

**GLOBAL ENVIRONMENT FACILITY
PROPOSAL FOR PDF BLOCK B GRANT**

Country: Regional - Western Indian Ocean (Kenya, Comoros, Seychelles, Mauritius, Madagascar, Tanzania, Mozambique, South Africa, [La Reunion-France])

Focal Area: Biodiversity (Coastal, Marine and Freshwater Ecosystems)

Project Title: Western Indian Ocean Marine Protected Areas Programme

Funding Required: \$350,000
(Main project of \$2-5 million to be determined during PDF process)

Cofunding: \$12,000 **Source:** IUCN EARO \$9,000; WWF \$3,000
(To be determined during PDF process. Potential donors include the European Union, Germany, Ireland, UNDP)

Requesting Agency: UNDP

Block: Block B

Block A Grant Awarded: \$25,000 for travel, communications, consultant and related costs for formulation of the Block B proposal

Block B Grant Awarded: No

Duration: 12 months (January 1998 through December 1998)

Council Submission: April 1999

1. SUMMARY PROJECT OBJECTIVES AND DESCRIPTION

Background

The Western Indian Ocean Marine Protected Areas (WIO-MPA) Programme aims to establish a representative system of functioning MPAs that effectively safeguards the marine biodiversity of the WIO and meets the needs of individual states of the region. The WIO-MPA system will be achieved through a partnership of donor, international and national agencies, NGOs, and communities, concerned with aspects of marine biodiversity use, conservation, research and monitoring in the region.

The recently concluded global review of MPAs: *A Global Representative System of Marine Protected Areas* (Kelleher *et al.* 1995), lists 11 priority actions for establishment of a globally representative system of MPAs. Volume III of the global review recognizes the diversity and values of ecosystems and species in the eastern African-WIO region, and identifies a number of priority actions at the national and regional level. These actions need to be interpreted in the context of global priority action 10: *Carry out further investigations to address biogeographic and other information gaps necessary for the identification of priority areas as part of the global system of MPAs.*

Acknowledging incompatibilities between existing biogeographic classifications for the WIO, the global review proposes a simplified version that clearly requires elaboration to achieve a truly representative system of MPAs in the region. The review also indicates correctly that the WIO has "... tended to be overlooked by international donor agencies when compared with [other] regions ...", that there is "... a lack of a strong regional approach to marine conservation in the region", that "*Networks designed to share experiences ... would go a long way to advancing marine biodiversity conservation*", and that there "... is the urgent need for training programs in MPA planning and management" (Gaudian *et al.* 1995). The global review has another important limitation which is that its recommendations "... do not necessarily have the support of governments." The global review has progressed to implementation with approval of funding by GEF to support a global coordinating mechanism designed to catalyse action at site level. Tanzania is identified as one of four focal countries for action at site level and will be the link with this proposal.

The WIO-MPA programme is a direct attempt to build on this global review for the WIO as a region, and to address some of the weaknesses recognized in it. It is the first attempt to develop a regional MPA programme under the broader GEF supported global programme, and will draw on the many different MPA activities in the region to develop an integrated programme that builds on the successes and failures of its component parts (including those supported by GEF in Comores, Madagascar, and Tanzania). The WIO-MPA programme will also support implementation of the Nairobi Convention which calls for the protection of ecosystems and species (see Annex 2).

This programme will directly complement the ongoing GEF supported process to undertake a Trans-boundary diagnostic analysis and develop a Strategic Action Programme for the Western Indian Ocean. The latter actually grew out of the preparatory work for this protected area programme but it was agreed by IUCN, UNEP, UNDP and the GEF Secretariat that the two initiatives were should be developed separately but, due to their complementarity, go forward

in parallel with UNEP focusing on the TDA and SAP while IUCN developed the MPA programme.

The programme responds directly to the strong need for coordination and partnership in the region in order to maximize the effectiveness of funding, the sharing of lessons learned, and the regional application of activities. The concept of the programme was first endorsed by participants at the *African Heritage 2000 Working Session* convened in 1994 to formulate a protected areas action plan for sub-Saharan Africa (Annex 1). It responds directly to requests for assistance with MPA development from within the region. The programme should result in the coordination and harnessing of the strengths of all involved institutions into an effective partnership. This will be achieved through a comprehensive programme that supports action for coordination, training and sharing of experience at the regional level linked with direct action at the site level that is financed largely by bilateral donors in the context of national programmes, though the GEF is supporting site based activities in Comoros, Madagascar, and Tanzania. The Block B funds would be used to refine the regional MPA programme through a participatory process of activities and discussions culminating in a regional workshop, that will include donor agencies.

In addition, the Block B funds would be used to:

- coordinate four activities to collate existing relevant information and prepare discussion documents for presentation at a regional workshop on the following subjects:
 - a biogeographic classification for the WIO and its implications for MPAs
 - participatory MPA planning and management approaches: an overview of strengths and weaknesses of those in use in the WIO
 - mechanisms for sustainability: lessons learned in achieving self-financing of MPAs in the WIO
 - an overview of MPAs in the WIO and priorities for action
- analyze the proposals developed from these discussion papers and synthesize these into a regional WIO-MPA programme with both national and regional action components
- obtain broad regional consensus on this proposed WIO-MPA programme, and on roles in implementation and regional coordination
- on the basis of this consensus develop one or more project briefs for submission to GEF.

This proposal has received widespread endorsement from the states of the region (Annex 3).

The Need and Framework for Regional Cooperation

Little is known of the biodiversity of the subtidal WIO relative to that of the African mainland. The diversity of marine organisms decreases west from Australasia. This decrease is partly offset by high levels of endemism experienced off the African coast and around the oceanic islands, leading to unexpectedly high marine biodiversity in the WIO.

Ocean currents and the monsoon seasons have a major influence on the biogeography and biodiversity patterns of the region. Currents carry larvae, migratory species, nutrients and pollutants from one coastal area to another, and across national boundaries. The states of the

WIO are linked too by the many common species and by some straddling species, particularly sea turtles, that are shared by several states of the region.

Although the processes are poorly understood, the oceanographic and ecological characteristics of the WIO define an area that needs closely coordinated management to conserve its unique biodiversity and natural resources. Consequently, effective marine biodiversity conservation will require regional-level coordination to safeguard circulation of larvae, nutrients and migratory species, and to maintain water quality, and national/subnational level actions to realize specific objectives at the local level.

The establishment in 1979 of the Indian Ocean Sanctuary (encompassing the entire Indian Ocean to 55 degrees South latitude) for the conservation of whales is among the greatest achievements of its kind in marine conservation. It offers an operating example of achievement in international cooperation for resource management and conservation, and a precedent for the region.

The UNEP Regional Seas mediated *Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region* (the Nairobi Convention) and in particular the related *Protocol Concerning Protected Areas and Wild Flora and Fauna in the Eastern African Region* provide an excellent framework for collaboration in development of a regional MPA programme. The WIO-MPA programme directly supports the implementation of this convention. Other relevant international instruments are discussed in Annex 2.

In practice, national interests will take priority over regional ones - the first duty of a nation is the well being of its people, but there are regional responsibilities, implications and interests too. A carefully planned and managed national system of MPAs will still serve the regional interest, leaving relatively little more to be done at that level. However, the challenge is to establish mechanisms that support an interactive network of protected area practitioners who share experiences and lessons learned, and collaborate to develop a working, representative system of protected areas that truly safeguards the resources of the region.

Overview of Main Issues

Rampant destruction of productive marine and coastal habitats (especially coral reefs) through damaging fisheries and tourism continues in the WIO (see annex 1). Inshore fisheries are deteriorating while endangered species such as turtles and dugongs no longer occur through a considerable part of their former range. The few MPAs are inadequate and unequally distributed through the WIO, and biodiversity interest, awareness, action, and funding in the seas of the region are overshadowed by attention to the terrestrial megafauna and national parks. Annex 1 includes details on the status of MPAs in the WIO and the constraints on their management.

While MPAs address some aspects of marine biodiversity conservation in the WIO, the global review notes that these are unevenly spread through the region and hampered in addressing the needs of the region by a number of factors, including the inadequacy of the biogeographic classification, low levels of funding by international donors, the need for building capacity in MPA planning and management and for regional networking (Gaudian *et al.* 1995). This PDF

activity will address all of these issues and needs, and will seek solutions to them for implementation in the next phase of the programme.

Previous Support

Activities to date have been inequitably scattered over the region and uncoordinated. They have been guided more by perceived local or national issues and opportunities than by regional ones, and tend to be short lived. Nonetheless, these activities provide a good foundation on which to build. There are lessons to be learned and adopted from successes, and failures to be avoided. Proposals for the establishment of an Indian Ocean Alliance for conservation made 15 years ago recognized the need for coordinated regional action to conserve the marine biodiversity of the region, but were too advanced for the time, and amounted to nothing (Anon 1980). More recently, the political will and recognition of the need for a regional approach has been expressed in the Nairobi Convention and its related protocols.

IUCN (Seychelles, Kenya, Tanzania, Mauritius, Comores), WWF (Mozambique, Tanzania, Kenya), the Netherlands (Kenya), and the European Union, France, BirdLife International and Society for the Promotion of Nature Reserves (Seychelles) have actively provided technical and/or financial support for MPA development in the region. MPA initiatives in the early stages of development or planned include community-based management of reefs in Tanzania (Irish Aid/IUCN), Comores (UNDP-GEF/IUCN), Madagascar (UNDP-GEF), Somalia (EU/IUCN), and development of a MPA programme proposal for Tanzania (GEF/IUCN). In 1997, IUCN will implement a project aimed at demonstrating the benefits of ecotourism and MPAs. The WIO-MPA programme will lead to coordination of these different activities to ensure complementarity and that gaps are filled at both national and regional levels, and to enable the sharing of lessons learned.

Project Objectives and Activities

The WIO-MPA programme will address the demand for joint management of shared resources and the need for sharing of lessons learned and for spreading project activities equitably over the wider region. The overall objective of the initiative is to establish a coordinated WIO-MPA programme among the states of the region that addresses biodiversity and productivity conservation issues at the local, national and regional levels.

Through the GEF process, a comprehensive regional programme will be developed that focuses on the establishment of:

- a system of MPAs that is representative of a full range of the region's ecosystems and species
- a network of MPA practitioners to enable a pooling of expertise and sharing of information, experiences and innovative approaches.

The WIO-MPA programme will be implemented through a partnership of national, regional, international and donor agencies, NGOs and communities. The GEF role is to support development and initial implementation of the programme. During this process, regional strategies and detailed national programmes will be formulated, partnerships and innovative mechanisms for sustaining activities, including capacity building, and coordination mechanisms and monitoring processes will be defined, representative sites for pilot activities (with an

equitable spread throughout the region) will be identified, and commitments for support from donor agencies will be secured.

2. DESCRIPTION OF PROPOSED PDF-B ACTIVITIES BY COMPONENTS

Objectives

The objectives of the PDF-B activities are:

- to develop a biogeographic classification of the WIO to guide the identification of priority areas for establishment as protected areas that enable conservation of representative ecosystems and species
- to review and share MPA planning and management approaches
- to evaluate financing mechanisms for MPAs
- to review the status of MPAs in the WIO
- to develop, for financing by GEF and other donors, a comprehensive regional MPA programme for the WIO to address national capacity for MPA management and ensure adequate regional coverage as well as effective coordinating and monitoring mechanisms.

Activities

IUCN will work with partners in different countries of the region to formulate a collaborative WIO-MPA programme. This process has begun with the preparation of this proposal and its endorsement by the relevant government agencies in the region (Annex 3). The next step in this process comprises a series of four activities to identify approaches to MPA planning, management and financing, and national and regional priorities. These will be presented for discussion and review at a regional workshop that will culminate in the collaborative design of the WIO-MPA programme built on a series of national and regional activities. The specific activities include:

1. *Biogeographic Classification*: The identification of biogeographic provinces of the WIO based on faunal/floral assemblages and patterns of endemism will provide a basis for formulation of a regional marine biodiversity conservation strategy. However, the existing classification is broad as indicated in the global review (Gaudian *et al.* 1995), and needs further refinement for conservation purposes. The classification resulting from this activity will further develop the existing one, and will help to identify priority activities, sites, ecosystems and species for inclusion in the conservation activities of the WIO programme, and to ensure that a representative sample of species assemblages and ecosystems are included, and that endemic species (some of which are the most vulnerable to extinction, particularly from island systems) are adequately addressed. The biogeographic classification would be used to formulate a strategy for regional marine/coastal biodiversity conservation. It would be developed based on commissioned research and a contributed paper at the regional workshop, and the following specific activities:
 - information on the occurrence and distribution of key taxa (e.g., benthic fishes, corals, molluscs, strand vegetation) will be compiled and analyzed to determine faunal/floral assemblages, areas of endemism, and latitudinal and depth determinants of species distribution;

- data would be compared among taxa to determine overlaps in distribution, and identify biogeographic provinces and zones within them based on these clustered or overlapping distributions, and to indicate areas of high endemism.

The biogeographic classification will provide a foundation for evaluation of the current MPAs, during the regional workshop, and suggest additional areas for consideration to achieve an adequate and truly representative coverage of MPAs in the WIO.

2. *Participatory MPA Planning and Management Approaches:* WWF and IUCN are both supporting management authorities in the region to develop and implement a highly participatory approach to MPA design and management. Similar approaches are being developed for broader coastal management. Collaborative MPA management that links communities and government into partnerships are extremely relevant in the context of the WIO. There are important lessons being learned by ongoing activities that need to be shared throughout the region. This project will undertake a review of participatory approaches in the region, including relevant ones for terrestrial protected areas, and assess their relative strengths and weaknesses. This analysis will be presented for discussion at the regional workshop, and the outcome will provide a basis for guiding the choice of suitable strategies for MPA implementation on a case by case basis. This activity will focus on practical aspects of implementing effective stakeholder participation rather than on a theoretical overview of the approach.
3. *Mechanisms for Sustainability:* Different methods used to build sustainability into marine and coastal conservation regionally, and globally (Hooten & Hatzilios 1995) will be evaluated. In particular, the following will be addressed:
 - incentives and process for both community and government sector participation (especially MPA contribution to sustainable fisheries)
 - innovative funding mechanisms, including the international community, national institutions, sectoral contributions (fisheries, forestry, tourism), international business community (airlines, tour operators)
 - income diversification and community development programmes
 - traditional management systems and customary law: relevance and resurrection.
4. *Regional Marine Protected Areas Review and Workshop:* Building on the global review, the proposed regional programme (Annex 1), and a commissioned analysis of the MPA status and needs in the region, a regional workshop will be convened. The workshop will critically review the institutional arrangements and planning and management capacity for MPAs in the region to assess training and technical assistance needs. It will review and integrate existing recommendations, reports, proposals, national programmes and local activities to formulate a strategy to implement a regional representative system of MPAs for the conservation of regional marine biodiversity and productivity. Specific project activities will be identified that will incorporate strong elements of institutional strengthening, training, public education, community participation, evaluation and networking.

Specific project activities will be identified that will incorporate strong elements of institutional strengthening, training, public education, community participation, evaluation and networking. To ensure representation of a wide range of interest groups in this process, participants will be selected from the MPA implementing agencies, NGOs and coastal communities.

The discussions and recommendations of the workshop will be synthesized to formulate the WIO-MPA programme, project concepts will be outlined, and implementation and coordination mechanisms will be agreed.

5. *Coordinating Mechanism*: IUCN EARO will maintain its catalytic role in developing the WIO-MPA programme and partnerships for its implementation. It will ensure coordination of the activities described in this proposal in order to produce a coherent WIO-MPA programme. Coordination mechanisms for follow-on activities will be agreed at the regional workshop.

3. ELIGIBILITY

The activities set out in this proposal will help to consolidate a partnership for implementation of the WIO-MPA programme. They are designed to mitigate the extreme threats to the nearshore environment, species and unique biodiversity of the WIO, many of which are directly related to the eligibility criteria and elements listed in the *GEF Operational Strategy* and draft *GEF Operational Program Component on Marine Protected Areas for Coastal, Marine and Freshwater Ecosystems under the Biodiversity Focal Area*. The latter also specifically calls for more effective management of existing MPAs, establishment and consolidation of MPAs, sustainable use and benefit sharing, training and institutional strengthening. The document also encourages strategic partnerships in the planning and management of MPAs. These will form the central pillars of the WIO-MPA programme.

The linkages among coral reefs for exchange of coral, invertebrate and fish larvae maintain the uniqueness of the WIO biodiversity. Maintenance of these linkages requires broad representation of coral reef types in a system of MPAs that is carefully designed to safeguard the full range of WIO biodiversity. Turtle conservation also requires integration of national management efforts into a regional programme that effectively protects the critical habitats of these endangered species among the many states in which they pass various stages of their lives.

This proposal arises in response to recognized shortfalls on the part of local institutions to effectively address the extreme threats to the biodiversity of the WIO, elements of which are not found anywhere outside the region. It will address the need to strengthen these institutions through a combination of policy formulation, personnel training, and intra-regional networking. The proposed activities are an essential step in establishment of a representative system of MPAs designed, *inter alia*, to safeguard the unique components of WIO biodiversity and, consequently, to contribute to the conservation of global biodiversity.

The relevant conventions that provide a framework for regional cooperation in the WIO are discussed in Annex 2. Nine of the ten states of the region are parties to the Convention on Biological Diversity (Kenya, Tanzania, Mozambique, South Africa, Comoros, Mauritius, Seychelles, Madagascar, France). Although Somalia lacks a national government, IUCN will be implementing relevant activities there funded by the EEC Somalia Delegation. France (La Réunion and Mayotte) will be expected to finance its own participation.

The concept of a partnership to implement a MPA programme in the WIO has attracted considerable support from government agencies, NGOs, and international and donor agencies committed to the region who are seeking to have their activities supported and reinforced in a regional context.

Lessons learned through the application of a regional MPA programme, such as this, will have direct relevance to all areas of the Indian Ocean (Arabian and Red Seas, South Asia) and other tropical seas of the world.

4. NATIONAL LEVEL SUPPORT

The WIO-MPA programme will build on national programmes and activities where these exist and put them into a regional context. IUCN has received specific requests from the states of the region, which recognize the introspective nature of their activities, to assist them benefit from and contribute to a MPA programme that is more regional in focus, especially if linked to shared resources (e.g., turtles that feed in the waters of one or more states but nest on the beaches of another), or by study tours and regional training activities.

IUCN has also received endorsement from the states of the region for the proposed activities and process outlined in this document (Annex 3).

5. JUSTIFICATION FOR PDF GRANT

Consensus building and definition of mechanisms for implementing and coordination will be achieved through a regional workshop, at which all WIO states will be represented. PDF-B funds are required to develop the background documents and proposals and to support the regional workshop, MPA programme formulation process and development of the related project brief(s). The products of the regional meeting will be an agreed WIO-MPA programme and agreed mechanisms for its implementation and coordination.

6. ITEMS TO BE FINANCED

COST AND FINANCING (\$US '000)				
Activity/Resource	Time Frame	GEF	Other	Total
1. Biogeographic classification	1/98-6/98			
Research & consultant costs		40.0		40.0
Travel costs		5.0		5.0
Communications		2.0		2.0
2. Participatory approaches	3/98-6/98			
Consultant costs		22.0	IUCN 1.0	23.0
Travel costs		8.0		8.0
Communications		2.0		2.0
3. Mechanisms for Sustainability	3/98-6/98			
Consultant costs		24.0	IUCN 1.0	25.0
Travel costs		5.0		5.0
Communications		2.0		2.0
4. MPA overview & regional workshop	1/98-9/98			
Commissioned analysis of MPA status & needs		15.0	IUCN 2.0	17.0
Workshop coordination		5.0		5.0
Travel & accommodation costs		60.0	WWF 3.0	63.0
Support services & facilities		10.0		10.0
Translation & interpretation		13.0		13.0
Report production		10.0		10.0
Communications		4.0		4.0
5. Coordination & Project Brief	1/98-11/98			
Consultants & IUCN staff		61.5	IUCN 5.0	66.5
Travel costs		10.0		10.0
Project Management & Accounting		7.0		7.0
Communications		4.0		4.0
IUCN overhead (8%)		25.5		25.5
Contingencies (5%)		15.0		15.0
TOTAL		350.0	12.0	362.0

7. OUTPUTS

The PDF-B outputs will include:

1. One or more Project Briefs and/or a series of integrated national project proposals for the GEF contribution to implementation of the WIO-MPA programme, that includes provisions for coordination and implementation of regional activities and for national project initiatives.
2. A comprehensive WIO-MPA programme developed and endorsed by the MPA practitioners and governments of the region.
3. A detailed classification of the biogeographic provinces of the WIO for use as a basis for biodiversity conservation planning and action in the region.
4. A review and assessment of participatory MPA planning and management processes.
5. An evaluation of financing mechanisms for MPAs in the region.

8. EXPECTED DATE OF PREPARATION COMPLETION

The PDF-B funded project development activities will begin in January 1998, and are expected to be completed in December 1998.

9. SPECIAL FEATURES

This activity will catalyze a partnership for conservation of the marine biodiversity resources of the WIO. It will improve coordination amongst the varied MPA activities in the region, including several that are already funded by different donors.

The principal partners will be the national governmental and parastatal agencies with the mandate for management of MPAs in the states of the region, and the relevant research institutions and NGOs supporting the activities of these agencies. The biogeographic classification will be developed by the Oceanographic Research Institute, an NGO with direct experience of this activity in South Africa, in partnership with the members of the Zanzibar-based regional NGO, WIOMSA (Western Indian Ocean Marine Science Association). It is envisaged that the assessment of participatory MPA planning and management processes will be undertaken through the University of Dar es Salaam, by Prof Ophelia Mascarenhas, and that the evaluation of financing mechanisms will be implemented by a consultant from the region drawn from EENESA (Environmental Economic Network for Eastern and Southern Africa) which is based in Nairobi. Kenya Wildlife Service have agreed to host the regional workshop near one of its marine parks.

Through the project development process, the priority activities (based on needs defined by nationals of all states in the region) will be identified and formulated into a WIO-MPA programme that put national actions into the context of an integrated regional programme. This process will serve to guide donor agencies on the relevance of local activities in contributing to the maintenance of processes and linkages that sustain the WIO biogeographic system.

IUCN, through its unique relationship with state governments, NGOs, communities, international agencies and donors, will serve to coordinate this process, develop the spirit of

partnership, and ensure that the aspirations of all are balanced with environmental considerations.

10. IMPLEMENTING AGENCY COORDINATION

IUCN will be responsible for regular reporting to all implementing partners (UNEP, UNDP, World Bank).

IUCN EARO is based in Nairobi and is working closely with UNEP to develop a WIO biodiversity conservation programme to which the WIO-MPA programme will contribute. IUCN EARO and UNEP already cooperate under the terms of a Memorandum of Understanding on several activities directly related to this initiative.

11. REFERENCES

Anon. 1980. *Report of the Meeting of Indian Ocean Coastal States on a Proposed Indian Ocean Alliance for Conservation*. Mahé, Seychelles, 21 pp.

Gaudian, G., A Koyo, & S. Wells. 1995. Marine Region 12 East Africa. In Kelleher *et al.* (eds) 1995. *Op. cit.*

Hooten, A.J. and M.E. Hatziolos (eds). 1995. Sustainable financing mechanisms for coral reef conservation. Environmentally Sustainable Development Proceedings Series No. 9, the World Bank, Washington, D.C.: 116 pp.

Kelleher, G, C. Bleakley & S. Wells (eds). 1995. *A Global Representative System of Marine Protected Areas*, volume III. World Bank, Washington D.C., 147 pp.

Salm, R.V. 1995. Overview of MPAs in the Western Indian Ocean. Pp. 68-80 in R. Robinson (ed.). *African Heritage 2000: The Future of Protected Areas in Africa*. Proceedings of the IUCN Commission on National Parks and Protected Areas African Regional Working Session, Skukuza, Kruger National Park, South Africa, 11-17 October 1994, National Parks Board, South Africa: ix + 135 pp.

7.2 Overview of MPAs in the Western Indian Ocean

Rod Salm

Worldwide, the coastal and marine habitats remain woefully under-represented in the [global] system [of protected areas] and far more work remains if these habitats are to be protected effectively.

(McNeely *et al.* 1990)

Nowhere is this statement more accurate than in eastern Africa, where the big game syndrome and dependence on tourism revenue have polarised conservation action landwards, or towards areas identified as having a greater value to tourists than the conservation of marine biological diversity.

In August 1992, largely in response to the overwhelming emphasis on land-based ecosystems, wildlife, and protected areas in East Africa, and in recognition of the crucial need for conservation action in the seas of the region, the IUCN Eastern Africa Regional Office (EARO) initiated a Marine and Coastal Conservation Programme. This Eastern Africa Marine and Coastal Conservation Programme is attempting to catalyse a Western Indian Ocean Marine Biodiversity Programme that would include the following five principal components:

- A regional level coral reef initiative.
- A regional level threatened-species initiative (initially focusing on turtles and dugongs).
- A regional level marine protected areas initiative
- A regional level marine biodiversity database, including a catalogue of relevant researchers and institutions.
- National and/or subnational level integrated coastal zone management initiatives.

Following a brief introduction to the special oceanographic and biogeographic features and environmental problems of the Western Indian Ocean (WIO), this paper focuses on the marine protected area initiative. It summarises achievements in the establishment of marine protected areas, analyses their effectiveness in achieving conservation of the marine environment, and proposes principal needs for further action.

The Western Indian Ocean: An Introduction

The WIO encompasses the mainland states of Somalia, Kenya, Tanzania, and Mozambique, and the island states of Comoros, Madagascar, Mauritius, Réunion, and Seychelles.

Although excluded by tradition from the region, South African is linked by the southward flowing Mozambique and Madagascar currents that join to form the Agulhas Current, by the many common species, and by some straddling species that are

shared by several states of the region (e.g. turtles that nest on the Tongaland coast of South Africa but move north to feeding grounds off Mozambique, Tanzania, and Madagascar). At least the northern portion of the South African coast should be included in the WIO biogeographic region for conservation purposes.

The chapter *Region 8c - South East Africa* of the yet to be published IUCN CNPPA/World Bank document *A Global Report on a System of Marine Protected Areas* gives a good general introduction to the oceanography and environment of the WIO. IUCN/UNEP (1984) and the various contributions to *Ambio* 7(6) 1983 provide useful additional introductory details on the environments and species of the region, and their uses and abuses.

The Principal Habitats

IUCN/UNEP 1984 includes a detailed classification of 40 different marine and coastal habitats, and their distributions, uses, and protection and management status in the WIO.

Rich coral reefs dominate the near shore marine environment of the WIO. Although much of the reef growth in the Indian Ocean is considered to have its origins 70 million years ago, large changes in sea level limit the reefs that survive today to probably no more than 5 000 years old. Fringing reefs are the most common type in the WIO. They border the shore, with few interruptions from northern Mozambique, along the length of mainland Africa to the Red Sea, and surround the relatively stable granitic islands of the Seychelles and the younger volcanic islands (Comoros, Mauritius, Réunion). Salm (1983a) and UNEP/IUCN provide more detailed introductory accounts of the coral reefs of the region.

Coral reefs are now known to be at least as diverse as that usual benchmark measure of diversity, the tropical rain forest. These reefs support important fisheries on which the majority of coastal fishing communities of the region depend for their livelihood, and are a significant draw card for coastal tourism. Reef tourism, especially the related sail and glass-bottom boat operations, gives employment to many coastal inhabitants, supplementing the incomes of fishermen, or providing them with an alternative earnings opportunity.

Coral reefs also break the force of the Indian Ocean swells to provide safe anchorages for fishing boats, and shelter for beaches and productive lagoons that support the growth of vast seagrass meadows.

Nursery to numerous reef fishes and home to a variety of other sea creatures, the seagrass further dampens the energy of scouring waves, allowing the build-up of beaches where people play and endangered turtles nest.

Mangroves are the third dominant component of the complex coastal ecosystem. These hardy trees turn the harsh saline tide lands into lush and productive wetlands that are breeding sites, nurseries, and homes to a variety of creatures, many of which are of great importance to us (notably oysters, crabs, prawns, and a variety of fishes). Mangroves also yield firewood, charcoal, and poles for construction and export. There are at least 654 species of algae, molluscs, crustaceans, echinoderms, and fishes of economic importance that are associated with mangroves in the WIO (Matthes and Kapetsky 1988).

Mangroves condition the coastal waters, trapping silt and winning for us new land as they creep relentlessly seaward. Their leaves drop and are cycled as detritus which is the driving force behind a productivity that supports fisheries tens of kilometres offshore.

Sandy beaches are another important component of the coastal ecosystem. They have immense allure for coastal tourists and consequently contribute substantially to the national exchequer. Less well-appreciated is their value as beaching areas for fishing boats, as a source of cockle shells for food, as feeding areas for migrant waders, and as nesting sites for endangered sea turtles.

These coral reefs, seagrass beds, mangroves, and beaches are the integral elements of the coastal ecosystem, elements that help nourish us and safeguard our properties, and that drive the coastal economy. They are elements, too, that hold in store for us a little tapped but valuable potential for future use.

General Biodiversity Patterns and Distribution

In this forgotten western Indian Ocean corner of the world, not only do we not know the extent of our marine biological wealth, but we also certainly do not know the rate at which we are losing it. To most coastal people here, UNCED and the Biodiversity Convention – indeed, the concept of marine biodiversity itself – are as foreign as octopi to ostriches...

There has been an attempt to analyse marine biodiversity issues in the WIO (Salm 1994), but information on regional marine biodiversity and biogeography is scarce, and difficult to compile. IUCN/UNEP (1984) presents lists and accounts of endemic and threatened marine and coastal species

of the WIO, summarising their distributions, uses and protection and management status.

There is a general decrease in species diversity west across the Indian Ocean from the Australasian region (centred on Indonesia) that, in some cases, is offset by endemic WIO species. Centres of high endemism appear to be the southern African coast and the outlying islands to the south (Mauritius and Réunion). Salm (1994) presents a synthesis of available data on species distribution and endemism for corals, mangrove-associated species, fishes and molluscs. The distribution of endemic marine species for certain taxa is summarised in Table 1.

This lack of precise knowledge of WIO biodiversity patterns makes it difficult to identify areas of greater or lesser conservation interest in the region.

We need to proceed with caution when applying biodiversity as a criterion for selection of marine protected areas. Although, for example, seagrass beds and mangroves would rate very low on a species diversity scale, compared to coral reefs, they are of inestimable value as nurseries for many species of direct commercial or subsistence value, and as ecological support systems for the nearshore marine environment (see Saenger *et al.* 1983 and Salm and Clark 1984 for discussions of the value of mangroves).

Rather than simply focusing on diversity of mangroves and their complement of species, we need to identify important associated and obligate biota in the WIO (i.e., those confined by specific requirements to a distinctive diet or habitat – in this case mangroves), and their status regionally, nationally, and locally. Thus, a mangrove species may be common globally or regionally, but rare or threatened locally, and consequently of greater significance at this level.

For example, in South Africa the mangroves *Ceriops tagal* and *Lumnitzera racemosa* and the mangrove whelk *Terebraia palustris* are listed as "vulnerable", and hence of special concern nationally, although they are generally common elsewhere in the region. The mangrove kingfisher *Halcyon senegaloides* is also "vulnerable" there, and in Madagascar the mangrove teal *Anas bernieri* is both endemic and "vulnerable" (Saenger *et al.* 1983), and hence of critical concern.

Beaches, in particular, with their full complement of two to three obligate mollusc species (Tavio 1971) underscore the folly of using biodiversity alone as a measure of conservation importance, and of separating elements of the coastal ecosystem to isolated conservation action.

Table 1: Endemic marine fauna of the Western Indian Ocean (based on available data).¹

Species	Som	Ken	Tan	Moz	Mad	Reu	Mau	Com	Sey ²
Corals		8	8	17	5	9	26		4
Ascidians							2		
Polychaetes							1		
Molluscs					1	2	5		
Damsel fishes ³	6	10	10	3	9	8	12	3	3
Other fishes	4	5	5	8	8	1	11	4	26
Coastal and seabirds					2	2		1	4

¹ Some species are found in more than one area, but all are endemic to the WIO.

² Som = Somalia, Ken = Kenya, Tan = Tanzania, Moz = Mozambique, Mad = Madagascar, Reu = La Réunion, Mau = Mauritius and Rodriguez, Com = Comoros, Sey = Seychelles, Aldabra and other outlying islands.

³ The distribution of a few of the species in these totals extends to include the Red Sea, Chagos, or northern South Africa.

For example, *Donax faba*, a small intertidal bivalve of sandy beaches, is harvested extensively throughout the WIO. Our sandy beaches are extremely low in mollusc species (generally only two), but are vital for their other obligate species. These include ghost crabs (*Ocypode* spp.), feeding areas of migrant shorebirds, and nesting sites for turtle species, one of which is "vulnerable" (*Caretta caretta*), and four that are "endangered" (*Chelonia mydas*, *Eretmochelys imbricata*, *Lepidochelys olivacea*, *Dermochelys coriacea*).

Clearly, we need to take great care when we apply biodiversity as a criterion for the selection of sites for conservation action. The example of molluscs shows that inter-habitat comparisons of diversity are fallible, and that the range of species diversity can only be conserved to maximum benefit by including the full range of habitats in the coastal ecosystem, each with its distinctive species assemblages, whether high or low in diversity.

Threats to WIO Environments and Species

Early settlement by colonisers and resource use by seafarers led to the rapid disappearance of species from the oceanic islands. For example, dugongs, crocodiles, giant land tortoises, and nesting green turtle populations were eliminated from the granitic Seychelles Islands, and the dodo was hunted to extinction on Mauritius.

The more recent impact of people on the environment of the WIO has been extensively documented (*Ambio* 12(6) 1983; UNEP OCA/PAC RSRS 7-12, 39, 41, 51, 57, 60, 61, 84, 105, 106, 113, 139). In summary,

there are two principal problems threatening the marine environment, both of which lead to loss of biodiversity:

- Habitat degradation sometimes leads to complete destruction.
- Over-exploitation of species may lead to local extirpation of some populations. The challenge is to identify the underlying causes of these problems and to apply appropriate actions to address them.

Levels of industrial development are low relative to many other parts of the world. Consequently, there is relatively little problem posed by industrial pollutants and toxic wastes. However, there are few safeguards on development, resulting in serious and often irreversible damage to the environment and loss of biodiversity caused by the poor siting of developments. The institutional capacity for environmental planning and management is not always sufficiently strong or advanced to ensure appropriate zoning of activities and developments. This is one underlying cause that requires urgent attention.

The major threat to the biodiversity of the region is one of unremitting impoverishment resulting from the activities of poor and burgeoning coastal communities dependent on the same few traditional resources. This leads to an escalation in subsistence use which, in turn, generally leads to widespread impoverishment of biodiversity through over-harvest, possibly ending in complete loss over the long term (e.g., the disappearance of many fish spe-

cies from the heavily fished reefs of Tanzania, and the loss of coastal forests along the northern Tanzanian coast).

Given a lack of opportunities for these coastal communities to diversify their activities, they are resorting to increasingly destructive means to survive, and continued resource use has become unsustainable. Income diversification at the level of coastal communities is another issue requiring urgent action.

Marine protected areas can be a significant tool in addressing habitat destruction and species impoverishment. Following a brief introduction to the marine protected areas of the region, an outline of how we might proceed with a regional programme to strengthen and complete these areas is presented in preliminary form below.

Marine Protected Areas in the WIO

Current Status

The IUCN CNPPA/World Bank document *A Global Report on a System of Marine Protected Areas* gives a current synthesis of information on marine protected areas of the WIO. It was compiled from the following principal sources: IUCN/UNEP 1984, IUCN/UNEP 1987, and UNEP/IUCN 1988.

Marine protected areas are unevenly distributed through the WIO, and they receive varying amounts of management attention. Levels of management vary from good in some of the Kenyan and Seychelles marine protected areas to none, as in Tanzania and Mauritius.

A number of these areas have never been managed, may not even be known to the management authority, have been severely degraded since they were gazetted, lack appropriate protection status, and should not qualify as protected areas. This applies especially to the six fishing reserves in Mauritius (several of which are heavily used for sand extraction), the seven marine reserves in Tanzania that were gazetted in 1975 (one of which, Maziwi Island, has been completely eroded away), and the five strictly controlled nature reserves in Madagascar designated for nesting sea turtles in 1923.

Nine of the nature reserves listed for Seychelles in the IUCN CNPPA/World Bank report are actually island reserves for birds (though four have nesting turtles), nine of the nature reserves listed for Mauritius and one for Madagascar also include islands only, and three game reserves listed for Mozambique are terrestrial, reaching to the coast.

Since 1983, at least two new marine protected area complexes have been established in Kenya (Mombasa Marine National Park and Marine National Reserve, and the Diani Chale National Marine Reserve). Mananara Marine National Park was established in 1989 off Madagascar, the Silhouette Marine National Park has been gazetted in Seychelles legislation and management plans are currently being drafted for two marine parks (Blue Bay and Balaclava) off Mauritius, significant progress has been made toward the formal establishment of the Mafia Island Marine National Park in Tanzania, and preliminary efforts toward community-managed marine protected areas are being implemented on Zanzibar.

So, while 41 marine protected areas were listed for the region in 1983 (Salm 1983b), counting the new reserves, and including Mafia Island with these (total = five), and discounting the island reserve (18) and others that are not managed (14, including the Silhouette Island Marine National Park which receives no management and has no provisions for management in the foreseeable future), 28 is a true total of marine protected areas for the WIO (Table 2). The surface area of these 41 areas was less than 1 900 km² in 1987, and probably remains much the same today. To put this in perspective, this area is about 0.8% of the total protected terrestrial areas for Kenya, Tanzania, and Mozambique (245 270 km²) in 1986 (IUCN/UNEP 1987). This percentage is a good indicator of the relative importance placed on marine protected areas in the region.

Analysis of WIO Marine Protected Areas

If the number of marine protected areas is a suitable measure of conservation achievement, it should be clear from the preceding section and Table 2 that some WIO countries have achieved more than others. However, the establishment of a system of reserves aimed at preserving the full range of biodiversity and social values has not been the driving criterion for selection of these marine protected areas. In Kenya, for example, value for tourism appears more important as a selection criterion than biodiversity. Nonetheless, marine protected areas, if properly designed and managed, will prove viable as centres for conservation of a variety of values.

Table 2 lists the 28 accepted marine protected areas of the region. Column 1 shows the uneven distribution of marine protected areas in the region, with Somalia, Mauritius, and the Comoros lacking them altogether. There is a need for better geographic representation.

Table 2: Evaluation of Western Indian Ocean marine protected areas.

Site name ¹	Adjacent habitat links ²	Conservation focus	Community links/value ³	National value	Regional value
KENYA					
Kisite MNP-Mpunguti MNR	adequate?	reefs/tourism	good	high	high?
Kiunga MNR	?	dugongs/turtles/reefs/seabirds	?	high?	high?
Malindi and Watamu MNPs/MNRs	adequate?	reefs/tourism	moderate?	high	high?
Mombasa MNP/MNR	adequate?	reefs/tourism	improving	moderate	low
Diani Chale MNR	adequate?	reefs/tourism	improving	moderate	low
TANZANIA					
Mafia Island MNP	adequate	marine biodiversity	good	high	high
MOZAMBIQUE					
Ilhas da Inhaca e dos Portuguese Reserve	adequate?	high biodiversity			
Bazaruto NP	?	research/tourism	?	high	high
Paradise Island MNP	adequate?	dugongs/turtles/reefs/tourism	?	high	high
Mananara MNP	?	tourism?	?	?	?
MADAGASCAR					
Mananara MNP	?	reefs/mangroves/dugongs?/coast	?	high?	?
SEYCHELLES					
Aldabra Atoll SNR	good	high biodiversity	N/R	high	high
Ste Anne MNP	adequate	reefs/tourism/turtles	poor	high	moderate
Curieuse MNP	adequate	reefs/tourism	poor	high	moderate
Port Launay MNP	poor	reefs/tourism	poor	moderate	low
Baie Ternay MNP	poor	reefs/tourism	poor	moderate	low
Brulee-Pte au Sel Reserve	poor	molluscs	poor	low	low
North-east Point Reserve	poor	molluscs	poor	low	low
La Passe-Grosse Roche Res. Anse Boudin-Pointe	poor	molluscs	poor	low	low
Zanguilles Reserve	poor	molluscs	poor	low	low
REUNION					
Ile Europa Reserve Naturelle	adequate?	turtles/seabirds/reefs?	N/R	high	high
Iles Glorieuses Reserve Nat.	adequate?	seabirds/coconut/crabs/turtles/reefs?	N/R	moderate	moderate
Iles Tromelin Reserve Nat.	adequate?	turtles/seabirds/reefs	N/R	high	high
Ilot de Basses de India Reserve Naturelle	adequate?	reefs?	N/R	?	?

¹ MNP = Marine National Park; MNR = Marine National Reserve; NP = National Park; SNR = Strict Nature Reserve

² Based on an assessment of adequate inclusion of adjacent and linked habitats.

³ Based on provisions for community involvement in management and benefits to communities.

N/R = not relevant for these isolated oceanic sites.

Integration of marine protected area management with the management of surrounding areas is generally inadequate (column 2), and is an area that needs to be strengthened. This is a much-needed agenda item for a regional workshop aimed at developing sustainability for marine protected areas.

Further analysis is needed for column 3, taking into account the distribution and threats to biodiversity, endemic and threatened species, and critical marine habitats (Sensu Ray, 1976).

There has been little progress in linking coastal people into the marine protected area selection, planning, and management process (column 4), and there is consequently little benefit to them. This problem has been recognised in Tanzania and Kenya where increased efforts are under way to ensure greater benefits to the people living adjacent to marine protected areas and to involve them more actively in the management of the areas. A regional workshop to share ideas and experiences on this subject would be timely and valuable, especially if linked with other topics relating to the sustainability of marine protected areas.

Existing marine protected areas generally have greater value at the national level (column 5) than at the regional level. A greater effort is required to establish a regional system of marine protected areas which addresses the WIO biogeographic province as an integral unit.

Constraints on the Establishment of Marine Protected Areas in the WIO

The lack of adequate institutional capacity is one of the major constraints in achieving the effective establishment of marine protected areas in the WIO. Although some countries have marine protected areas in place, many of these lack adequate management.

Others give inadequate consideration to the needs and interests of traditional users of the included areas (the inherited outdated colonial approach), resulting in little community support or, worse, outright antagonism on the part of the community. Many additional marine protected areas have not advanced beyond proposals (and others were gazetted in 1975).

Another major constraint is the general lack of effective control over activities outside marine protected areas which impinge on the areas. This is particularly true of activities that destroy the natural environment and impoverish biodiversity through the extirpation or reduction of species populations and ecosystems that serve as sources of propagules

and nutrients to communities inside the protected areas.

Bilateral or multinational co-operation will be needed in some instances to enable transnational issues to be addressed adequately. For example, turtles nesting along the Tongaland coast of South Africa are protected on their nesting beaches but they move, along with turtles which are protected on the beaches of Europa Island, to feeding grounds off Mozambique, Tanzania, and Madagascar, where they are harvested. Another example is that of the Tanzanian reefs adjacent to, and upcurrent from, those of the Kisite Marine National Park in Kenya. They are extensively overfished and devastated by destructive fishing techniques. This must affect the quantity and variety of larvae drifting onto the Kenyan reefs.

Another constraint that applies universally, but to the WIO in particular, is the general public apathy toward, and lack of awareness of, marine conservation issues.

This apathy also entails a lack of appreciation of the value of the marine environment and of our impact on it. This has the following direct consequences:

- As we cannot easily see what happens underwater, the sea is regarded as an inexhaustible source of food and a convenient place to dispose of our wastes. We have little awareness of our impact on submerged life, and it is generally more difficult to monitor and investigate this impact. We know little of the functioning of ecosystems and the life cycles of species, so it is difficult to anticipate the influence of various activities on them. Consequently, we lack a good biogeographic classification scheme from which to ensure adequate representation of regional biodiversity in marine protected areas; we are depleting species populations faster than we can document the process; and our management decisions are guided more by theory and speculation than the application of proven methods.
- There is a general perception that the sea has an endless capacity for self-healing. Consequently, active interventions to restore degraded habitats and depleted populations, which are a common practice among wildlife and protected area managers on land, are not seen to be necessary, or are regarded as too difficult.
- Research on or under the sea is unpopular or difficult to break into, and deferred in favour of ei-

fort on land where it is perceived to be of greater immediacy and priority. Consequently, our knowledge of the seas is sparse relative to land. We are still making major discoveries in the seas, e.g., in the WIO, the coelacanth *Latimeria chalumnae* was discovered alive in 1958, having been considered extinct ca. 70 million years ago.

Possible Approaches to Marine Protected Area Establishment in the WIO

Conservation of the marine-coastal realm involves a number of related activities. In a more traditional approach, a system of marine protected areas would be established to include areas of special interest, and to enable strict protection, controlled access, regulation of activities, and intensive management. Generally, however, marine protected areas in isolation will have to be large and numerous to achieve the goal of conservation of the full range of resources and their support systems.

There still is value in protecting small areas which remain essential for safeguarding vital habitats such as seabird colonies. However, these sites cannot stand alone in the vast interconnected coastal environment, where winds, current, and species movements ensure a great deal of linkage between far distant areas (Salm and Clark 1984). We would need to fit them into some larger, meaningful, cohesive ecological and administrative framework (Salm and Dobbin 1989).

When this is not achieved, as happened at Mazwi Island in Tanzania (Yonazi and Mwamoto 1982; Fay 1992), we can expect spectacular failure of the conservation area. In this case, a turtle reserve disappeared when, according to popular belief, the surrounding reef was blown apart by fishermen using explosives, although the truth may be more complex and attributable also to sea level rise (Fay 1992).

Because of the linkages between sea grass, mangroves, and coral reefs, and their proximity to each other, we should group estuaries and mangroves, tidal flats and sea grass, and lagoons and coral reefs into a complex of habitats forming a typical tropical coastal ecosystem. This unit, with its full complement of component habitats, should be the focus for conservation action.

How can this be achieved, short of creating a protected area covering the whole coastal zone of a country and all parts linked to it by wind transport of seeds, salt spray, and pollutants, and by streams, rivers and run-off from land? We have to settle for some realistic and achievable alternatives.

One approach would be to establish vast, multiple use reserves incorporating a full range of linked habitats. These would be zoned for a variety of pursuits, ranging from strict protection to controlled development and extractive activities.

A more practical approach in the region may be to integrate the management of marine protected areas with general land use planning, for example through coastal zone management, and to facilitate the participation of coastal communities in this process. Establishment of marine protected areas in the broader context of participatory coastal zone management planning provides an effective means to buffer these areas from upstream and other interactive activities and processes that could degrade the included ecosystems (Salm and Clark 1984; Salm 1987), while addressing the needs and aspirations of coastal communities.

In terms of this approach, the entire coastal zone of the country essentially functions as a large conservation area in which all significant ecosystems receive protection without the deployment of permanent field managers. Thus only the minimal core areas need specific management attention from the protected areas authority. Management activities are free to focus on the protection of critical marine habitats or core areas (reducing conflict between user groups), and on the restoration of damaged areas.

Land-use policies are used to achieve *de facto* protection for a range of sensitive and scenic environments (including beaches, dunes, wetlands, estuaries, coastal cliffs and mountains, and headlands). This generally underexploited means of protecting critical habitats and scenic areas has one main advantage: it enables broad environmental protection without the need to define, legislate, and manage numerous small and scattered reserves.

The advantages of buffering marine protected areas by broader coastal zone management as a means of conserving marine and coastal resources include the following:

- Species will obtain some degree of protection throughout the coastal zone. This helps ensure that more populations than just those in protected areas, hence greater intraspecific genetic diversity, receive protection from major damaging activities (such as pollution, over-harvesting, and reclamation).
- A greater variety of habitats will receive protection from major damaging activities. Many coastal and marine environments normally com-

prise clusters of habitats separated into spatially discrete components by headlands, creeks, river mouths, channels, or bays. These components function as "islands" of habitats that could provide survival opportunities to different members of a set of competitive species.

- A catastrophic event (oil spill, tropical storm, crown-of-thorns starfish outbreak) is not as likely to destroy all of a number of separate areas. Considering the dispersal ability of many marine and coastal species with larvae or drifting seeds, recolonisation of damaged areas should be possible so long as a source is available. For example, one or a system of protected coral areas would remain susceptible to predation during a major crown-of-thorns outbreak, but would be severely deprived of larvae for recolonisation if set among a complex of destroyed reefs.

There is no evidence that any of the current marine protected areas of the region have consciously incorporated either of these two approaches, although the soon-to-be-gazetted Mafia Island Marine National Park has come closest to achieving this.

Related to these approaches is the critical need for research to yield information on species and ecosystem distribution, uses, and threats, and the processes sustaining them. This is an activity that can be promoted and expedited in marine protected areas. For example, the Kenya Wildlife Service has facilitated ongoing research on the impact of fisheries on coral reefs by the New York Zoological Society's Coral Reef Conservation Project.

Finally, and crucial to the success of marine protected efforts, is the fundamental need for community involvement in the form of participation in the selection, planning, and management process, and through extension and educational activities.

Developing and Strengthening the System of Marine Protected Areas in the WIO

Marine Protected Areas Needs in the WIO

Earlier in this report several needs were identified to improve the current system of marine protected areas. These needs can be grouped broadly under the following two themes that would form the core of a regional marine protected areas programme:

- The need for an improved regional system of marine protected areas, including:

the need for a clear definition of marine protected area objectives, and assessment of whether these address the full range of regional conservation issues; and

- the need for better geographic representation.

- The need for improved management capacity for marine protected areas, including:

- the need for integration of marine protected areas into broader management frameworks;
- the need for marine protected areas to provide improved community participation and benefits; and
- the need to strengthen marine protected area management capacity and action.

Framework for Regional Co-operation

The establishment in 1979 of the Indian Ocean Sanctuary (encompassing the entire Indian Ocean to 55 degrees south latitude) for the conservation of whales is among the greatest achievements of its kind in marine conservation. It offers an example of achievement in international co-operation for resource management and conservation and, together with the Protocol Concerning Protected Areas and Wild Flora and Fauna in the Eastern African Region generated through the UNEP Regional Seas Programme, provides an excellent framework for collaboration in the development of a regional marine protected areas programme.

In practice, national interest will take priority over regional interests – the first duty of a nation is the well-being of its people, but there are regional responsibilities, implications and interests, too.

A carefully planned and executed national biodiversity conservation plan will still serve the regional interest, and would leave relatively little more to be done at that level. However, the challenge is to establish an active and interactive network of protected area practitioners who work together to share experiences and lessons learned, and to develop a working system of protected areas that truly safeguards the resources of the region.

Programme Goal

To safeguard marine and coastal biological diversity of the Western Indian Ocean through the establish-

ment of a representative system of marine protected areas.

Programme Objectives

Within the context of the needs, opportunities and priorities of the region, and the aspirations of the people, and in close consultation with relevant government authorities, non-governmental organisations (NGOs), and the concerned communities:

Phase 1

- To establish an interactive regional network of marine protected area practitioners and to develop mechanisms for regular exchange of information and experience.
- To design an integrated representative system of marine protected areas for the conservation of biological diversity.
- To define a programme of activities to strengthen the capacity of appropriate institutions to manage marine protected areas.
- To develop project proposals to governments and funding agencies to enable the implementation of the above two objectives.

Phase 2

- To implement a focused programme of training, workshops, study tours, and higher learning to further develop capacity for MPA management in the region.
- To provide technical and other support for the implementation of projects for the establishment and improved management of marine protected areas.

Activities

Phase 1

It is proposed that the marine protected area needs and programme objectives could be met through the following activities:

- Establish an interactive network of marine protected area scientists, planners, and managers to enable and promote the regional sharing of expertise and experience, including inter-agency agreements to provide personnel on secondment to assist with problem-solving and programme development.

- Through a working group drawn from the network, and building on the IUCN CNPPA/World Bank report, define a framework for a regional system of marine protected areas, including:

- a definition of the region-specific goal, objectives and selection criteria for a regional marine protected areas system;

a detailed review of the findings and recommendations of the IUCN CNPPA/World Bank report concerning existing and proposed marine protected areas and their contribution to the conservation of marine biodiversity, fisheries and tourism, and assessment of whether existing systems are adequate to conserve representative biodiversity;

- formulation of a regional strategy for marine protected area establishment and management that builds on the IUCN CNPPA/World Bank and UNEP OCA/PAC reports, and national initiatives to:

- identify any additional areas for establishment as marine protected areas
- identify priorities for action within the context of the programme goal and objectives

integrate the above into a proposed representative system of marine protected areas for the conservation of regional marine biological diversity, and recommend a course of action for establishment of these areas

the development, in close collaboration with all relevant government agencies, NGOs, and communities if appropriate at this stage, of detailed proposals for projects aimed at implementing the conclusions from the above activities – these projects will incorporate strong elements of institutional strengthening, training, public education, community participation, networking, and evaluation, and will address the following general themes:

- marine protected area planning and management;
- management oriented research and monitoring (both environmental and social);

- public education and community awareness;
 - training and strengthening institutional capacity for management.
- Critical review, by the network, of management objectives, policies, and practices for marine protected areas, to assess:
- whether marine protected area design and management practices are adequate to fulfil management objectives;
 - whether mechanisms to achieve effective management action beyond marine protected area boundaries, or to integrate these into broader management frameworks (such as through coastal zone management), exist and are adequate to buffer the protected areas from surrounding developments and activities;
 - whether processes and approaches to coastal community participation in marine protected area planning and management, and means to have these bring tangible benefits to the communities, are successful and transferable within the region;
 - and to identify successful management sites and methodologies that would form the basis for regional study tours and wider regional application.
- Critical review of the institutional arrangements, planning and management capacity for marine protected areas in the region to assess training and technical assistance needs, and define a course of action to address these.

Phase 2

- Implementation of training programmes, including:
- special regional training courses for marine protected area planners and managers, possibly through the College of African Wildlife Management in Mweka, Tanzania (Kenya Wildlife Service have indicated that they would be willing to facilitate this through their base at Shimoni to enable participants to acquire first-hand experience in the Kisite Ma-

rine National Park, a good example of a working park);

- a sharing of experience and lessons learned through workshops, study tours to sites in the region, including expansion of the IUCN EARO Marine Programme network newsletter and information dissemination activities possibly through partnership with a regional NGO such as the Western Indian Ocean Marine Science Association (WIOMSA).

- Provision of support for implementation of project activities developed in Phase 1 of the programme, including fund raising and technical advisory services.

Organisational Framework

A lead agency will need to be identified to coordinate and implement the programme. This role could be assumed by IUCN as the technical partner with UNEP OCA/PAC, but the region would be better served if a suitable regional NGO could be located for the role of implementing agency.

WIOMSA is a young regional NGO based in Zanzibar that has members from all WIO states. WIOMSA would be an appropriate choice for implementing agency, and could be assisted in this capacity by IUCN. WIOMSA would act as secretariat to the Working Group, co-ordinating all its meetings and ensuring regular contact and exchange of information. WINDOWS, the newsletter of WIOMSA, would provide an effective means of communication for the network of marine protected areas practitioners.

IUCN, through its Eastern Africa Marine and Coastal Conservation Programme, would continue to take the lead in catalysing interest and commitment to the programme. If so requested, IUCN would be the principal technical partner to WIOMSA. In this case, IUCN would:

- Assist WIOMSA with its secretariat functions, at least in the initial stages of the project and until such time as WIOMSA has sufficient capacity to manage this activity independently.
- Facilitate linkages and co-ordination within the region, with GBRMPA (under the terms of Memorandum of Understanding to be developed), IUCN Regional Office for Southern Africa IUCN Headquarters Programmes and Commis-

sions (especially CNPPA), UNEP's Regional Seas Programme, and regional biodiversity initiatives;

- Assist WIOMSA with the development of project proposals in partnership with relevant institutions or, if so requested by WIOMSA, take the lead role in development of these proposals;
- Provide technical advice to WIOMSA, or directly to national project implementing agencies within the overall framework of the programme, including direct support and supervision of project activities, as appropriate, and recruitment of suitably qualified technical advisors and trainers as required;
- Provide the services of a full-time Working Group Leader, if required.

The working group leader will direct and facilitate implementation of the programme developed by the working group. In particular, the working group leader will:

- Oversee development and implementation of the programme;
- Assist WIOMSA to identify and recruit working group members;
- Assist WIOMSA to identify, recruit, and supervise the activities of support staff;
- Liaise closely with the IUCN to ensure co-ordination with other national, regional or international initiatives relevant to the programme.
- Report on programme implementation.

The working group will support the working group leader in carrying out the activities of the programme. This will include facilitating co-ordination with relevant national authorities and assistance in the identification, design, prioritisation and implementation of projects that aim to achieve the goal and objectives of the programme.

Conclusion and Recommendations

The Western Indian Ocean remains an area of great biodiversity interest, but the full extent of this value is unknown. It is known, however, that since the advent of Arab and European seafarers, biodiversity in the region has been lost and is threatened due to intensive tourism development, the international and

local souvenir trade in marine products (including of endangered species), the near total subsistence of poor coastal communities on a few coastal marine resources, and inappropriate or poorly controlled development.

Conservation of marine biodiversity in the region requires a combination of research, community participation and rights to resource ownership, establishment of marine protected areas, including the strengthening of capacity for their management, and, for coastal planning, management and environmental impact assessment.

It is strongly recommended that the following actions for marine protected areas be considered priorities among the nations of the region and the donor community:

- Establishment of an interactive network of marine protected area planners and managers.
- Formulation of a regional strategy for marine protected area establishment and management.
- Review of management objectives, policies and practices for marine protected areas, and identification of successful sites and methodologies that foster community participation and integrate management with that of surrounding areas.
- Review of the planning and management capacity for marine protected areas in the region, and implementation of training programmes, including regional study tours.
- Related activities that are important to promote include:
 - Biodiversity-related research, especially when linked to the development of management strategies and action plans.
 - Coastal zone planning and management, incorporating community development activities, and the establishment of marine protected areas designed to meet multiple objectives.

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ANNEX 2. FRAMEWORK FOR REGIONAL COOPERATION

Three legally binding global instruments place a profound obligation on the states of the WIO to safeguard their marine environment and resources and to cooperate in this endeavour. Two regional agreements, one in force and the other pending one more ratification further strengthen the framework for regional cooperation.

The most significant of the global instruments concerning conservation of marine biodiversity in terms of historical achievement is the *1982 United Nations Convention on the Law of the Sea* which entered into force on the 16th November 1994. Almost one fifth of the text of the Convention has an environmental significance.

The 1982 Convention (UNCLOS III) carries with it a number of duties designed to ensure sustainable use and prevent overexploitation of living resources (chiefly, Art. 61(1),(2); Art. 62(1); Art. 145; Art. 192). There are also obligations to cooperate on a regional basis (Art. 192; Art. 197) for the protection and preservation of the marine environment. Of significance to the WIO is a further obligation placed on International Organisations to assist this process through transfer of technical assistance and data, through training, and through establishment of guidelines and criteria for management.

The UN Conference on Environment and Development, especially through the provisions of Agenda 21 Chapter 17 entitled *Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources*, interfaces with, complements and expands on UNCLOS III, providing a broader and more detailed platform for the conservation of marine environments and species.

Another product of the UN Conference on Environment and Development, is *The Convention on Biological Diversity* which entered into force on 29 December 1993. Article 6 of the Convention is crucial, requiring each Party to develop national strategies, plans or programmes for the conservation of biodiversity and sustainable use of biological resources. Article 8 focuses on *in situ* conservation obliging parties to establish protected areas, rehabilitate degraded ecosystems, assist recovery of threatened species, and maintain viable populations of species in natural surroundings. IUCN EARO is committed to assisting the states of the WIO to meet these obligations.

Another valuable instrument is *The Convention on Migratory Species of Wild Animals* which came into force in November 1983. Also commonly known as *The Bonn Convention*, the CMS provides a framework within which Parties may act to conserve migratory species and their habitat by:

- adopting strict protection measures for migratory species that have been categorized as endangered;
- concluding Agreements for the conservation and management of migratory species that have unfavourable conservation status or would benefit significantly from international cooperation; and
- undertaking joint research activities.

The CMS clearly provides a sound enabling environment for cooperation in a regional programme of both coordinated research and management activities.

The UNEP facilitated *Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region and related protocols* (Nairobi Convention) entered into force in 1996. The Nairobi Convention binds the states of the region into a number of very specific actions concerning protection of marine species and ecosystems.

These international conventions are developed in response to demonstrated needs to address issues of global concern. They are the product of debate, negotiation and consensus, and their entry into force places obligations on all parties to implement the duties defined in them. The provision of assistance by international organisations in this process of implementation is one of these obligations.

The establishment in 1979 of the Indian Ocean Sanctuary (encompassing the entire Indian Ocean to 55 degrees South latitude) for the conservation of whales is among the greatest achievements of its kind in marine conservation. It offers an example of achievement in international cooperation for resource management and conservation and, together with the *Protocol Concerning Protected Areas and Wild Flora and Fauna in the Eastern African Region*, provides an excellent framework for collaboration in development of regional MPAs and species conservation programmes.

In practice, conservation action in the sea will be implemented at the national, sub-national or local level. A carefully planned and executed national biodiversity conservation plan could still serve the regional interest, and certainly would if it were integrated into a regional strategy. The challenge for international organisations is to assist the establishment of interactive networks of researchers and managers, and enabling environments for them to work together to formulate and implement regional action plans, to plan national actions in the context of their contribution to the region; and to share experiences, successes, failures, information, and lessons learned in implementing programmes at various levels within the national context.

**REPUBLIQUE FEDERALE ISLAMIQUE
DES COMORES**

Moroni, le 31 Janvier 1997

**MINISTERE DE LA PRODUCTION AGRICOLE, DES
RESSOURCES MARINES ET DE L'ENVIRONNEMENT**

À

DIRECTION GENERALE DE L'ENVIRONNEMENT

Le Directeur,

B. P. 41

Moroni - Comores

Fax : (269) 73.13.57

Monsieur John HOUGH
Coordinator GEF/PNUD New-York
Fax : (212) 906 - 5974/5423

N° Rcf: 97- 006 /MPARME/D.G.E.

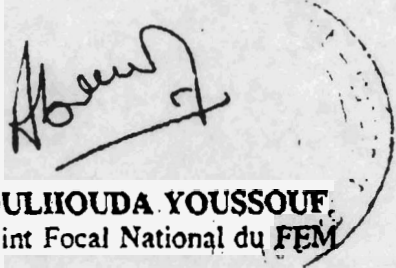
Objet : WIO - MPA.

Monsieur,

Suite à la proposition de l'IUCN pour le développement d'un programme régional d'aires protégées marines et cotières à l'Ouest de l'Océan Indien, je vous signifie l'approbation des Comores à ce programme étant donné qu'il est complémentaire à d'autres activités menées au niveau national que régional.

Je vous prie d'agréer Monsieur l'expression de mes sentiments distingués.

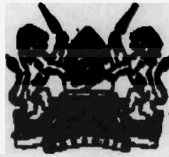
cc: Rod SALM
IUCN - EARO
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ABOULHOUDA YOUSOUF
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When replying please quote

Ref. No. **NES/CONE/07/10.VOL III**
and date



NATIONAL ENVIRONMENT SECRETARIAT
KENCOM HOUSE
P.O. Box 67839
NAIROBI

..... 19.....

3rd September 1997

The Resident Representative
United Nations Development Programme (UNDP)
P.O. Box 30218
NAIROBI

(Attn: Dr. C. Gakahu)

**RE: PDF PROJECT PROPOSAL ON "WESTERN INDIAN OCEAN MARINE
PROTECTED AREAS PROGRAMME**

We have the pleasure to forward to you the Global Environment Facility PDF Block B Project Proposal on "Western Indian Ocean Marine Protected Areas Programme. This Project Proposal has been discussed, reviewed and endorsed by the Kenya's National Global Environment Facility Review Panel.

Kindly communicate the same to the Global Environment Facility, New York Office.


B.O. K'Omudho
DIRECTOR

c.c. ✓ Regional Representative
IUCN/Easter Africa Regional Office
P.O. Box 68200
NAIROBI

(Attn: Dr. Rodney V Salm)

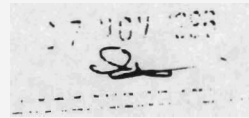
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GEF Coordination Unit
United Nations Environment Programme (UNEP)
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Regional Representative
The World Bank
P.O. Box 30577
NAIROBI



República de Moçambique

MINISTERIO PARA A COORDENAÇÃO DA ACÇÃO AMBIENTAL
GABINETE DO SECRETÁRIO-GERAL



Mr. Emmanuel Dierckx de Casterlé
Resident Representative
UNDP

Maputo

Our/Ref. 2072/GSG/MICOA/96

25 November 1996

Dear Mr. de Casterlé,

Further to our letter of 8 November 1996 concerning the IUCN proposal for PDF block B grant on Western Indian Ocean Marine Protected Area Programme and after having received the necessary clarifications from IUCN, with think that the proposal is in concordance with the general objectives defined in the National Environmental Management Programme as well as in our Coastal Zone Programme.

We therefore endorse it and urge other parties to do the same. The urgent approval and implementation of this proposal will allow us better elaboration of the National Strategy and Action Plan as well as National Communication, which are to be ready in 1998 for the COP of the Biodiversity Convention.



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Brian A D Egan

Dr Rodney V Salm
Coordinator: Marine and Coastal Conservation Activities
IUCN Eastern Africa Office
P O Box 68200
NAIROBI
Kenya

Dear Dr Salm

GEF PROPOSAL: WESTERN INDIAN OCEAN MARINE PROTECTED AREAS PROGRAMME

Receipt is acknowledged of your letter dated 3 January 1997 and accompanying documents dealing with above-mentioned proposal. Thank you for clarifying the matter.

This department, as the GEF operational focal point for South Africa, has no objection to your proposal and endorses it in principle. However, we need to consult with our colleagues on regional level and other institutions who make up a reference group for matters of this nature. I am doing this at the moment and as soon as I am able to give you unqualified support I will contact you.

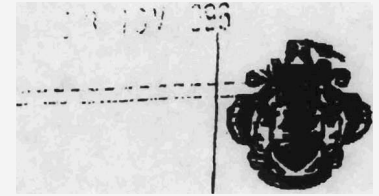
Yours sincerely

**DR F HANEKOM
DEPUTY DIRECTOR GENERAL
GEF OPERATIONAL FOCAL POINT: SOUTH AFRICA**

97.01.29

of Foreign Affairs, Planning and Environment
P.O. Box 656, Victoria, Mahé, Seychelles
Tel : (248) 224688 - Fax : (248) 224845

Please address all correspondence to the Principal Secretary



TELEFAX MESSAGE

Our Ref : FAIC/355/8/57

TO : Mr. Rod Salm
IUCN
Kenya

FROM : Mrs J. d'Offay
Technical Adviser

FAX NO : 254 2890615

DATE : 28th November 1996

NO OF PAGES : 2

Dear Mr. Salm

**RE : GEF PDF BLOCK B GRANT FOR THE DEVELOPMENT OF A
MARINE PROTECTED AREAS PROGRAMME FOR THE WESTERN
INDIAN OCEAN**

I refer to the above project document which was submitted to us by UNDP but which I understand was prepared by IUCN.

Please find attached a copy of the letter we have sent to UNDP on this subject.

Thank you for your cooperation.

Yours sincerely


Jeannette d'Offay (Mrs)
Technical Adviser

FOR : PRINCIPAL SECRETARY

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8 November 1996

Dr. Rodney V. Salm,
Coordinator,
Marine & Coastal Conservation Activities,
IUCN
Eastern Africa Regional Office,
P.O Box 68200,
NAIROBI,
KENYA

Dear Sir,

**RE: MARINE PROTECTED AREAS PROGRAMME
FOR THE WESTERN INDIAN OCEAN**

We are in receipt of your letter dated 26 September, 1996 as well as the project proposal on "West Indian Ocean Marine Protected Areas Programme". We have studied the proposal and find it instrumental in enhancing biodiversity protection cooperation. We consequently give a support to the proposal, and your effort to submit it to the GEF council for funding.

Yours Sincerely


W.V. Haule
for: **PRINCIPAL SECRETARY**