory Committees and even on the CZM Advisory Council; this arrangement ensures that activities will be integrated, thereby minimizing conflicts through the involvement of stakeholders from the bottom up, particularly as the MPA program is included as a component of the wider ICM program.

The challenge ahead for Belize is to create a comprehensive ICM program that incorporates land-based activities, watershed issues and ocean governance under a sustainable financing system of environmental charges. Parallel to this and equally important is the need for a national policy for MPAs to create a functioning network and a system of financing for MPAs either as a part of the greater ICM financing or as a sub-component. There must be continued efforts for improved coordination for ICM and devolution of management for Marine Protected Areas to include local communities in the management of their resources. These are the major goals that must be achieved within the next ten years for the long-term success of Integrated Coastal Management in Belize.

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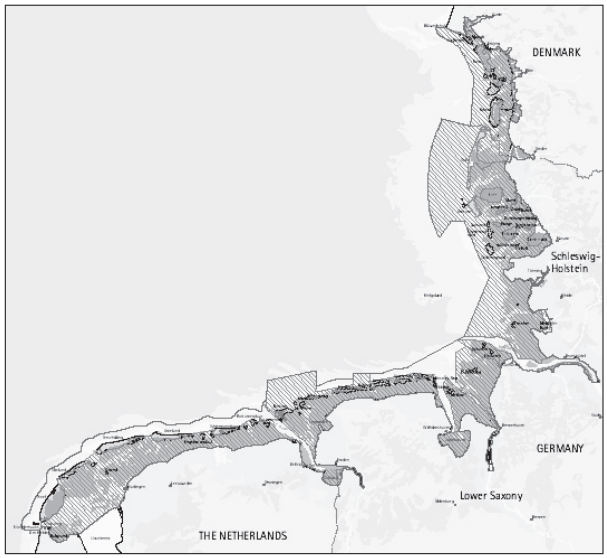
Principle 6 Wadden Sea: protecting and managing a worldwide unique marine ecosystem — with the region, for the world

The Wadden Sea is Europe's largest and most important marine intertidal wetland. It is a marine area of outstanding international importance shared by Denmark, Germany and the Netherlands. Its exceptionality relates to its extensiveness, complexity and interrelationship of habitats and species and its high biomass productivity, which provides the foundation for an abundance of species. The Wadden Sea Area covers an area of roughly 15,000 km^2 of which almost 12,000 km^2 is subject to strict conservation through national parks and nature reserves. Furthermore the large majority of the Wadden Sea Area is subject to protection by the European Union Habitats and Birds Directives, the Ramsar Convention and the other international agreements. Recently the Wadden Sea was designated as the world's 5th Particularly Sensitive Sea



The Wadden Sea area

Area in the framework of the International Maritime Organization (IMO).

The protection and management of the Wadden Sea is embedded in a comprehensive spatial and sectoral planning framework on practically every level of government. This approach underpins the conservation policy for the Wadden Sea to achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way. The Wadden Sea Region is, however, characterized by having a weak economic and social development with lower economic growth rates and higher unemployment rates than the average rates for the Wadden Sea countries. Since the introduction of Wadden Sea protection schemes, stakeholders have considered these potentially constraining economic developments in the region. It has also been widely felt that the management principles and the targets were pointed at protecting the environment without taking due account of the people living and working in the region. A Trilateral Wadden Sea Forum of all economic and environmental stakeholders, local and regional governments was therefore established by the three governments in 2002. The task of the Wadden Sea Forum is to develop new and improved socio-economic perspectives for the Wadden Sea Region, which are compatible with the national and international standards for protection of nature and the environment of the Wadden Sea.

Though the Wadden Sea Forum is scheduled to deliver its results by 2005, the work to date has been very positive. It has brought about a better mutual understanding of the issues with regard to the conservation and management of a complex marine protected area. It has underlined that the Wadden Sea protected area needs to embedded within a broader spatial management in order to be able to address the issues, such as water management and harbor developments, which relate to the management of the area. And the articulation of new social and economic perspectives is necessary to maintain and enhance a sustainable regional economy within which there is an environment supporting the protected area.

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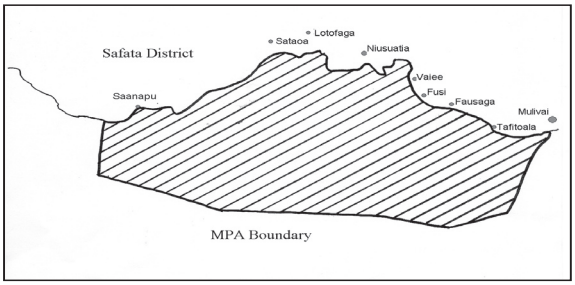
Principle 7 Money alone does not buy success — time and commitment are equally essential elements for success in community-based MPA and ICAM activities: the Aleipata and Safata MPA experience in Samoa

Safata MPA's vision

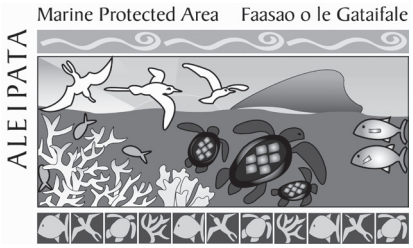
Safata's marine environment is critical to our way of life. We commit to taking care of our marine environment and establishing a solid foundation for our Marine Protected Area, which we hope will both sustain and bring new opportunities for our people and future generations.

Safata MPA's boundaries



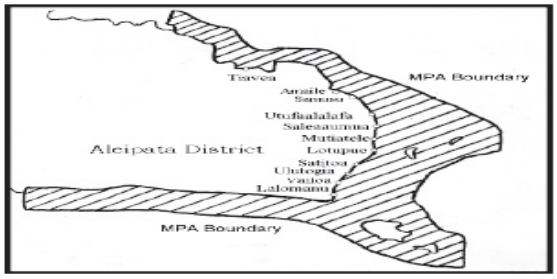
Our Safata MPA consists of all the following nine participating villages, Mulivai, Tafitoala, Fausaga, Fusi, Vaiee, Nuusuatia, Lotofaga, Sataoa and Saanapu. The boundaries of the Safata Marine Protected Area extend from Le Niu at Saanapu in the West and end at Ava o le Fua at Mulivai in the East. It extends from the high water mark to one mile from the reef drop-off and includes the Aau Gasese submerged reef.

Aleipata MPA's vision



Our marine environment is a gift from God to the people of Aleipata. We declare our commitment to working together to conserve our marine resources so that they may be used wisely and can provide new opportunities to sustain the way of life of Aleipata's people now and for future generations.

Aleipata MPA's boundaries



The boundaries of the Aleipata Marine Protected Area begin from Utuele Headland at Tiavea in the north and end at Nonoa at Lalomanu in the south. The boundary also includes the area from the high water mark to half mile seaward from the reef dropoff and includes the offshore islands (Nuutele and Nuulua). The inshore islands of Namua and Faanutapu are also included.

Samoan culture revolves around the *aiga* or extended family. Village control is through a group of elders or *matai*. Local people depend heavily on marine fishery resources for food and income. The communities at Aleipata and Safata are deeply concerned about the current and future status of the marine environment and are aware of the strong link between the health of this environment and the economic and social benefits they produce. Although national law declares coastal areas belong to the state, local communities throughout Samoa perceive that they have customary tenure over coastal marine areas and exercise their traditional rights with recognition from the government. Specific environmental problems addressed by the project include:

- Unsustainable fisheries resource use and associated impacts of destructive fishing techniques.
- Unsustainable coastal and associated land use practices, e.g., sand mining, and waste disposal.
- Impacts from tourism development and unsustainable tourism development as part of alternative income generation.
- Rare and threatened species conservation.

The overall purpose of the project is to assist Aleipata and Safata to establish community-based, multi-use marine protected areas in each District that incorporate existing fisheries reserves into a wider integrated coastal management framework:

- To provide for the protection and sustainable use of threatened coastal marine biodiversity in Samoa.
- To empower local communities at the Aleipata and Safata Districts to protect and manage coastal marine biological diversity effectively and help them achieve sustainable use of marine resources.

The initiative has two phases and is funded over two years:

- Phase 1: Management Planning: (a) Prepare

MPA Management Plan; (b) Design alternative income generation (AIG) Activities; and (c) Strengthen Capacity and Build Environmental Awareness.

– Phase 2: Management Implementation: (a) Implement MPA Management Plan; (b) Implement AIG Activities; and (c) Strengthen Capacity and Build Environmental Awareness.

The project design, although describing a participatory community-based approach, did not take into consideration the time and human resources required for such processes to take place. As a result, the project activities and budget necessary to ensure full village participation were not anticipated or properly defined. The consultation process took much longer than considered in the initial project design and is affected the project implementation schedule and budget. However, it was considered essential to take this time to ensure commitment to project implementation and to MPA management beyond the life of the project by the respective communities.

Lessons show that in order to be sustainable, MPAs will need to be able to pay for their own costs, or else be guaranteed continued government support, which is unlikely. The Project Team has recognized that methods for minimizing costs, generating revenue and sharing costs and benefits need to be developed as soon as possible, and has made good progress towards the establishment of a savings account, a Trust Fund, and funding arrangements with tour operators. The management of both MPAs needs to be institutionalized through incorporated societies or NGOs in their own right in order to function effectively. Furthermore the MPA District Centers and associated equipment (furnishings, vehicle, boat, field equipment) represent a core and vital resource base on which the post-project success of the MPAs will heavily depend.

The need to improve the collaboration and coordination of key stakeholders in this project has been recognized since the inception of the project. Considerable progress has been made and the level of collaboration is continually rising. This improvement is valuable, not only in reducing the cost and increasing the effectiveness of the project in achieving its aims, but in contributing to efficiency in other, related projects and operations in the regions of the MPAs.

A key concern expressed by the Project team is the need to build the capacity of District Officers and Committee members on extension training, facilitation skills, ecological and socio-economic monitoring, financial management and general principles of project management (training the trainers).

The use of traditional rules and formal legislation has proved effective. Traditional law, encapsulated in village by-laws, is enforced at the community level to deal with infringements from within community. Infringements by outsiders can be dealt with under national fisheries legislation that gives formal recognition to village by-laws thereby removing the potential for intra-community conflict.

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Principle 8 Great Barrier Reef Marine Park: evaluation of the effectiveness of the MPA zoning and catchment initiatives in an integrated coastal and ocean management system

The Great Barrier Reef Marine Park (the Marine Park) was established in 1975 with a view to protecting the natural qualities of the Great Barrier Reef (The Reef), while providing for reasonable use, economic development and integrated management of the Reef Region. The Marine Park is the largest World Heritage site, covering an area of 345,000 km^2 and extending

over 2,000 km along the Queensland coast. The Reef holds unique and rich ecosystems and it is one of Australia's main tourist destinations, with marine tourism contributing $4.25 billion annually to the national economy. The Marine Park also supports a $250-million commercial fishery and a large recreational boating and fishing sector. Predominant land uses in the catchment comprise beef grazing, cropping, coastal development, aquaculture, harbours, heavy industry and urban centres (Figure 1).

Since its declaration in 1975, the Marine Park has provided different levels of protection for different areas and broad-scale habitats. A variety of management tools (e.g. zoning plans, permits, management plans, public education), and collaboration with catchment and fisheries management agencies, have been used to help achieve ecological protection and other management objectives. A multiple-use zoning approach has provided high levels of protection for specific areas while allowing reasonable activities, such as tourism, fishing, boating, diving and research to occur in other zones, and separate conflicting uses.

About 16,000 km^2 of the Marine Park is currently zoned as 'no take' areas (National Park Zones - 4.57%), and there are some very small 'no-go' areas (Preservation Zones – 0.13%). The no-take and no-go areas equate to only 4.7% of the Marine Park and the location of these zones reflects an historical focus on coral reefs and more remote 'pristine' areas.

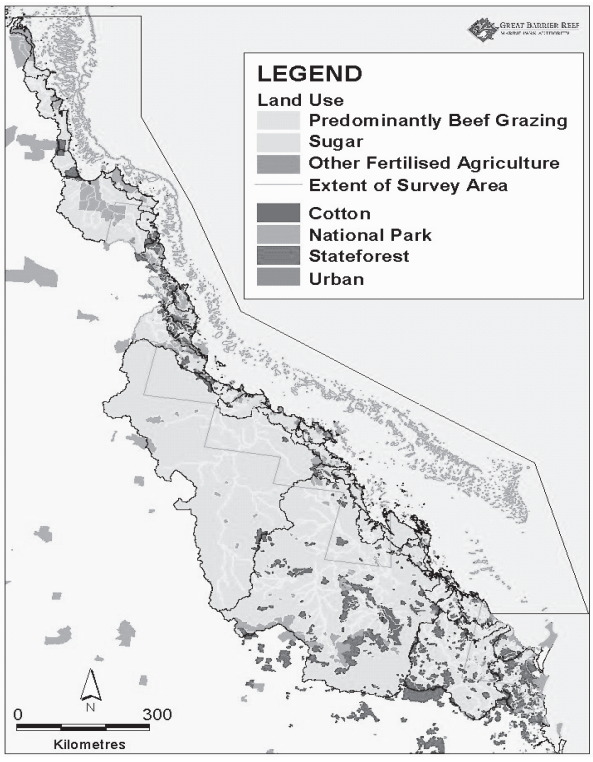

Figure 1. GBRMP and catchment land use

Since the first Marine Park zoning plan was prepared in 1981, zoning has been widely regarded as the cornerstone of Marine Park planning and management. The strategy is based on the premise that broad-area integrated network of zones within a large marine protected area is more effective than a series of small isolated highly-protected areas within a broader unmanaged area because it recognises temporal/spatial scales at which systems operate and ensures the entire Marine Park remains viable as a functioning ecosystem; and practically, it is easier to manage as it buffers the impacts of activities in areas adjacent to highly protected 'core' areas.

However, a review of the operations of the zoning arrangements for the first 20 years highlighted the fact that most of the highly-protected areas were focussed on coral reefs and that many habitats had minimal protection. The Representative Areas Program (RAP) currently being developed by the Great Barrier Reef Marine Park Authority (GBRMPA) arose from an increasing awareness of the value of an ecosystem-approach to management and the interconnection between the wide range of habitats, species and communities that exists in the Reef.

Using 70 distinct habitat types (bioregions) across the Marine Park, the RAP sought to protect a minimum of 20% of each bioregion within 'no-take' areas. These known habitat and community types should conserve examples of most species together with the habitats and ecological processes upon which they depend. The revised Zoning Plan provides protection for 33.3% of the Marine Park in 'no-take' zones (Figure 2).

Has zoning successfully protected the values of the Reef? Only partially. There is increasing evidence that run-off from the catchment is damaging inshore areas. Since European settlement, nitrogen input to the Reef Lagoon has at least doubled and phosphorus input has increased more than three fold. As a response

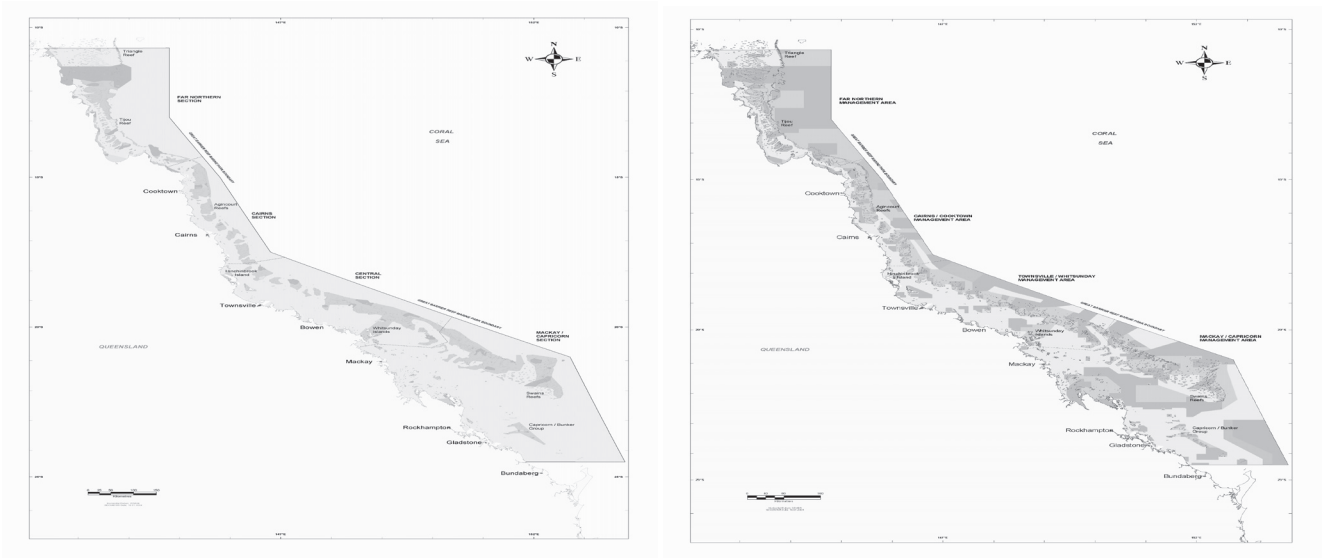

Figure 2. Current and revised Zoning Plan for off shore waters of the Great Barrier Reef Marine Park

to this declining water quality, in December 2003 the Queensland and Australian governments jointly released the Reef Water Quality Protection Plan (the Reef Plan) for catchments adjacent to the Marine Park. The overriding goal of the Reef Plan is "halting and reversing the decline in water quality entering the Reef within 10 years". This goal will be achieved through two main objectives:

1. Reduce the load of pollutants from diffuse sources in the water entering the Reef; and

2. Rehabilitate and conserve areas of the Reef catchment that have a role in removing water borne pollutants.

Implementation of the Reef Plan will require focusing resources to successfully instigate change in land management practices. Coordination of actions across the complex jurisdictional arrangements of the Reef and Reef catchment will also be a significant challenge. Effective monitoring and auditing against defined milestones is essential for assessing the success of the Reef Plan. The Reef Plan utilized a range of tools including economic incentives, planning mechanisms, partnerships, regulation, education and extension to bring about significant change. While both these programs are critical for maintaining biodiversity and halting declining water quality, independently they cannot ensure the ecological integrity of the Reef. Such integrated management requires that both programs occur concurrently, and demonstrates how effective protection of a large multipurpose Marine Park requires complementarity with adjacent land management objectives to achieve integrated coastal and ocean management.

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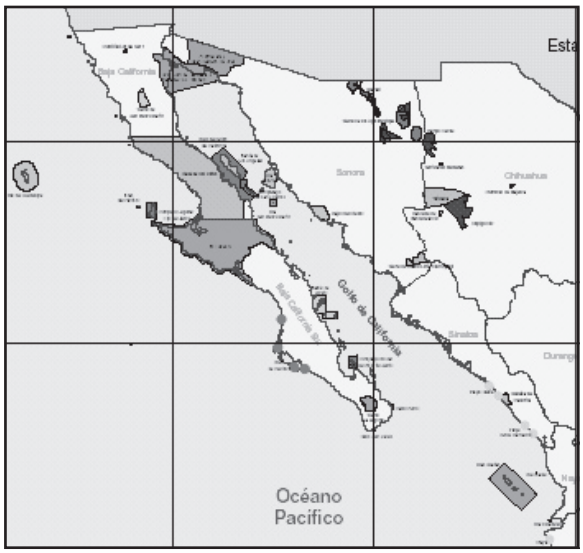
Principle 9 Identifying specially important areas for coastal and marine biodiversity conservation in Mexico's Gulf of California and southern Californian Pacific regions

Mexico's Northwest coast encompasses the states of Baja California, Baja California Sur, Sonora, Sinaloa, Nayarit and a small portion of northern Jalisco, thus representing a land and sea use planning challenge of significant complexity. The area's diversified economy



Regional map with existing and proposed protected areas. (Other specially important areas for coastal and marine biodiversity conservation not mapped)

includes the country's most productive fisheries with over 50% of the total catch, the most important irrigated croplands and aquaculture enterprises in Sonora and Sinaloa and tourism developments like Los Cabos, Puerto Vallarta, Mazatlán and La Paz.

The Gulf of California is one of the world's most unique coastal and marine ecosystem. Along with the Southern Californian Pacific, their highly productive waters provide a contrast with the stark beauty and harshness of Baja California Peninsula's surrounding desert ecosystems. Although only 0.008 percent of the world's oceans, over millions of years the Gulf has functioned as a gigantic trap, that collected and sheltered a myriad of tropical organisms in their northward range migration. This explains in part, its high biodiversity and level of endemism. It contains 34 species of cetaceans (one third of the world's total, one of them endemic), 745 species of fish, 4,848 known species of marine macro-invertebrates, including the Eastern Pacific's northernmost coral reefs and 626 forms of macro algae. The Gulf further supports important sea turtle populations and about 170 species of sea and shore bird species, providing them with nesting sites and a migratory corridor. On the western side of the Baja Peninsula, the cold California Current acts as a gigantic nutrient conveyor. This explains the high productivity of the Southern Californian Pacific waters, which shelter the southernmost expansion of many cold water species. The challenge is, how to keep the coast and waters of this amazing area as a functioning ecosystem, guaranteeing its unique biodiversity, while providing sustainable economic developing opportunities for Mexicans throughout the region.

To address this challenge The Gulf of California Sustainability Coalition was created. "The Coalition" assembles a diverse group of local, national and international conservation NGOs, academic institutions and government conservation agencies, all striving towards a common goal. On 2001, "The Coalition" convened over 180 regional, national and international experts to a workshop in Mazatlán, assigning them the task of identifying, analyzing and defining, those places of importance due to their biodiversity and the threats that jeopardize their existence. Further work was carried out by scientists using a target based site identification methodology, in order to define the optimal distribution of areas needed to conserve the Gulf's reef fish. All this information was then reanalyzed in relation to shrimp trawling areas and current fisheries regulations to define a set of "Specially Important Areas for Coastal and Marine Biodiversity Conservation" for the Gulf of California and the Southern Californian Pacific.

Specially Important Areas for Coastal and Marine Biodiversity Conservation, represent a limited area of a region's territory, where a set of different protection strategies need to be implemented to maintain a functioning regional ecosystem. These strategies can sometimes include legal protection such as: improvement of existing protected area management capacity, consolidation of legal protection regimes or gaining legal protection status, and/or social protection strategies through: private protection mechanisms or community coastal resources management schemes. Defining a specific mix of social and legal strategies that will provide optimal results for each "Specially Important Area" represents the next challenge. Two environmental policy instruments: protected areas and ecological zoning programs (OET), are being used to provide a framework for ICM implementation in Mexico. While the technical component of the Sea of Cortez OET has been basically completed and

proposals for new protected areas in the region are being negotiated, the political and consensus building process is currently being blocked by industrial fisheries interests, who publicly state their opinion that all fisheries are going to be banned and the Gulf turned into a marine sanctuary. Having a map of priority areas at hand has proven to be an invaluable aid, while at the same time it has generated suspicion and opposition of sectors that want to preserve the status quo, and have resisted all efforts to get involved in the process. To be successful in a challenge of this magnitude requires important contributions from stakeholders all across the board.

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APPENDICES

Glossary

Marine protected area (MPA)

"Any area of the intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment." (IUCN 1988)

Coastal zone

"The coastal zone may be defined as the areas where land and sea interact with its landward boundary defined by the limits of ocean influence on the land, and the seaward limit being the limit of influence of land and freshwater on the coastal ocean." (IUCN 1993)

Ecosystem approach

"The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Thus, the application of the ecosystem approach will help to reach a balance of the three objectives of the Convention: conservation; sustainable use; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources." (CBD 2000)

Integrated coastal and ocean management (ICOM)

"Integrated coastal management can be defined as a continuous and dynamic process by which decisions are taken for the sustainable use, development, and protection of coastal and marine areas and resources. ICOM acknowledges the interrelationships that exist among coastal and ocean uses and the environments they potentially affect, and is designed to overcome the fragmentation inherent in the sectoral management approach. ICOM is multi-purpose oriented, it analyzes and addresses implications of development, conflicting uses, and interrelationships between physical processes and human activities, and it promotes linkages and harmonization among sectoral coastal and ocean activities." (Cicin-Sain & Knecht 1998)

Reference texts

The main provisions concerning the incorporation of MPAs into an ICM framework can be found in a number of documents, among which:

- Recommendation I/8 of the Subsidiary Body on Scientific, Technical and Technological Advise to the Convention on Biological Diversity (1995)
- Decision II/10 ("Jakarta Mandate") of the Conference of the Parties to the Convention on Biological Diversity (1995)
- Plan of Implementation of the World Summit on Sustainable Development (2002)
- Technical Advice on the Establishment and Management of a National System of Marine and Coastal Protected Areas of the Subsidiary Body on Scientific, Technical and Technological Advise to the Convention on Biological Diversity (2003)
- Recommendation 22 of the 5th World Parks Congress (2003)

The relevant policies, processes, and tools suggested for the incorporation of MPAs into ICM frameworks are summarized in the background paper on *Linking Marine Protected Areas to Integrated Coastal and Ocean Management: A Review of Theory and Practice*.

The principles and guidelines follow closely the recommendations of the WSSD Plan of Implementation for oceans, coasts and biodiversity, in particular paragraph 32, noted below:

In accordance with chapter 17 of Agenda 21,

promote the conservation and management of the oceans through actions at all levels, giving due regard to the relevant international instruments to:

(a) Maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction;

(b) Implement the work programme arising from the Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity of the Convention on Biological Diversity, including through the urgent mobilization of financial resources and technological assistance and the development of human and institutional capacity, particularly in developing countries;

(c) Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds and periods, proper coastal land use; and watershed planning and the integration of marine and coastal areas management into key sectors;

(d) Develop national, regional and international programmes for halting the loss of marine biodiversity, including in coral reefs and wetlands;

(e) Implement the Ramsar Convention, including its joint work programme with the Convention on Biological Diversity, and the programme of action called for by the International Coral Reef Initiative to strengthen joint management plans and international networking for wetland ecosystems in coastal zones, including coral reefs, mangroves, seaweed beds and tidal mud flats.

Numerous other provisions apply to the integrated management of oceans and coastal areas, for example in paragraph 30:

(d) Encourage the application by 2010 of the ecosystem approach, noting the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem and decision 5/6 of the Conference of Parties to the Convention on Biological Diversity;

(e) Promote integrated, multidisciplinary and multisectoral coastal and ocean management at the national level, and encourage and assist coastal States in developing ocean policies and mechanisms on integrated coastal management.

In addition, the provisions applying to the sustainable development of small island States are of relevance (in particular, paragraphs 58[c] and [d]).

The principles and guidelines support the implementation of the Jakarta Mandate in relation to integrated marine and coastal area management (IMCAM in the terminology of the Convention on Biological Diversity) and use of diverse approaches and tools, including the ecosystem approach, the use of scientific information to establish MPAs and representative networks of MPAs, proper coastal land use, watershed planning, and the integration of marine and coastal areas into key sectors.

More recently, Recommendation 22 on "Building a Global System of Marine and Coastal Protected Area Networks" from the 5th WPC called the international community to establish networks of MPAs that:

(f) Integrate MPAs with other ocean, coastal, and land governance policies, as recommended by the Jakarta Mandate, to achieve sustainable fisheries, biodiversity conservation, species protection, and integrated watershed, coastal, ocean and high seas and polar management objectives.

The Recommendation further calls for the establishment of networks of MPAs that are:

1.(q) […] Embedded within wider integrated coastal and marine management frameworks that include collaboration among resource management bodies and ensure linkages among marine coastal and terrestrial protected areas to address potential threats beyond area boundaries.

This approach is also specified in relation to the application of the ecosystem approach to sustainable fisheries management and marine biodiversity conservation:

2.(a) Through marine protected areas integrated with other marine and coastal governance and management actions, as appropriate, through the application of best available science and consistent with international law.

To this end, the ecosystem approach can be implemented:

2.(e) Through the designation of marine protected areas, including those within Large Marine Ecosystems, as one of the strategies applied to the recovery of depleted fish stocks reduction of coastal pollution and conservation and restoration of biodiversity.

The Recommendation builds upon the approach adopted by the Jakarta Mandate, the Ramsar Convention (2002 and UNEP/GPA (2002) to foster the incorporation of MPAs into coastal, marine, and land and watershed policies and governance and management frameworks, including collaboration among resource management bodies.

International and regional instruments on MPAs and ICOM

A number of legal instruments developed at the regional sea level address to a certain degree the need to incorporate MPAs into ICOM frameworks or to pay particular attention to the protection of areas of ecological and landscape interest in ICOM initiatives (Table 1). From the overview, it is possible to see that networks of MPAs are provided by the protocols in Easter Africa, Caribbean, Mediterranean, and Black Sea, while ICOM is only addressed explicitly by the Mediterranean and Black Sea protocols. The Mediterranean protocol, in particular, indicates among the desired characteristics of an MPA to be included in the list of Specially Protected Area of Mediterranean Interest (SPAMI) the existence of an ICM plan covering the MPA.

Over 4,000 MPAs are reported having been established around the world (WCMC 2003), but it is not possible to say how many of them can be considered operational. Likewise, almost 700 ICOM efforts are reported in 145 countries, only 45% of which are probably in operation (Sorensen 2002). No attempts have been done so far to assess how many operational MPAs are associated with ICOM programs.

No methodologies exist to evaluate the contribution of ICOM frameworks to MPA goals. Recently, initiatives have been conducted to clarify this relationship but results were mixed (CZMC/RIKZ 2002). A major initiative to test the management effectiveness of MPAs through the application of environmental, socioeconomic, and governance indicators to selected case studies has been completed by WCPA Marine, NOAA, and WWF (Pomeroy, Parks, & Watson 2002). Further efforts, however, will be required to identify measures to evaluate the synergy between MPAs and ICOM.

Legal instruments addressing the need to incorporate MPAs into ICOM

Region	Instrument	Adoption	Into force	MPA networks	ICOM
East Africa	Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern Africa Region	1985	1996	Arts. 16 and 17	
South-East Pacific	Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific	1989	1994		Art. 5 (integrated environmental management)
Wider-Caribbean	Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region	1990	2000	Arts. 7 and 23	
Mediterranean	Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (replacing the 1980 protocol)	1995	1999	Annex I	Annex I
Northeast Atlantic	Annex V to the OSPAR Convention on the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area	1998	2000-2003 (partially)		Art. 3 (integrated ecosystem approach)
Black Sea	Protocol on Conservation of Biological and Landscape Diversity	2003			Art. 7

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