

**MPAs
INDIA**

SAMUDRA Monograph

Marine Protected Areas in India



Ramya Rajagopalan



International Collective in Support of Fishworkers
www.icsf.net

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Children returning with fishing gear
to Thoopukadu fishing village in the
Gulf of Mannar National Park

Photo by
Ramya Rajagopalan

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Acronyms and Abbreviations

ASI	Archaeological Survey of India
ATREE	Ashoka Trust for Research in Ecology and Environment
CBD	Convention on Biological Diversity
CEC	Central Empowered Committee
CMFRI	Central Marine Fisheries Research Institute
CRZ	Coastal Regulation Zone
CSS	centrally sponsored scheme
DCF	Deputy Conservator of Forests
DHAN	Development of Humane Action Foundation
EDC	eco-development committee
EEZ	exclusive economic zone
FRA	Forest Rights Act
FRP	fibre-reinforced plastic
FSI	Fishery Survey of India
GDP	gross domestic product
GEER	Gujarat Ecological Education and Research
GEF	Global Environmental Facility
GOI	Government of India
GOM	Gulf of Mannar
GOMBR	Gulf of Mannar Biosphere Reserve
GOMBRT	Gulf of Mannar Biosphere Reserve Trust
GOMNP	Gulf of Mannar National Park
ha	hectare
hp	horsepower
IBE	inboard engine
IBL	international boundary line
ICSF	International Collective in Support of Fishworkers
kg	kilogramme
MAB	Man and Biosphere (programme of UNESCO)
MCPA	marine and coastal protected area
MFRA	Marine Fishing Regulation Act
mld	million litres per day
mn	million

MoEF	Ministry of Environment and Forests
MPA	marine protected area
MSSRF	M S Swaminathan Research Foundation
NBA	National Biodiversity Authority
NBAP	National Biodiversity Action Plan
NFF	National Fishworkers' Forum
NGO	non-governmental organization
NIO	National Institute of Oceanography
nm	nautical mile
OBM	outboard motor
PA	protected area
PA PoW	Protected Areas Programme of Work (of the CBD)
PBR	People's Biodiversity Register
PoW PA	Programme of Work on Protected Areas (of the CBD)
RSTPC	Rushikulya Sea Turtle Protection Committee
SBB	State Biodiversity Board
SHG	self-help group
SIFFS	South Indian Federation of Fishermen Societies
sq km	square kilometre
STB	stern trawler boat
TEKS	traditional ecological knowledge systems
TRRM	Tamil Nadu Rural Reconstruction Movement
UNDP-GEF	United Nations Development Programme–Global Environmental Facility
UNEP	United Nations Environment Programme
UNEP-WCMC	UNEP World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
VMC	village marine conservation committee
WII	Wildlife Institute of India
WLPA	Wild Life (Protection) Act, 1972

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PREFACE

As the conservation of marine resources becomes a growing global priority, the concept of marine protected areas (MPAs) is being widely propagated. Since most MPAs are located in coastal areas of great biodiversity, their development has direct relevance and concern to the livelihoods, culture and survival of small-scale and traditional fishing and coastal communities.

An MPA is considered to be any coastal or marine area in which certain uses are regulated to conserve natural resources, biodiversity, and historical and cultural features. The Convention on Biological Diversity (CBD) defines an MPA as “any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna, and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings”.

As an area-based management tool, MPAs are considered useful in implementing both the ‘ecosystem approach’ and the ‘precautionary approach’, since their design involves managing pressures from human uses by adopting a degree of protection, which can range from strict protection, where all use activities are barred, to less stringent measures like sanctioning areas where multiple uses are allowed and regulated.

In 2004, the Seventh Meeting of the Conference of Parties (COP7) to the CBD agreed that marine and coastal protected areas, implemented as part of a wider marine and coastal management framework, are one of the essential tools for the conservation and sustainable use of marine and coastal biodiversity. The meeting noted that marine and coastal protected areas have been proven to contribute to (a) protecting biodiversity; (b) sustainable use of components of biodiversity; and (c) managing conflict, enhancing economic well-being and improving the quality of life. Following on this, Parties to the CBD subsequently agreed to bring at least 10 per cent of the world’s marine and coastal ecological regions under protection by 2012. In 2006, only an estimated 0.6 per cent of the world’s oceans were under protection.

Protected areas need to be seen not just as sites copious in biodiversity but also as regions historically rich in social and cultural interactions, which often have great importance for local livelihoods. In practice, however, MPAs have increasingly

become tools that limit, forbid and control use-patterns and human activity through a structure of rights and rules. While numerous studies have examined the ecological and biological impacts of MPAs, few have focused on their social implications for communities and other stakeholders in the area who depend on fisheries resources for a livelihood. A particular MPA may be both a “biological success” and a “social failure”, devoid of broad participation in management, sharing of economic benefits, and conflict-resolution mechanisms. Clearly, for MPAs to be effectively managed, it is essential to consider the social components needed for the long-term benefits of coastal communities.

It is in this context that the International Collective in Support of Fishworkers (ICSF) commissioned studies in six countries to understand the social dimensions of implementing MPAs, with the following specific objectives:

- to provide an overview of the legal framework for, and design and implementation of, MPAs;
- to document and analyze the experiences and views of local communities, particularly fishing communities, with respect to various aspects of MPA design and implementation; and
- to suggest ways in which livelihood concerns can be integrated into the MPA Programme of Work, identifying, in particular, how local communities, particularly fishing communities, could engage as equal partners in the MPA process.

The studies were undertaken in Brazil, India, Mexico, South Africa, Tanzania and Thailand. Besides the Mexico study, the rest were based on primary data collected from selected MPA locations within each country, as listed in the table opposite.

The studies were undertaken in the context of Programme Element 2 on governance, participation, equity and benefit sharing in CBD’s Programme of Work on Protected Areas (PoW PA, also referred to as PA PoW), which emphasizes the full and effective participation of local and indigenous communities in protected area management. Taken together, the studies provide important insights into the MPA implementation process from a fishing-community perspective, particularly on issues of participation.

It is clear from the studies that the most positive examples of livelihood-sensitive conservation come from Brazil, where communities are in the forefront of demanding, and setting up, sustainable-use marine extractive reserves (MERs). Communities there are using protected areas to safeguard their livelihoods, against, for example, shrimp farms and tourism projects. The Brazil study also highlights the many challenges faced in the process, which are related, among other things,

to the need for capacity building of government functionaries and communities; funding; strong community/fishworker organizations; an interdisciplinary approach; and integration of scientific and traditional knowledge.

Country	Case Study Locations
Brazil	<ul style="list-style-type: none"> • Peixe Lagoon National Park, Rio Grande do Sul • Marine Extractive Reserve (MER) Mandira, Sao Paulo • Marine Extractive Reserve (MER) Corumbau, Bahia
India	<ul style="list-style-type: none"> • Gulf of Mannar National Park (GOMNP) and Gulf of Mannar Biosphere Reserve (GOMBR), Tamil Nadu • Malvan (Marine) Wildlife Sanctuary, Maharashtra
South Africa	<p>Five MPAs in three of the country's four coastal provinces, namely:</p> <ul style="list-style-type: none"> • Langebaan Lagoon MPA • Maputaland MPA • St Lucia MPA • Tsitsikamma MPA • Mkambati MPA
Tanzania	<ul style="list-style-type: none"> • Mafia Island Marine Park (MIMP)
Thailand	<ul style="list-style-type: none"> • Had Chao Mai Marine National Park, Trang Province, Andaman Coast • Ra Island, Prathong Island, Prathong Sub-district, Kuraburi District, Phang Nga Province, Andaman Coast

On the other hand, the studies from India, Mexico, South Africa Tanzania and Thailand indicate that communities do not consider themselves equal partners in the MPA process. While, in all cases, there have been recent efforts to enhance community participation, in general, participation tends to be instrumental—communities are expected to participate in implementation, but are not part of the process of designing and implementing management initiatives. The studies also document clear costs to communities in terms of livelihood options lost, expulsion from traditional fishing grounds and living spaces, and violation of human/community rights. The affected communities regard alternative livelihood options as providing limited, if any, support, and, in several cases, as in South Africa, Tanzania and Thailand, they do not perceive substantial benefits from tourism initiatives associated with the protected areas. There tends to be a resistance to MPAs among local communities, a mistrust of government and non-governmental organizations (NGOs) that lead such processes, and violations of rules and regulations, undermining the effectiveness of the MPA itself.

The studies in this series of *SAMUDRA Monographs* stress that there is a strong case for putting in place, or strengthening, a legal framework for supporting community rights to manage resources, building the capacity of both governments and communities, strengthening local organizations, and enhancing institutional coordination. They also highlight the need for more, independent studies on MPA processes from the community perspective, given that the few existing studies on social dimensions of MPA implementation have mainly been undertaken by MPA proponents themselves. Where clear examples of violations of community rights, and unjust costs on communities are identified, easily accessible redressal mechanisms need to be put in place, nationally and internationally

Empowering indigenous and local fishing communities to progressively share the responsibility of managing coastal and fisheries resources, in keeping with the CBD's PA PoW, would undoubtedly meet the goals of both conservation and poverty reduction. This is the challenge before us. The future of both effective conservation and millions of livelihoods is at stake.

Chandrika Sharma
Executive Secretary, ICSF

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This study on marine protected areas (MPAs) in India analyzes the legal and institutional framework for their establishment, and uses two case studies—the Gulf of Mannar National Park and Biosphere Reserve, and the Malvan (Marine) Wildlife Sanctuary—to document and understand the experiences and views of local communities, particularly fishing communities, with respect to the various aspects of design and implementation of protected areas. Stressing the need for fishing communities to be equal partners in all aspects of MPA design, implementation and monitoring, the study concludes with specific recommendations.

The study finds that while there is now more focus, in legislation, policy and practice, on community participation and co-management of natural resources, there is yet a long way to go. Much remains to be done to secure full and effective participation of fishing communities, and to improve governance, participation, equity and benefit sharing, as outlined in Programme Element 2 of the Programme of Work on Protected Areas of the Convention on Biological Diversity.

This publication will be useful for analysts, researchers, non-governmental and fishworker organizations, and anyone interested in issues related to fisheries, biodiversity, conservation, communities and livelihoods.



ICSF is an international NGO working on issues that concern fishworkers the world over. It is in status with the Economic and Social Council of the UN and is on ILO's Special List of Non-Governmental International Organizations. It also has Liaison Status with FAO. As a global network of community organizers, teachers, technicians, researchers and scientists, ICSF's activities encompass monitoring and research, exchange and training, campaigns and action, as well as communications.

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Marine Protected Areas in India

INTRODUCTION

The first MPA in India was designated in 1967 for the protection of wetlands and of the birds migrating there, even before a specific legal framework for protected areas (PAs) was put in place. Currently, there are 31 MPAs along India's coastline (including the islands) that have been officially declared for conserving and protecting coastal and marine biodiversity (SCBD, 2006). There are another 100 PAs that have terrestrial or freshwater components, which partly contain marine environment. Most of the MPAs were designated during the 1980s and early 1990s. They were notified as either 'national parks' or 'wildlife sanctuaries', under the Wild Life (Protection) Act (WLPA) 1972, where, in most cases, no extractive activity is allowed.

This study on MPAs in India analyzes the legal and institutional framework for their establishment, and uses two case studies—the Gulf of Mannar National Park (GOMNP) and Biosphere Reserve (GOMBR), and the Malvan (Marine) Wildlife Sanctuary—to document and analyze the experiences and views of local communities, particularly fishing communities, with respect to the various aspects of design and implementation of PAs. Stressing the need for fishing communities to be equal partners in all aspects of MPA design, implementation and monitoring, it concludes with specific recommendations.

The GOMNP comprises a group of 21 uninhabited islands, located on the Tamil Nadu coast in south India. It was created in 1986 to conserve the coral reef, mangroves and seaweed habitat of the area. The national park, with an area of 560 sq km, forms the core area of the biosphere reserve (GOMBR). The biosphere reserve was set up in 1989 under the United Nations Educational, Scientific and Cultural Organization Man and Biosphere (UNESCO-MAB) programme, and covers 10,500 sq km, making it India's largest (including the land and territorial sea component) marine and coastal protected area (MCPA). Rough estimates suggest that there are 125 fishing villages and 35,000 active fishers who depend

on the resources in the Gulf of Mannar (GOM) area, especially on fishing, and collection of seaweed and other marine resources. There are approximately 5,000 fisherwomen who depend on seaweed collection in and around the 21 islands, and 25,000 fishermen who dive to collect sea cucumbers.

The Malvan (Marine) Wildlife Sanctuary was designated in 1987, and covers an area of 29.12 sq km, with a core zone of 3.18 sq km. The core zone includes the Sindhudurg fort, Padamged island and other submerged rocky structures. The core zone is used for anchoring fishing vessels, and for fishing by a small number of hook-and-line fishermen. The buffer zone has seven villages, with a population of over 7,000 that depends on fishing for a livelihood. Though the sanctuary has been designated, it exists mainly on paper, as the regulations have not been implemented.

In both Malvan and GOM, fishing communities feel that processes of consultation with them have been weak and inadequate. The studies also highlight that significant provisions in the WLPA that support the rights and occupational interests of communities are yet to be implemented. These include provisions that require that the rights of communities be settled, and that the occupational interests and innocent passage of fishers in territorial waters under protection, be protected. Also, while there are legal provisions to form advisory committees for sanctuaries, in practice, these are yet to be formed in the case of Malvan.

Both the case studies highlight that fishing communities have been asking for better implementation of existing fisheries legislation—the provisions of the Marine Fishing Regulation Acts (MFRAs) of their respective States—to control trawling, in the case of the GOM, and purse-seining, in the case of Malvan. Communities feel that control of such destructive fishing practices will, by itself, benefit conservation. Communities in both areas have also made other specific proposals to improve conservation and management. The case studies also demonstrate that fishing communities have either taken up, or are willing to take up, management initiatives to minimize the impact of their fishing activities. However, such community initiatives have not received adequate official support, and have not yet been incorporated into the management plans for the PAs.

Overall, the research study indicates that while there is now more focus, in legislation, policy and practice, on community participation and co-management of natural resources—all changes in the positive direction—there is yet a long way to go. Much remains to be done to secure full and effective participation of fishing communities, and to improve governance, participation, equity and benefit sharing, as outlined in Programme Element 2 of the PA PoW of the CBD.

OUTLINE OF THE STUDY

The study is in six sections. Section I provides background information on the marine and coastal ecosystem, as well as on fisheries resources and fishing communities in India. Section II discusses the legal, policy and institutional framework for protected area implementation in India. Section III is on India's reporting on issues related to MCPAs to the CBD. Section IV examines the current status (location and management) of MPAs in India. Section V contains the two case studies: GOMNP/GOMBR in Tamil Nadu, and the Malvan (Marine) Wildlife Sanctuary in Maharashtra. Section VI synthesizes the status of MPAs in India from the livelihood perspective of small-scale fishing communities, and provides conclusions and recommendations to improve MPA implementation in livelihood-sensitive ways.

METHODOLOGY

The study was based on primary data collection and a secondary review of literature. Information about PAs in India, as well as on the legal framework and other aspects of MPA design and implementation, was obtained from a review of secondary literature. Two MPA sites, namely GOMNP/GOMBR in Tamil Nadu, and the Malvan (Marine) Wildlife Sanctuary in Maharashtra, were chosen for in-depth study and collection of primary data. The sites represented MPAs significantly different in terms of the process adopted for their establishment, and their current status of implementation, as well as in their governance and management structures. During field visits, discussions were held with local fishing communities, as well as with various government departments involved in managing these PAs, including officials of the Gulf of Mannar Biosphere Reserve Trust (GOMBRT), the Office of the Wildlife Warden, the Forest Departments of different States, district-level officials of the Fisheries Departments, and the Central Marine Fisheries Research Institute (CMFRI). Meetings with fishworker organizations, unions and NGOs working in the MPA areas were also held. Primary data collection was undertaken in January 2007.

SECTION I

MARINE AND COASTAL RESOURCES, FISHERIES AND FISHING COMMUNITIES

This section provides background information on the marine and coastal ecosystems in India. It also provides information on fisheries resources and fishing communities in India.

MARINE AND COASTAL BIODIVERSITY

India has a coastline of 8,118 km, with an exclusive economic zone (EEZ) of 2.02 mn sq km and a continental shelf area of 468,000 sq km, spread across 10 coastal States and seven Union Territories, including the islands of Andaman and Nicobar, and Lakshadweep.

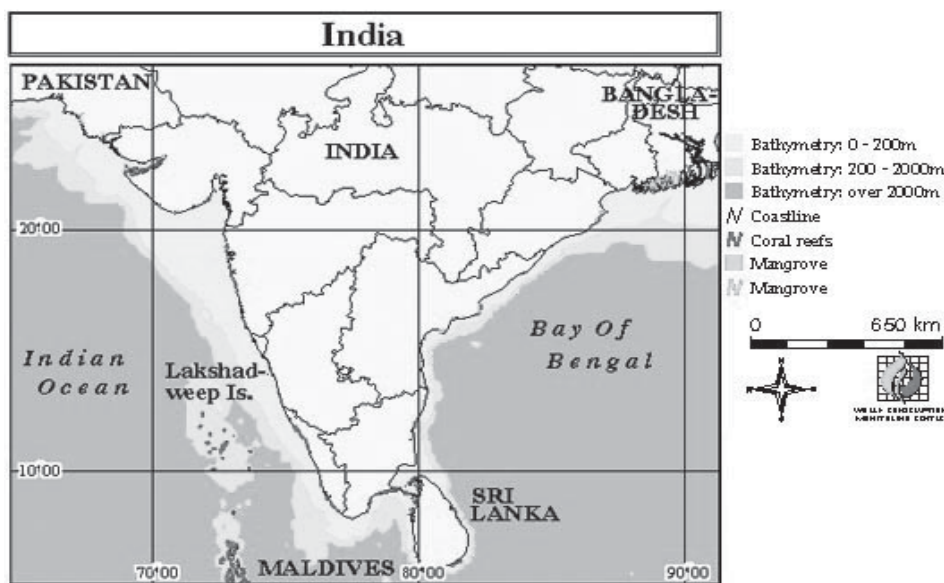
The marine ecosystem is extremely diverse, attributed to the geomorphologic and climatic variations along the coast. The coastal and marine habitat includes nearshore, gulf waters, creeks, tidal flats, mud flats, coastal dunes, mangroves, marshes, wetlands, seaweed and seagrass beds, deltaic plains, estuaries, lagoons and coral reefs.

There are four major coral reef areas in India—along the coasts of the Andaman and Nicobar group of islands, the Lakshadweep group of islands, the GOM and the Gulf of Kachchh. The Andaman and Nicobar group is the richest in terms of diversity. Mangrove ecosystems are found along both the east and west coasts of India, covering an estimated area of 4,120 sq km. Important mangrove areas are in the Sundarbans, Bhitarkanika, Krishna and Godavari delta of Andhra Pradesh, Andaman and Nicobar islands, Gulf of Kachchh, and the Pichavaram-Vedaranyam area of Tamil Nadu coast. Seagrass beds are found along the coasts of Tamil Nadu, Lakshadweep islands, Andaman and Nicobar islands, and the Sundarbans. There are 770 species of seaweeds found in shallow waters all along the Indian coast, particularly in Tamil Nadu, Gujarat, Goa, Maharashtra and Lakshadweep.

Five species of sea turtles are found in Indian waters: leatherback turtles (*Dermochelys coriacea*), green turtles (*Chelonia mydas*), olive ridleys (*Lepidochelys olivacea*), hawksbills (*Eretmochelys imbricata*), and the loggerhead (*Caretta caretta*). The three mass-nesting sites on the east coast of India—Gahirmatha, Rushikulya and Devi river mouth—are all in the State of Orissa.

Twenty-five species of marine mammals (*Cetaceans* and *Sirenias*) are found in Indian waters. Sea cows (*Dugong dugon*), for example, are found in the waters off GOM, Gulf of Kachchh, and the Andaman and Nicobar islands. The islands of Andaman and Nicobar and Lakshadweep, along with the Sundarbans, are considered as biodiversity hotspots¹, where large numbers of endemic flora and fauna exist.

Figure 1: Map Showing the Mangrove and Coral Reef Ecosystems in India



Source: UNEP-WCMC

MARINE FISHING POPULATION

According to the Marine Fisheries Census 2006, undertaken by CMFRI for mainland India and the Fishery Survey of India (FSI) for the Andaman and Nicobar, and Lakshadweep islands, there are 3,305 marine fishing villages in India, with a total fishermen population of 3.57 mn, and an active fishermen population of 0.81 mn. Of these, 0.71 mn are full-time fishers, 0.11 mn are part-time fishers and 0.053 mn are occasional fishers. About 0.83 mn people are involved in other allied activities relating to fishing (CMFRI, 2006 and FSI, 2006).

According to the CMFRI census, the number of villages rose from 2,182 in 1980 to 3,305 in 2005, while the total fishermen population increased by 86 per cent, from 1.89 mn to 3.52 mn². The increasing trend is not uniform across the coastal States;

in the case of West Bengal, Gujarat and Tamil Nadu, there has been significant growth, while Kerala and Goa experienced no growth (CMFRI, 2006).

FISHERIES PRODUCTION

The fisheries sector contributed 1.04 per cent to the national gross domestic product (GDP) and 5.34 per cent to agriculture and allied activities in 2004-05 (Government of India, 2006). The total fish production of India increased from 0.73 mn tonnes in 1950 to 6.57 mn tonnes in 2005-06 (*Handbook on Fisheries Statistics*, 2006:9). During the same period, marine capture fish production increased from 0.5 mn tonnes to 2.92 mn tonnes. The bulk of the catch comprises oil sardines, followed by penaeid and non-penaeid shrimp, Indian mackerel, Bombay duck, croakers, smaller quantities of cephalopods, other sardines and threadfin breams.

In 2004, the mechanized sector accounted for 67.9 per cent of the marine-capture fish production, followed by the motorized sector, with 25 per cent, and the artisanal sector, with 7.1 per cent (Government of India, 2006). The number of fishing craft rose from 144,030 in 1980 to 238,772 in 2005, a growth of 65 per cent in 25 years. During the same period, the number of mechanized craft grew from 19,013 to 58,911, a growth of over 300 per cent. The major fishing gears are gillnets, fixed bagnets, trawl nets, hooks-and-line, troll lines, shore-seines and longlines.

FISHERIES DEVELOPMENT

The development of the mechanized fleet and the trajectory of fisheries development, in general, have had severe impacts on the artisanal fishing sector. The 1970s and 1980s saw the expansion of the mechanized trawl fleet for harvesting shrimp in different parts of India. The competition for resources between the artisanal and mechanized sectors gave rise to a number of conflicts over fishing grounds and fishing rights, in States like Goa, Kerala and Tamil Nadu. This led to the adoption of MFRA by different States, which demarcated zones for traditional fishing.

The small-scale sector has also adapted many of the gear earlier used by the mechanized sector. For example, Kerala has witnessed the emergence of the ring-seine (a modified form of purse-seine) and the mini-trawl net. These types of gear have contributed to substantial increases in production, and, in the absence of an effective management system for both the small-scale and mechanized sectors, there is evidence of increasing pressure on resources, particularly in inshore waters.

SECTION II

LEGAL AND INSTITUTIONAL FRAMEWORK

This section provides information, in brief, on the legal and institutional framework related to PAs and fisheries in India.

According to the Constitution of India, both the State and Central governments have the power to legislate on the subject of forests and the protection of wild animals. The main Central legislation relevant for the designation of PAs, as national parks, wildlife sanctuaries, community reserves, conservation reserves and tiger reserves, is the WLPA 1972, as amended in 2002 and 2006. The WLPA provides no specific definition for MPAs or MCPAs³, which can be declared under any of the above five categories of PAs. Currently, existing MPAs are either declared as sanctuaries or national parks. Significantly, in India, MPAs are designated for conservation and preservation of the ecosystem, and not for fisheries management.

The other important pieces of legislation relevant to wildlife and forest-resource management are: the Biological Diversity Act (2002) and Rules (2004); the Indian Forest Act (1927); the Forest (Conservation) Act (1980, as amended in 1988); the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (2006) and Rules (2008), known as the Forest Rights Act (FRA); and the Environment (Protection) Act (1986). The MoEF is the nodal agency for implementation of the WLPA and all the above legislation, except for the FRA, which is under the Ministry of Tribal Affairs.

In the case of fisheries management, the relevant central legislation includes: the Indian Fisheries Act (1897); the Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act (1976); and the Maritime Zone of India (Regulation of Fishing by Foreign Vessels) Act (1981) and Rules (1982). There are also policy notes and guidelines brought out by the Government of India (GOI). Fisheries in the territorial waters is a State subject, and the relevant legislation related to fishing, particularly the State-level MFRA, are discussed in the case studies.

This section focuses mainly on the WLPA as the primary legislation providing the framework for PAs. Relevant provisions of other selected legislation are then discussed briefly.

The Wild Life (Protection) Act, 1972, amended in 2002⁴ and in 2006⁵, provides for “the protection of wild animals, birds and plants, and for matters connected therewith or ancillary or incidental thereto, with a view to ensuring the ecological and environmental security of the country”. Under the Act, animals include “mammals, birds, reptiles, amphibians, fish⁶, other chordates and invertebrates, and also includes their young and eggs”. Wildlife is defined to include “any animal, aquatic or land vegetation which forms part of any habitat”, which has been interpreted to imply that the destruction of habitat amounts to destruction of wildlife itself.

The WLPA provides for two kinds of protection to species—protection of specific endangered species listed in Schedules I, II, III and IV (especially against hunting), regardless of its location, and the protection of all species in designated PAs. The species listed in Schedule I, including marine species such as all five species of turtle found in Indian waters, ten species of shark and ray, all species of seahorse, giant grouper, reef-building corals, black coral, organ pipe coral, fire coral, sea fan, and nine species of molluscs and sea cucumber, are prohibited from being hunted. All sponges are listed in Schedule III, and 15 species of molluscs are listed in Schedule IV, which are also prohibited from being hunted or captured, from 2001⁷.

PA categories include national parks, sanctuaries, conservation reserves, community reserves and tiger reserves, notified under Sections 18, 35, 36A, 36C and 38V of the WLPA. The last three categories were added in the 2002 and 2006 amendments. As mentioned earlier, MPAs or MCPAs can be declared under any of the five categories of PAs under the WLPA, with existing MPAs mainly declared as either sanctuaries or national parks. In the case of the Sundarbans National Park, a small area has been designated as a tiger reserve. Significantly, while ‘biosphere reserves’ are not legally a PA category, they are an important entity since they are formed by a Central government notification under the UNESCO-MAB programme, and are included in India’s list of MPAs submitted to the CBD.

The WLPA restricts entry into a sanctuary and national park, and nobody is allowed in, except certain specified categories, such as those permitted by the Chief Wildlife Warden, or those who have immovable property within the limits of the sanctuary. It is to be noted that in the case of a national park, there is no provision to allow the continuance of any right of any person in, or over, any land within its limits. The Act also states that “no person shall destroy, exploit or remove any wildlife from a sanctuary or destroy or damage the habitat of any wild animal or deprive any wild animal or its habitat within such a sanctuary...”⁸. The same provisions apply to national parks.

Sanctuaries and national parks are thus primarily no-commercial extractive-use zones⁹, though there are differences between them; the highest degree of protection is accorded to national parks where no human interference is permitted, except those beneficial to conservation. In the case of sanctuaries, certain rights may be permitted by the Collector in consultation with the Chief Wildlife Warden (Section 24 (2) (c))¹⁰. Thus, while grazing and fishing are completely banned in national parks, in wildlife sanctuaries, grazing and fishing may be regulated, controlled or prohibited. In the case of national parks, the focus is on conserving the habitat of a species, allowing for no human activity except tourism, and providing the highest degree of protection. In sanctuaries, the focus is on conservation of a species, with provisions for allowing traditional activities practised for non-commercial purposes.

The WLPA specifically mentions that if any part of the territorial waters are to be included within a sanctuary or national park, prior concurrence is needed from the Central government, provided that the limits of the area of the territorial waters are determined in consultation with the Chief Naval Hydrographer of the Central government, and *after taking adequate measures to protect the occupational interests of the local fishermen*¹¹. There is also specific mention that *the right of innocent passage of any vessel or boat through the territorial waters should not be affected by the notification of the sanctuary*¹². It is also worth noting that, in relation to prevention and detection of offences, the WLPA states that where a fisherman, residing within 10 km of a sanctuary or national park, inadvertently enters the territorial waters in that sanctuary or national park on a boat not used for commercial fishing, such a boat shall not be seized¹³.

According to the 2002 amendment to the WLPA, State governments can, after consultations with local communities, declare any area owned by the Government as a conservation reserve, particularly areas adjacent to national parks and sanctuaries, so as to link one PA with another. The State governments can also declare any privately owned area or community land, not part of a national park, sanctuary or conservation reserve, as a community reserve, when the community or an individual has volunteered to conserve wildlife and its habitat. The same provisions as for sanctuaries apply to activities prohibited in the reserve. Community reserves and conservation reserves have provisions for community participation and representation through local self-government institutions. It is worth noting that it is only recently, after the 2002 amendment to the WLPA, that space for community representation in the management process has been created.

As of December 2007, two community reserves¹⁴ and three conservation reserves have been declared, all in the terrestrial ecosystem. In the case of marine

ecosystems, there is a proposal from the Government of Orissa to declare the Rushikulya sea turtle rookery as a community reserve. The Rushikulya Sea Turtle Protection Committee (RSTPC), formed by motivated villagers (mostly fishing communities) adjoining the Rushikulya sea turtle rookery, has been working for some time now to protect and conserve turtle populations.

One major reason for the lack of community response to the community reserve category is the proposal of a uniform administrative structure, requiring the representation of a forest official in the management committee. Communities that have been managing and conserving their resources through their own local institutions and norms may find this difficult to accept. Further, the community-reserve category is severely restricted because it is applicable only to community and private lands. It thus excludes all those government habitats that many communities across India have been conserving or managing, often for generations¹⁵.

The 2006 amendment to the WLPA introduced provisions for tiger reserves in core or critical tiger habitat areas of national parks and sanctuaries, and buffer areas. The tiger conservation plan has provisions to address the livelihood concerns of local people and the rights of Scheduled Tribes or other forest dwellers. The tiger reserve is the first category that addresses the issue of co-existence of wildlife and human activity, with due recognition to livelihoods, development, and the social and cultural rights of local peoples, in the buffer or peripheral areas, such as the communities living inside the Sundarbans Tiger Reserve. It has been pointed out that the main weakness of the 2006 amendment to the WLPA is that it does not define critical habitats¹⁶.

Several other provisions, from a community-rights perspective, that are applicable to PA categories under the WLPA, need to be noted. In the case of both sanctuaries and national parks, the 2002 amendment to the WLPA asks State governments, as far as possible, to complete the proceedings to *settle rights* of affected persons within a period of two years from the date of first notification of the sanctuary or national park. However, once the procedures are completed, another notification has to be issued specifying the limits of the area of the sanctuary or national park, and declaring the said area as a sanctuary or national park, on and from such date, as may be specified in the notification. It is also stated that until the rights of affected persons are finally settled, the State governments are to make alternative arrangements for making available fuel, fodder and other forest produce to the persons affected as per government records.

The 2002 amendment to the WLPA also calls for the constitution of an advisory committee, to render advice on measures to be taken for the better conservation and management of the sanctuary, including participation of the people living

within and around the sanctuary (Section 33B(2)). The members are to include three representatives of institutions of *panchayati raj* (India's decentralized form of governance or government), besides others. The 2002 amendment further provides for State governments to set up management committees for community and conservation reserves. They should comprise representatives of government and village *panchayats* in whose jurisdiction the reserve is located, besides others, to advise the Chief Wildlife Warden to conserve, manage and maintain the area. It is evident from the above that the WLPA, particularly through recent amendments, has created some spaces for community participation, and for protection of community rights.

The Biological Diversity Act 2002 (No. 18 of 2003) is meant “to provide for conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.” This Act has created a new category for the protection of areas of high biodiversity, called ‘biodiversity heritage sites’. Under the Act, State governments may, in consultation with the Central government, frame rules for the management and conservation of heritage sites. The National Biodiversity Authority (NBA) can also advise State governments on selection of areas to be notified as biodiversity heritage sites, and on measures for the management of these sites¹⁷. The Act also has provisions for setting up of a State Biodiversity Fund, to be used for the management and conservation of heritage sites, for compensating or rehabilitating any section of people economically affected by the notification of the heritage sites, and for the socioeconomic development of areas from where such biological resources or knowledge associated with them have been accessed.

The NBA's functions include issuing guidelines for fair and equitable benefit sharing, advising the Central government on matters relating to the objectives of the Act, and also providing for the establishment of State Biodiversity Boards (SBBs). Though the Act specifically defines ‘benefit claimers’ as including conservers of biological resources, and creators and holders of knowledge and information, there is no further guidance on how these provisions can be applied to PAs.

As the Act is relatively recent, no sites have yet been designated under the biodiversity heritage¹⁸ category, though a sub-committee has been constituted to look at the proposed guidelines submitted by NGOs. The NBA and SBBs have been formed, and work has been initiated to prepare a People's Biodiversity Register (PBR) in consultation with local people, to contain comprehensive information on availability and knowledge of local biological resources, their medicinal or other uses or any other traditional knowledge associated with them.

The Indian Forest Act, 1927, classifies forests into four categories—reserve forests, village forests, protected forests and non-government (private) forests. In most cases, reserve forests have been declared in the periphery of MPAs. For example, the peripheral areas of the GOMNP have been declared as reserve forests. This is also the case of the Bhitarkanika and Sundarbans Biosphere Reserve. The Forest Conservation Act, 1980 (as amended in 1988) provides the legal framework for forest conservation.

The recently enacted **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006⁸**, or FRA, is a landmark legislation, in that it recognizes and vests forest rights and occupation in forest land on forest-dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded. It also provides for a framework for recording forest rights. The recognized rights under the Act include the responsibility and authority for sustainable use, conservation of biodiversity, and maintenance of ecological balance, thereby strengthening the conservation regimes of the forests while ensuring livelihoods and food security. Forest rights include the community rights of use or entitlements for natural products such as fish. The Rules under the Act make provisions for the inclusion of traditional fishing grounds as evidence for determination of forest rights. These could be of importance to the fishing communities living in the Sundarbans Tiger Reserve area in West Bengal.

The Environment (Protection) Act, 1986, provides for the protection and improvement of the environment. **The Coastal Regulation Zone (CRZ) Notification, 1991**, issued under the provisions of this Act, outlines a zoning scheme to regulate development in a defined coastal strip. It recognizes the traditional rights and customary uses of fishing communities, and provides for the construction/reconstruction of their dwelling units between 200 m and 500 m of the shoreline. This Notification is currently being revised, but the proposed new framework makes no reference to these rights, and has met with strong protests from fishing community organizations.

Besides the above-mentioned pieces of legislation, there are a number of other policy documents, guidelines and action plans that are relevant for the designation and management of PAs and marine resources. These include the National Conservation Strategy and Policy Statement for Environment and Sustainable Development, 1992; the National Environment Policy, 2006; the Wildlife Conservation Strategy, 2002; the Guidelines for integrated management action plan for wetlands, mangroves and corals; and the Guidelines for protection, maintenance, research and development in the biosphere reserves in India, 1999.

The National Wildlife Action Plan (2002-2016) recognizes local communities who have been traditionally dependent on natural biomass, with the assumption of basic responsibility to protect and conserve these resources. The Strategy for Action calls for strengthening and enhancing the PA network, effective management of PAs, ensuring people's participation in wildlife conservation, and integration of the national wildlife action plan with other sectoral programmes. The Plan stresses that management plans should be based on scientific knowledge, adequate field data and traditional knowledge and expertise. The Plan emphasizes the need to set up participatory management committees for each PA, and evolve and prescribe guidelines for local community involvement in the different management zones of PAs and adjacent areas. It also recognizes the need for revising the fishing laws in various States to formulate a central fisheries²⁰ legislation, improving implementation, and extending legal coverage to aquatic life forms and ecosystems. Though it is five years since the Plan has been formulated, its implementation is yet to be seen in MPAs.

INSTITUTIONAL FRAMEWORK

The MoEF is the nodal agency at the Central level responsible for biodiversity and wildlife conservation and preservation. The Coast Guard (Department of Defence, Ministry of Defence) is responsible for enforcement of some of the regulations in MPAs, especially in territorial waters. There are other research institutes under the Ministry of Science and Technology, and the Ministry of Agriculture, that are also responsible for undertaking research activities on coastal and marine ecosystems. At the State level, the Department of Forests is the nodal agency under the MoEF, responsible for managing PAs. The Departments of Fisheries, under various State governments, are responsible for managing fisheries resources through enacting legislation and regulations, and are also responsible for the welfare of fishing communities. As seen in the case of the Gahirmatha (Marine) Wildlife Sanctuary, Orissa, the State Fisheries Department has, since 2003, been bringing out regulations every year, notifying the closed areas and periods for fishing, to protect turtle-congregation areas.

It is worth noting the role that the Supreme Court of India plays in ensuring implementation of the legislation discussed earlier. Some important Supreme Court case judgements are primarily concerned with the implementation of the WLPA and the Forest (Conservation) Act, 1980, especially relating to the settlement of rights and activities permitted in PAs. The Supreme Court has also set up new authorities and committees such as the Central Empowered Committee (CEC). Notable for fishing communities is the CEC's 2004 report on protection of olive ridley sea turtles in Orissa, and the interim order issued by the Supreme Court regarding non-forestry use of the reserved forest in Jambudwip Island²¹.

SECTION III

INDIA AND CBD'S PROTECTED AREAS PROGRAMME OF WORK

India became a signatory to the CBD in June 1992, and the Convention itself came into force on 29 December 1993. The CBD sets out the obligations of States to the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

India, in its third report to the CBD in 2006, highlighted the following activities initiated under the Programme of Work on Coastal and Marine Biodiversity: MCPAs have been declared and gazetted; management plans have been developed with the involvement of all stakeholders; effective management, with enforcement and monitoring, has been put in place; and a national system or network of MCPAs is under development, and is already in place.

The report also states that India has a system of MCPAs that includes areas that forbid extractive uses, and are surrounded by sustainable management practices over the wider marine and coastal environment, with an overall high priority towards the implementation of the Programme of Work on Coastal and Marine Biodiversity. India also reports that national targets have been set in sectoral plans, strategies and programmes, especially for the establishment of new MPAs, and that there are enabling legislative frameworks already in place to manage the marine and coastal biodiversity, and PAs.

The report identified major legislative and institutional barriers, and a variety of social, economic, political, administrative and financial reasons that impede effective establishment and management of PAs. Several PAs have not been legally gazetted yet. The absence of management plans and monitoring processes also hampers the effective management of PAs. Low investment in both manpower and financing, and inadequate inter-agency co-ordination, also adversely affect PA management.

Thus, several issues hindering effective establishment and management of PAs have been identified by India. It is also worth drawing attention to the country presentation by India, in April 2007, at the South and West Asia Sub-regional Workshop on the Review of, and Capacity Building for, the Implementation of the Programme of Work on Protected Areas, organized by the CBD²². The presentation highlighted that enabling mechanisms were still being developed to incorporate

Programme Element 2²³ on governance, participation, equity and benefit sharing of CBD's PoW PA, into the legal framework. It was also highlighted that there are currently limited provisions for sharing benefits with local communities. During discussions at the workshop, it was reported that little data is currently available on the socioeconomic status of communities dependent on PAs, and that efforts need be taken to collect such information (SCBD, 2006).

SECTION IV

MARINE PROTECTED AREAS IN INDIA

India has a network of 611 PAs, including 96 national parks, 510 wildlife sanctuaries, three conservation reserves, and two community reserves²⁴, covering a total of 155,978.05 sq km, or approximately 4.75 per cent of the geographical area of the country, including both terrestrial and marine ecosystems²⁵. Besides these, the GOI has also declared 14 biosphere reserves under the UNESCO-MAB programme, which are also part of the PA database.

According to the GOI's third national report to the CBD, in 2006, there are 31 MCPAs²⁶, 18 of which are fully under the marine environment, whereas the other 13 are partly also on land. Besides these, there are another 100 PAs that have terrestrial or freshwater ecosystems that border with seawater or partly contain coastal and marine environment (SCBD, 2006). These PAs have been notified either as national parks or wildlife sanctuaries, mainly under the WLPA, though, as mentioned earlier, there is no specific provision or mention of MPAs under this, or any other, legislation.

The 31 MCPAs cover an area of 18.5 per cent of the islands and 6.16 per cent of the coastal biogeographic zones. It is proposed to increase this area to 36.14 per cent and 7.12 per cent, respectively (SCBD, 2006). These 31 MCPAs cover an area of 6,271.21 sq km, or 4 per cent of the total area under protection. The MCPAs declared as national parks form 1.8 per cent of the total area under national parks in India, while wildlife sanctuaries form up to 6.16 per cent²⁷ (Rodgers et al., 2002).

The Wildlife Institute of India (WII) has categorized the biogeographic areas of India into ten zones, including coasts and the islands. These are further categorized into five biotic provinces, two on the coasts and three in the islands—west coast (8A), east coast (8B), Lakshadweep Islands (8C), Andaman (10A) and Nicobar (10B) zones (Rodgers et al., 2002). According to the WII reports, there are 26 MCPAs in India, covering an area of 4,745.53 sq km. Though there are some overlaps between the list provided by WII and the list provided by H S Singh (2002), the WII list does not include a number of PAs in the Andaman and Nicobar islands. According to the review of the wildlife PA network in India carried out by WII² in 2002, there are 19 PAs in the coastal region—two national parks and 17 wildlife sanctuaries—and 22 PAs in the islands.

A recent MoEF press release noted, however, that there are only five designated MPAs in the country, namely, the GOMNP (Tamil Nadu), the Gulf of Kutch (Kachchh) Marine National Park and the Gulf of Kutch Marine Sanctuary (Gujarat), the Mahatma Gandhi Marine National Park (Andaman and Nicobar islands) and the Gahirmatha Sanctuary (Orissa)²⁹. Clearly, the number of MPAs/MCPAs identified depends on how MPAs are defined.

The oldest MCPA in India is the Point Calimere Wildlife Sanctuary—an inter-tidal mud flat bed to protect migratory bird species—declared in 1967, before the enactment of the WLPA. The Sundarbans Tiger Reserve, declared in 1973 under the WLPA, was the first MCPA declared as a tiger reserve, though the specific category for designation of tiger reserves under the WLPA was introduced only in the 2006 amendment.

There are three biosphere reserves in marine and coastal areas declared under the UNESCO-MAB programme, which are considered as MPAs as per the GOI's report to the CBD. In the zonation adopted for the biosphere reserves, the core area of the reserve generally comprises the complete area of the national park in the same region. This is the case in the GOM and Sundarbans Biosphere Reserves. There are, additionally, 25 wetlands designated as Ramsar wetlands by the GOI. These also include some of the PAs, such as in Chilika, Point Calimere and Bhitarkanika.

A complete list of MPAs, including biosphere reserves, is provided in Table 1, and a map showing the location of MPAs in India is given in Figure 2. It can be observed that there are more PAs on the east coast of India, while only four PAs have been declared on the west coast to date. It can also be seen that most of the PAs were declared between 1975 and 1990, much before the various guidelines and policies on PAs were formulated at the international and national levels. The increasing conflicts within PAs, and the amendments in legislation, have made the process of declaration of new PAs more stringent and slower, especially in the case of those declared by the State governments.

Table 1: List of Marine and Coastal Protected Areas in India

No.	Name	State	Legal Status	Year of Est.	Total Area (in sq km)	Biotic Zone	Source
1	Gulf of Mannar (marine)	TN	NP	1986	560.00	8B	GEER 2002, WII, GOI
2	Sundarbans	WB	NP	1984	1330.10	8B	GEER 2002, WII, GOI
3	Bhitarkanika	OR	NP	1988	145	8B	GEER 2002, WII, GOI
4	Gulf of Kachchh	GU	NP	1980	162.89	8A	GEER 2002, WII, GOI
5	Rani Jhansi (marine)	AN	NP	1996	256.14	10A	GEER 2002, WII, GOI
6	Mahatma Gandhi (Wandoor – marine)	AN	NP	1983	281.50	10A	GEER 2002, WII, GOI
7	North Button	AN	NP	1987	0.44	10A	GEER 2002
8	Middle Button	AN	NP	1987	0.64	10A	GEER 2002
9	South Button	AN	NP	1987	0.03	10A	GEER 2002
10	Malvan (marine)	MH	WLS	1987	29.12	8A	GEER 2002, WII, GOI
11	Gulf of Kachchh	GU	WLS	1980	295.03	8A	GEER 2002, WII, GOI
12	Khijadiya	GU	WLS	1981	6.05	8A	WII,GOI
13	Sajnekhali	WB	WLS	1976	362.04	8B	GEER 2002, WII, GOI
14	Lothian	WB	WLS	1976	38	8B	GEER 2002, WII, GOI
15	Haliday	WB	WLS	1976	5.95	8B	GEER 2002, WII, GOI
16	Bhitarkanika	OR	WLS	1975	672	8B	GEER 2002, WII, GOI
17	Gahirmatha (marine)	OR	WLS	1997	1435	8B	GEER 2002
18	Chilika	OR	WLS	1987	15.53	8B	GEER 2002, WII, GOI
19	Coringa	AP	WLS	1978	235.70	8B	GEER 2002, WII, GOI
20	Pulicat	AP	WLS	1976	500.00	8B	GEER 2002, WII, GOI

21	Krishna	AP	WLS	1999	194.81	8B	GEER 2002, WII, GOI
22	Point Calimere	TN	WLS	1967	17.26	8B	GEER 2002, WII, GOI
23	Pulicat	TN	WLS	1980	153.67	8B	GEER 2002, WII, GOI
24	Lohabarrack	AN	WLS	1987	100	10A	GEER 2002, WII, GOI
25	North Reef Island	AN	WLS	1987	3.48	10A	GEER 2002, WII, GOI
26	South Reef Island	AN	WLS	1987	1.17	10A	GEER 2002, WII, GOI
27	Cuthbert Bay	AN	WLS	1987	5.82	10A	GEER 2002
28	Cingue	AN	WLS	1987	9.51	10A	GEER 2002, WII, GOI
29	Galathea	NI	WLS	1997	11.44	10B	GEER 2002
30	Parkinson Island	AN	WLS	1987	0.34	10A	GEER 2002
31	Mangroves Island	AN	WLS	1987	0.39	10A	GEER 2002
32	Blister Island	AN	WLS	1987	0.26	10A	GEER 2002
33	Sandy Island	AN	WLS	1987	0.26	10A	GEER 2002
34	Pitti	LK	WLS	2000	0.01	10B	GEER 2002
35	Sundarbans (tiger reserve)	WB	TR	1973	2,585	8B	
36	Gulf of Mannar (biosphere reserve)	TN	BR	1989	10,500	8B	WII
37	Sundarbans (biosphere reserve)	WB	BR	1989	9,600	8B	WII
38	Great Nicobar (biosphere reserve)	AN	BR	1989	885	10A	WII

States: TN - Tamil Nadu; AP - Andhra Pradesh; OR - Orissa; WB - West Bengal; GU - Gujarat; MH - Maharashtra, AN - Andaman and Nicobar, NI - Nicobar, LK - Lakshadweep

Legal status: NP - national park; WLS - wildlife sanctuary; BR - biosphere reserve; TR - tiger reserve

Sources: (1) Singh, H S, 2002. *Marine Protected Areas in India: Status of Coastal Wetlands and Their Conservation*, Gujarat Ecological Education and Research (GEER) Foundation.

(2) Wildlife Institute of India (WII), Government of India. Coastal and Marine Protected Areas list.

Figure 2: Map Showing the Location of Marine Protected Areas in India



Source: Singh, H S, 2002. *Marine Protected Areas in India: Status of Coastal Wetlands and Their Conservation*, GEER Foundation.

MAJOR MCPAS

The major MCPAs along the coastline of India (excluding the islands) that are important from a fishing-community and marine resource-conservation perspective are: the GOMNP; the Sundarbans National Park; the Gulf of Kachchh National Park; the Gulf of Kachchh Wildlife Sanctuary; the Malvan (Marine) Wildlife Sanctuary; and the Gahirmatha (Marine) Wildlife Sanctuary.

The GOMNP comprises a group of 21 uninhabited islands, located on the Tamil Nadu coast. Originally proposed in 1976, the national park was created in 1986, to conserve the coral reefs, mangroves and seaweed habitat of the area. The national park forms the core area of the GOMBR, which was set up in 1989 under the UNESCO-MAB programme. The buffer zone of the biosphere reserve includes the waters between the main coastline and the islands, according to the original notification. The biosphere reserve covers a very large area, making it the largest MCPA (including the land and territorial sea component) in India.

The Gahirmatha Wildlife Sanctuary, located on the east coast of India in the State of Orissa, was designated in 1997, to protect turtle-breeding and nesting grounds. The present sanctuary boundary extends into the territorial waters, covering an area of 1,450 sq km, the largest marine area covered by any of the MCPAs in India. While the turtle-nesting grounds on the beach were earlier part of the Bhitarkanika National Park, the sanctuary was designated especially to include the territorial sea component in 1997.

Regions of the Sundarbans in West Bengal—a unique ecosystem with a network of tidal rivers, channels, mud flats, creeks, dunes, mangrove forests and numerous islands—have been variously designated. The Sundarbans National Park includes the three sanctuaries of Lothian, Sanjnekhali and Haliday. The Sundarbans Biosphere Reserve includes the national park and the sanctuaries, as well as a large buffer area. Besides these categories, the core area, which is the habitat of tigers, is also designated as a tiger reserve.

The Gulf of Kachchh, located on the west coast in the State of Gujarat, is designated as both a wildlife sanctuary and a national park, to protect the coral reefs and mangroves. It was first designated as a sanctuary in 1980, and later in the same year, to provide complete protection to the islands and intertidal area, it was declared as a national park. The MCPA comprises 42 islands, 20 of which have mangroves, while 33 support coral reefs.

The Malvan (Marine) Wildlife Sanctuary in Maharashtra, also located on the west coast, was designated in 1987, to protect the scattered patches of coral reefs that

occur in the intertidal zones. The core zone covers the Sindhudurg Fort, which still has a small population residing inside, the Padmaged island, and a few exposed rocky areas.

The next section has detailed case-study reports of the GOMNP and the Malvan (Marine) Wildlife Sanctuary.

SECTION V

CASE STUDIES

5.1 THE GULF OF MANNAR NATIONAL PARK AND BIOSPHERE RESERVE, TAMIL NADU

5.1.1 PROTECTED AREAS IN TAMIL NADU

Tamil Nadu has 20 sanctuaries, five national parks, three tiger reserves, four elephant reserves and three biosphere reserves, besides a newly designated conservation reserve, in both terrestrial and marine ecosystems³⁰. Tamil Nadu stands 14th in India in terms of total area under PAs. There are three PAs with a coastal and marine component—the Point Calimere Wildlife Sanctuary, declared in 1967; the Pulicat Wildlife Sanctuary, declared in 1980; and the GOMNP, declared in 1986, and the GOMBR, declared in 1989. Point Calimere and Pulicat were declared as sanctuaries to protect birds in wetlands, and the GOM was declared a national park for the conservation of its marine ecosystems.

5.1.2 GULF OF MANNAR NATIONAL PARK

In 1976, based on the results of a scientific study, the GOI proposed that the GOM area be declared a national park, because of its unique ecosystem (coral reefs, mangroves and seagrass beds). The study highlighted the destruction of coral reefs—used in the construction industry from the 1970s for producing lime—as one of the major threats to the coral reefs of the GOM region. The proposal to declare the GOM as a national park was later included in the Sixth Five-Year Plan of the GOI (1980-85).

In 1980, the Government of Tamil Nadu issued a notification³¹, stating its intention to declare the area as a marine national park for the protection of wildlife and the environment. The area was finally declared as a marine national park in 1986 by a Government of Tamil Nadu notification under the WLPA³².

The area of the GOMNP is 560 sq km. It includes 21 islands³³, all uninhabited, in the GOM region, bordering the districts of Tuticorin and Ramanathapuram. At the time of declaration of the GOMNP, three of the islands were privately owned by individuals in Ramanathapuram District; the Government of Tamil Nadu secured the rights over these islands in 1989. The islands range in size from 0.25 ha to 230 ha, and are located at a distance of 1 km to 15 km from the coastline. These islands are grouped into four clusters: Mandapam, Keezhakarai, Vembar

and Tuticorin (see Figure 3). The national park covers waters around these islands up to a depth of 3.5 fathoms on the bay side and 5 fathoms on the seaward side.

It is worth noting that the second notification as per the requirement of the WLPA is yet to be issued. Settlement of rights, as required by the WLPA, has also not been completed. Initiatives are currently being undertaken, in consultation with the Chief Naval Hydrographer's Office, to bring out the second notification stating the boundaries of the park.

5.1.3 GULF OF MANNAR BIOSPHERE RESERVE

The GOMBR was set up as part of the UNESCO-MAB programme in 1989 through a notification issued by the MoEF, following acceptance by the Government of Tamil Nadu. The GOMBR was set up with the broad objectives of conserving representative samples of ecosystems, providing long-term conservation of genetic diversity *in situ*, promoting basic and applied research work and its monitoring, and disseminating experiences for education and training.

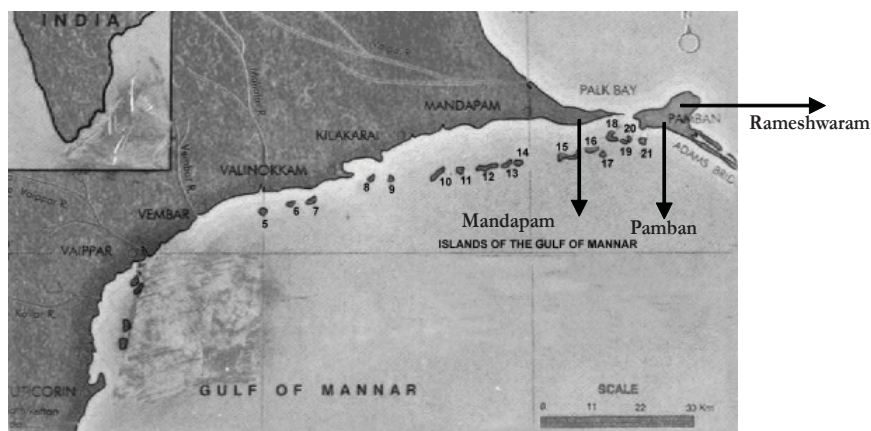
The GOMBR is the first marine biosphere reserve not only in India but also in all of South and Southeast Asia. The island was selected on criteria such as biophysical uniqueness; economic, social, cultural and scientific importance; and national and global significance. The reserve was designated as one of the four reserves in UNESCO's 2001 list of biosphere reserves from India.

According to the notification, the area of the GOMBR is 10,500 sq km, running southwards and parallel to the mainland coastline to a distance of about 170 nautical miles. It includes the national park as the core area. The original notification includes the 21 islands, starting from the northern-most Pamban island to Tuticorin (the pearl banks near and away from Tuticorin, and between Tuticorin and Kanyakumari). The buffer zone includes the immediate sea between Keezhakarai and Mukairyur, Valimunai, Poovarsanpatti, Van, Kasuwar, Karaichalli and Vallanguchali islands and the remaining waters in the Tuticorin–Kanyakumari belt. Recent reports from the GOMBRT office show that the reserve has a coastline of about 300 km and a 10-km wide buffer zone on either side of the coastline (Melkani et al., 2006). The buffer zone comprises Gulf waters to the south and an inhabited coastline to the north, according to the draft management plan prepared by the WII and submitted to the GOI. There are about 150,000 people living in the coastal buffer zone, and over 70 per cent of them depend on coastal marine resources for their livelihoods.

According to the notification, the manipulation activities³ in the buffer zone will be in conformity with guidelines for biosphere reserves, and the core zone will

be kept absolutely undisturbed. The Government of Tamil Nadu is responsible for preparing the management plan that provides information on conservation, protection, eco-restoration, education and awareness raising, and surveys, with financial assistance from the GOI. The notification for setting up the GOMBR also made provisions for a management council, comprising various government departments and the Director of the Biosphere Reserve, who is the Conservator of Forests, Virudhunagar District, Tamil Nadu.

Figure 3: Map of the Gulf of Mannar National Park



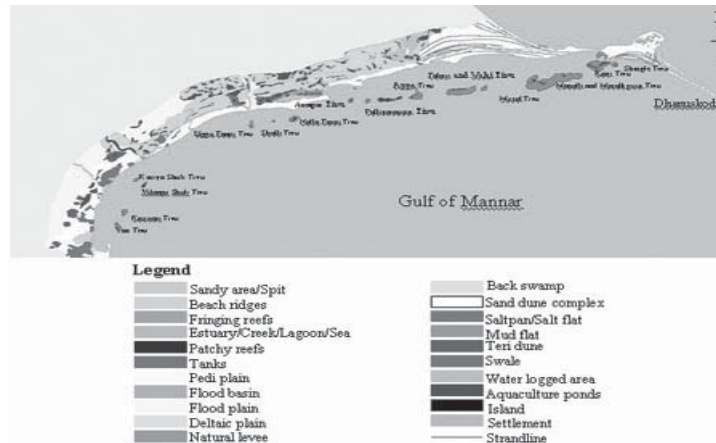
Source: www.ramnad.tn.nic.in³⁵

5.1.4 BACKGROUND INFORMATION

Marine Ecosystem: Gulf of Mannar

The national park was declared to protect wildlife and its environment, because of its ecological, faunal, floral and zoological association and importance. The GOM has coral reefs, and mangrove and seaweed ecosystems, apart from rocky shores, sandy beaches, mud flats and estuaries (see Figure 4). The islands are surrounded by fringing and patchy coral reefs. In terms of biodiversity, there are a total of 3,600 species found in the GOMNP, of which 44 are protected under the various schedules of the WIPA. Species found include 117 species of corals, 79 species of crustaceans, 108 species of sponges, 260 species of molluscs, 441 species of finfishes and 147 species of seaweeds. There are 17 species of mangroves, of which one—*Pemphis acidula*—is endemic to the region. Seasonally migrating marine animals, like whales, dolphins and turtles, also form part of the rich biodiversity of the GOM. The Krusadai Island is home to an endemic organism called *Balanoglossus (Ptychodera fluva)*, a taxonomically unique living fossil that links vertebrates and invertebrates (Melkani et al., 2006).

Figure 4: Map Showing the Various Ecosystems of Gulf of Mannar National Park



Source: Wildlife Institute of India

Fisheries in the Gulf of Mannar

Tamil Nadu has a coastline of 1,076 km—east coast: 1,016 km; west coast: 60 km—with a continental shelf area of 41,412 sq km, and territorial waters of approximately 19,000 sq km (Government of Tamil Nadu, 2005). According to the 2005 Marine Fisheries Census for Tamil Nadu, covering its 13 coastal districts, there are 352 landing centres and 581 marine fishing villages in the State, with a total fishermen population of 0.79 mn, of whom 0.2 mn are active fishermen (CMFRI, 2006). The total fishermen population almost doubled from 0.39 mn in 1980 to 0.79 mn in 2005. The population of active fishers increased from 0.09 mn in 1980 to 0.2 mn in 2005. The fishers belong mainly to the Paravar, Valaiyar, Kadaiyar and Karaiyar communities.

In 2006, the total catch from marine capture fisheries in Tamil Nadu was 0.38 mn tonnes, of which 36 per cent was from the Palk Bay³⁶, 31 per cent from the Coromandal coast, 28 per cent from the GOM and 5 per cent from the west coast (Government of Tamil Nadu, 2006). The major species caught in Tamil Nadu include oil sardines (*Sardinella longiceps*), lesser sardines (*Sardinella spp.*), silver bellies/pony fish (*Leiognathus sp.*), penaeid shrimp, crabs, perches, skates and rays, and mackerel. The CMFRI 2005 census shows that Ramanathapuram District has the maximum number of landing centres, fishing villages, fishermen families and population in Tamil Nadu (see Table 2).

Table 2: Fisheries Statistics of Tamil Nadu

	Tamil Nadu	Ramanathapuram (includes Palk Bay and GOM)	Tuticorin
No. of landing centres	352	80	22
No. of fishing villages	581	180	31
No. of fishermen families	192,152	38,800	18,671
No. of fisherfolk	790,408	175,421	78,487
No. of active fisherfolk	206,908	38,892	21,613
Total mechanized vessels	7,711	1,409 ³⁷	480
Total motorized vessels	22,478	2,009	2,984
Total non-motorized vessels	24,231	6,351	637

Source: CMFRI, 2005a

Tamil Nadu has 7,711 mechanized fishing vessels³⁸, 22,478 motorized fishing vessels (*vathais* and *vallams*, with a few *vallams* having outboard motors (OBMs)) and 24,231 non-motorized vessels, using different kinds of fishing gear such as trawl nets, gillnets, hooks-and-line, troll lines, longlines, shore-seines and scoop nets (CMFRI, 2005a). The number of mechanized craft has grown from 2,627 in 1980 to 7,711 in 2005. Pair trawls operate from the Pamban and Rameshwaram landing centres.

The GOM is also historically known for its pearl (*Pinctada fucata*) and *chank* (conch shells, *Xancus pyrum*) fishery. The Government of Tamil Nadu provides licences to fishermen for the *chank* fishery in the area. Sea cucumbers, locally called *attai*, found in abundance in the GOM region, constituted an important fishery until 2001. The intertidal regions near the islands are an important source of sea cucumbers, which are exported as *beche de mer*. The *Holothurians* (all species of sea cucumbers) were listed in Schedule I of the WLPAs in 2001, leading to a ban on their collection and trade.

Fishing Regulations in the Gulf of Mannar Region

The Tamil Nadu MFRA 1983, as amended in 2000, provides “for the regulation, restriction and prohibition of fishing by fishing vessels in the sea along the whole or part of the coastline of the State.” The Act defines a mechanized fishing vessel as a fishing vessel not less than 8 m and not more than 15 m in length, and using an engine of not less than 15 hp but not more than 120 hp. The Act has the power to regulate, restrict or prohibit fishing in any specified area; and restrict the

number of fishing vessels catching in any specified area of such species of fish; restrict the use of fishing gear and the number of hours in a day during which any person may carry on fishing. The Rules under the Act were notified in 1983. The Directorate of Fisheries is responsible for implementing the provisions of the Act.

The Act and Rules have a number of regulatory provisions, including the following:

- All fishing vessels are required to register and get a licence to fish in the waters of the State.
- The Act prohibits fishing gear of less than 10-mm mesh size from knot to knot.
- The Act prohibits mechanized and deep-sea fishing vessels from undertaking fishing operations within three nautical miles of the coastline.
- The Rules, as amended in 2000, prohibit bottom-trawling operations within three nautical miles of the coastline.
- The Rules, as amended in 2000, prohibit the use of gillnets with a stretched mesh size of less than 25 mm from knot to knot; of shrimp nets with a stretched mesh size less than 37 mm at the cod end; and of fish trawl nets with a stretched mesh size less than 75 mm at the wings and 40 mm at the cod end.
- According to a notification issued under the Act, dated 25 March 2000, fishing using pair trawls or fishing with purse-seine nets by any fishing vessel/craft, whether country craft or mechanized boat, irrespective of its size and power of the engine, is prohibited along the entire coastal areas in the territorial waters of Tamil Nadu, to conserve the fishery resources.
- A closed season (monsoon ban) is in place, whereby mechanized fishing vessels are not allowed to fish in the territorial waters for a period of 45 days during the monsoon season, starting from 15 April to 29 May every year.

Pair trawling, according to the small-scale fishermen, is one of the most destructive fishing techniques in the GOM region, as it is known to catch large quantities of pelagic fish without any discrimination of size. Though pair trawlers are banned, they are still operational during lean periods, both in the Pamban and Rameshwaram landing centres, leading to conflicts with artisanal fishermen, who are clamouring for proper enforcement of the ban. Besides the State regulations, there are district regulations, as highlighted in the box.

Box 1: District-level Regulations on Fishing Operations

Apart from regulations at the Tamil Nadu level, there are district-level regulations that restrict the number of days that mechanized fishing vessels in the Palk Bay and GOM, especially in Ramanathapuram District, can fish. During the 1970s, major conflicts took place between mechanized fishing vessels, specifically those using trawlers, and the small-scale fishing vessels all along the Tamil Nadu coast, with incidents of violence also reported. In view of the conflicts, in 1976, the Revenue Divisional Officer of Pudukkottai District passed an order restricting fishing by trawlers. This was challenged at the High Court of Madras. The 1977 order of the court allowed mechanized fishing vessels to fish for three days a week, while small-scale fishers could fish on the remaining four days, especially in the Pudukkottai and Thanjavur Districts (Bavinck and Karunaharan, 2006).

The same regulation was implemented even for Ramanathapuram District from 1993, based on the decision taken at a District Collectors' meeting. The decision was to implement different regulations for the northern and southern parts of the districts, and also in different seasons. The regulations for the northern part of the district, that is, Palk Bay, are strictly implemented by the District Directorate of fisheries officials, whereas in the case of the GOM, the regulations have been formulated by fishermen's organizations and boatowners' associations themselves, to avoid conflicts in the fishing grounds. The 'three-four day rule' system, as it is called, initiated as part of district administrative orders to maintain law and order in the district (and not as part of the Act), is one of the important fishing regulations being implemented by district-level officers. This regulation is also followed by the non-mechanized fishermen, who observe specific times for setting sail and returning to shore.

In addition, the Assistant Directors at the district levels are responsible for issuing tokens to mechanized fishing vessels on a daily basis, before they venture into the sea. This regulation is implemented as part of security measures, as these waters are very close to the international boundary line (IBL) between India and Sri Lanka. These tokens are also used to distribute subsidized fuel, to maintain law and order, and implement the three-four day rule. Mechanized fishing vessels are not allowed to venture into the sea without a token.

Source: South Indian Federation of Fishermen Societies (SIFFS), Rameshwaram office

During discussions with fishworker organizations and district-level officials of the Directorate of Fisheries, it was revealed that OBMs on fishing vessels are not allowed in the GOM for security reasons, and are, therefore, not distributed by the Government of Tamil Nadu in this region. The order for the restriction was passed in 1995³⁹. However, in 2003⁴⁰, based on demands from fishing communities, the Joint Task Force Committee on Coastal Security allowed the usage of OBMs in Ramanathapuram District, but restricted the number of fibre-reinforced plastic (FRP) vessels with OBMs to 25. A district-level decision not to increase the number of mechanized fishing vessels led to a ban on new fishing licences after 2002.

As mentioned in Section II above, there are provisions under the WLPA that prohibit the hunting or fishing and trading of species listed in Schedules I, II, III and IV of the Act. This puts further restrictions on fishing and trading in these species. In general, in the perception of small-scale fishers, the growth in number of regulations, both at the district and State level, along with the national park and related regulations under the WLPA, has made it increasingly difficult for them to engage in fishing.

5.1.5 POPULATION DEPENDENT ON MARINE RESOURCES IN THE GOMNP

There are no clear estimates available with the Department of Environment and Forests on the number of people dependent on marine resources in the GOMNP. While there have been research studies undertaken to assess the status of biological resources, there is not much information on the socioeconomic status of communities at the time of declaration of the national park and biosphere reserve, or later.

Based on rough estimates, there could be 125 fishing villages dependent on the fishery resources in the GOM area (31 villages in Tuticorin District and 94 villages in Ramanathapuram District, in the *taluks* of Kadaladi, Rameshwaram and Ramanathapuram). There are 35,000 active fishers who depend on the resources in the GOM area, especially on fishing, and collection of seaweed and other marine resources. There are 5,000 fisherwomen who are dependent on seaweed collection in and around the 21 islands, besides 25,000 fishermen who dive to collect sea cucumbers⁴¹.

5.1.6 MANAGEMENT OF THE GOMNP

The management and day-to-day activities of the GOMNP are carried out by the office of the District Wildlife Division, established in 1989, by the Wildlife Warden's office, Department of Environment and Forests, Government of Tamil

Nadu. There are three wildlife ranges under the Division—Mandapam, Keezhakarai and Tuticorin—with a range officer, one or two foresters and some forest guards to patrol the islands. Each range has two boats to patrol the area around the islands. The range offices have booked a few cases in the region, for offences both inside and outside the national park. According to the office of the Wildlife Warden, Ramanathapuram District, the numbers of cases booked (including those booked outside the GOMNP area) are as shown in Table 3.

Table 3: Number of Offences Booked by the Forest Department, Ramanathapuram District

Year	No. of cases booked	Year	No. of cases booked
1989-90	2	1998-99	39
1990-91	5	1999-00	30
1991-92	15	2000-01	50
1992-93	94	2001-02	20
1993-94	23	2002-03	23
1994-95	20	2003-04	29
1995-96	15	2004-05	11
1996-97	25	2005-06	18
1997-98	22		

Source: Wildlife Warden, GOMNP, Ramanathapuram

The WLPA prohibits any habitation or wildlife extraction inside a national park. In the case of the GOMNP, this is interpreted as no fishing within the boundaries of the national park, especially around the islands. Of the 18 cases booked in the year 2005-06, four cases relate to harvesting of sea cucumbers, one to coral collection, and six cases to fishermen fishing next to the islands. In the latter case, a fine of Rs3,000 (approx. US\$74; in 2005-2006, US\$1 = Rs44-45) for each violation was collected.

The Wildlife Warden's office has been involved in afforestation programmes along the coastline, and in mangrove regeneration. The office implements some of the centrally sponsored schemes (CSSs), which include the various activities in the GOMBR (establishment of sand dunes and oases, and plantations of casuarinas and mangroves), management of mangroves, and development of GOMNP (wireless communication, cleaning of the beaches of the islands, publicity boards, infrastructure and fuel).

Recent initiatives for enforcement have been undertaken with the help of the United Nations Development Programme–Global Environmental Facility (UNDP-GEF) project. These include employing 40 forest guards to implement the various regulations in the 21 islands. In 2006, joint patrolling was initiated with the Department of Fisheries around the islands to implement fishing regulations. Another activity under the UNDP-GEF project was the demarcation of the boundaries of the national park around the islands, initiated in 2006, 20 years after the establishment of the park. A few buoys have been installed to mark the boundaries close to Krusadai Island, but a recent order from the Madras High Court led to stoppage of work⁴².

The management plans are prepared on an annual basis, and approved by the Chief Wildlife Warden and the State Advisory Committee. These plans, in most cases, mention only the infrastructure requirements for the range offices and for patrolling, and do not contain concrete management options for the national park. Both the GOMNP and GOMBR do not yet have a scientific management plan, prepared with community participation. In 2007, a management plan was prepared by the WII as part of the UNDP-GEF project. This has been submitted to the Government of Tamil Nadu for approval.

According to the 2004-05 report from the office of the Wildlife Warden, one of the problems faced in the management of the GOMNP is lack of sufficient manpower—there were only 25 people appointed for the management of the 21 islands, and the positions of three forest guards and one forester were still vacant as of January 2007⁴³.

During discussions, the Wildlife Warden highlighted the major threats to the GOMNP as the use of prohibited fishing gear and techniques near the islands, including dynamite fishing, pair trawling, purse-seining, and the use of roller nets and drag-nets, as well as seaweed collection. This has led to increased conflicts between fishing communities and the park authorities over fishing and non-fishing zones.

5.1.7 UNDP-GEF PROJECTS IN THE GOMBR

The UNDP-GEF project on “Promotion of Alternative Livelihoods for the Poor in the Biosphere of the Gulf of Mannar”, between 2000 and 2002, was the first project towards empowerment of communities for poverty alleviation in the region. This was a sub-programme to the main project on “Conservation and Sustainable Use of Gulf of Mannar Biosphere Reserve’s Coastal Biodiversity”, which was endorsed in 1999 by UNDP-GEF, and inaugurated in 2002. The local implementation for the sub-programme on promotion of alternative livelihoods

was entrusted to the M S Swaminathan Research Foundation (MSSRF) and the Development of Humane Action (DHAN) Foundation. The expected outcome of the sub-programme included: equitable access to marine resources by artisanal fishers through better community management and regulatory frameworks; decreased violence between the artisanal and mechanized fishers; better conservation strategies; provision of alternative livelihood sources; and savings and credit activities. The programme has been effective in setting up self-help groups (SHGs) in several coastal and inland villages as well as *kalanjiam* groups, with the assistance of DHAN Foundation, for microfinance activities and tank-based agriculture.

The complete programme is implemented locally by the GOMBRT, a statutory trust established by the Government of Tamil Nadu in 2000⁴⁴. Its mission is “to build and nurture the Trust as a vibrant organization of international repute with a key role and focus on facilitating improved co-ordination, concern and care among other, and often conflicting, agencies and organizations, for sustained conservation, preservation, protection and sustainable utilization of the ecosystem services and resources from the rich, unique and fragile coastal and marine ecosystems of the Gulf of Mannar Biosphere Reserve in order to ensure sustainable coastal development in the area, which is compatible with the ethos of biodiversity conservation”.

The Board of Trustees, the apex body for the management of the Trust, has representatives from various government departments, NGOs like MSSRF and DHAN Foundation, members of the State Legislative Assembly from the project area, and one village *panchayat* president from the project area. There are also district-level committees in Ramanathapuram and Tuticorin that include members from the mechanized boatowners (secretary) and the country craft fishermen’s association.

The major activities of the Trust are broadly classified into:

- protecting the GOMNP and endangered marine organisms, through strengthening law-enforcement departments;
- systematic research in areas related to ecology, biology, environment management and socioeconomics;
- awareness raising and education of the fisher population and all stakeholders for better understanding of resources in the GOM; and
- eco-development schemes in all the dependent coastal villages located in the impact zone, 10 km from the coastline.

The Trust, under its programme on PA management, has been supporting the Wildlife Warden's office in the implementation of various regulations, by providing funds for demarcation of the national park boundary, boats for patrolling, enforcement of regulations (appointment of 40 anti-poaching watchers to enforce regulations in the islands), joint patrolling activities with the Forest and Fisheries Departments, infrastructure support to the Wildlife Warden's office, training for staff of the Wildlife Warden's office, post-mortem of marine mammals, and preparation of a scientifically developed management plan by the WII for the biosphere reserve and national park⁴⁵. It has been specified that the process of developing the management plan should be participatory. However, while Trust officers and the WII refer to the public hearings organized, affected fishing communities claim lack of effective participation in the process.

The activities undertaken by GOMBRT under its eco-development schemes include: training youth from fishing community in scuba diving; educating children about the dangers of destructive fishing practices; creation of village marine conservation committees (VMCs)⁴ and eco-development committees (EDCs) in 222 coastal villages along the 10-km zone from the coastline, as identified by the Trust. The 222 coastal villages identified by the Trust are categorized into four zones—Mandapam, Keelakarai, Ervadi and Tuticorin—with the Mandapam zone having the maximum number of villages (59), 26 of which have been classified as “high threat”.

There are 73 villages in the high-threat zone. The threat zones are classified as follows:

- high threat: villages causing threat to marine conservation because of poaching, coral mining, collection of *chanks* (conch shells) and sea cucumbers, harvesting seaweed, island dependence, engaging in destructive fishing practices and other illegal activities;
- medium threat: villages causing threat to marine conservation through unsustainable use of craft and gear, fishing pressure, increased immigration and support for illegal activities; and
- low threat: villages causing threat to marine conservation due to the practice of seasonal fishing and pressure created by the non-fishing coastal villages.

Box 2: Eco-development Committees (EDCs)

The EDCs have focused on forming SHGs and providing alternative livelihood options. Each village EDC has an Executive Committee (comprising members of the villages and a government official) that looks into the implementation/enforcement of regulations relating to the ban on using prohibited nets and catching prohibited species. Shore-seines, roller nets and bottom trawls have been banned by the EDCs, as these gear can adversely affect the benthic fauna.

The GOMBRT has produced posters of species in the prohibited list and also of destructive fishing gear, and distributed them in all the fishing villages. While proposing alternative livelihood options, the EDCs have conducted training in manufacturing products from palm leaves; vermin composting; operating construction equipments (such as excavators); maintaining aquariums; and tailoring. Fourteen NGOs are working as partners in implementing alternative livelihood options and setting up SHGs⁴⁷. Significantly, none of the alternatives offered has direct relevance to fishing or with introducing alternative, low-impact methods of fishing in the region. Discussions with the communities revealed that a large number of EDCs were formed in non-fishing villages.

The GOMBRT⁴⁸ is one of the first of its kind, an agency set up for implementing the various management programmes of an MPA. It has made some progress in educating communities about the various provisions in the WLPA, and offering some alternative livelihood options. However, there has been no direct involvement of fishing communities in the programmes of the GOMBRT, due to constant conflicts between the Forest Department officials and fishing communities. The worst-affected villages have not evinced interest in setting up SHGs and in the other alternatives provided by the Trust, since these have not been provided for the entire village but only for a selected group of villagers. During discussions, GOMBRT officials claimed that the process was time-consuming due to the conflicts, and also due to the fact that it was the first initiative from the Forest Department to get involved in MPA management.

5.1.8 OTHER DEVELOPMENT ACTIVITIES IN THE REGION

While fishing is considered one of the major threats to the marine resources of the GOM area, there are other developmental activities that pose threats to the biodiversity of the area, such as the upcoming Sethusamudram canal project, and other industrial projects on the Tuticorin coast. The Sethusamudram canal

is coming up at a distance of 20 km from the GOMNP, and the dredging of the canal is displacing rock, shoal and sediments, making the water column turbid. The increase in turbidity may affect the ecosystem of the area in a major manner—starting from the phytoplanktons to the seaweeds and coral reefs (Lu, 2004)⁴⁹. The canal will pass six km from the Van islands (near Tuticorin), part of the GOMNP. Additionally, the southern tip of the GOMNP and GOMBR are very close to the town of Tuticorin, where there are major industries, including a thermal power plant, chemical factories, and the Sterlite copper plant, besides a major port. The Tuticorin municipality generates 14 mn litres per day (mld) of sewage, which is let out directly into the sea, without any treatment (Government of Tamil Nadu, 2005)⁵⁰. These development activities—and not just fishing activities—pose a major threat to the coral reef and seagrass ecosystem of the GOM. Little, however, is being done to address these major problems of pollution and sedimentation.

5.1.9 CASE STUDIES OF FISHING VILLAGES DEPENDENT ON RESOURCES IN THE GOMNP

There are 125 fishing villages that depend on the GOMNP's resources, including seaweed, collected mostly by women; crabs and other fish species, caught by traditional fishermen using *vathais* and *vallams* (non-motorized plank-built canoes); and shells collected for ornamental purposes.

Previous studies have identified the following major fishing villages affected by the designation of the national park: Chinnapalayam, Thavakadu, Thoopukadu and Nadutheru (in the Pamban area), Indira Nagar (in Keezhakarai area), and Idinthakalpudur (Whittingham, 2003). Besides these, the 73 villages identified as 'high threat' by the GOMBRT are among the most affected.

Fishing Communities in the Pamban Area

For the purpose of this study, discussions were held in January 2007 with villagers of five affected villages: Chinnapalayam, Thoopukadu, Nadutheru (near the Pamban region), Meenavarkuppam and Keezhakari. The traditional small-scale fishermen in these villages use *vathais* and *vallams* (plank-built canoes), using rows and sails for propulsion, to fish in the waters around the islands of Nallathanni, Krusadai, Palli, Mannali, Mulli, Musal/Muyal and Ulli.

Chinnapalayam

Chinnapalayam, a small fishing village on the southern side of the Pamban area, is among the most affected by the designation of the national park. According to the CMFRI census of 2005, there are 239 households in the village, with 314 active fishermen and 50 fisherwomen. The village has 48 motorized fishing vessels

and 93 non-motorized fishing vessels. Fishermen and women in the village have traditionally been fishing in the waters around the nearby islands of Appa, Pulli, Valai, Mullai, Muyal and Krusadai, closest and most easily accessible to them. Most fishers use non-motorized plank-built canoes called *vathai*. Some of them use *vallams* with inboard engines (IBEs). They fish on the bayward side of the islands, and up to a very short distance on the seaward side. They use different kinds of fishing gear such as crab nets, *singhi valai*, *sembara valai*, *meen valai*, *koi valai*, *veral valai*, and *oda valai*, which are bottom-set gillnets, made of nylon and monofilament thread. The *vallams* are used mainly to reach the fishing grounds, and four to five people then go to fish near the islands in a single *vathai*. Traditionally, fishermen stayed overnight on the islands, and returned the next morning with the catch. However, due to restrictions on staying in the islands by the Forest Department, such layovers are no longer practised now.

There are 50 women in the village who collect seaweeds on a regular basis; another 50 are involved in allied activities. Women from the village also go fishing for crabs and fish on a regular basis. It is mainly women from the Valaiyar community who engage in fishing and related activities.

The village has a marketing co-operative society formed with the help of two NGOs, the DHAN Foundation and the Kalanjyam Fishermen Society. The society helps in marketing the fish catch directly to exporters, but not all fishermen are its members. Fish is also marketed through middlemen and traders, who collect the catch from the village. There are also women's SHGs in the village.

The fishing community in this village refused the alternative employment package offered by the GOMBRT, as they did not find it lucrative and sustainable. During interviews, fishermen said that they preferred to explore options within the fishery itself, rather than seek a livelihood in other sectors. Through the Ramnad Fishermen's Union (see Box 3), they have been protesting against the restrictions on fishing imposed in the GOMNP. Although, according to the GOMBRT survey, the village is considered as 'high threat', the community has not been involved in the development of the management framework, nor are they actively involved in the eco-development centre set up by the GOMBRT.

Box 3: Ramnad Fishermen's Union

The Ramnad Fishermen's Union was formed in 1999. It is a member of the National Fishworkers' Forum (NFF). The union has 15,000 members in 126 coastal villages in Ramanathapuram District, including both the Palk Bay and the GOM area. The membership of the union includes small-scale fishermen, women and workers on trawlers. The union also has members from the Sea Cucumber Collectors and Harvesters Union, Keezhakarai. There are four federations under the union—those of Pamban, Uchipulli, Tondi and Kadaladi. Some of the successful initiatives of the union include: demanding the effective implementation of the provisions of the MFRA; imposition of a ban on dynamite fishing, and its implementation through community-level structures; imposition of a ban on metal tools (scrapers) for collecting seaweed; preventing trawlers from fishing in coastal waters within three nautical miles of the shore; and gaining recognition of the right of women to benefit from savings-and-relief schemes.

In the case of the national park and biosphere reserve, the union has been demanding that the traditional rights of fishing communities to their fishing grounds should be recognized, and that communities should be allowed to fish in areas that they have been protecting for generations. The union also emphasizes that the alternative livelihood options that have been provided by the GOMBRT are not economically viable for fishing communities, and they are demanding economically viable options with better marketing opportunities. The sea cucumber collectors' union, which recently joined the Ramnad Fishermen's Union, has been demanding the delisting of certain sea cucumber species from Schedule I of the WLPA.

Source: Ramnad Fishermen's Union (Personal discussion, 11 January 2007)

Although the national park was declared 20 years ago, there was no restriction on fishing until recently. It is only in the last four years, starting 2002, that restrictions on accessing fishing grounds have been put in place and enforced by the Forest Department. Demarcation buoys were deployed in 2006 around the islands, and fishermen are now not allowed to fish inside the waters demarcated by the buoys. For the fishing community here, this has meant denial of access to their primary fishing grounds. This has led to regular confrontation and conflicts between the fishing community and forest guards. Sometimes the fishing gear and the catch are confiscated by Forest Department personnel, and a fine of Rs500-1,000 (approx. US\$12-25) has to be paid to get the fishing gear back. Bribes may also

have to be paid to the local forest guard or range officer to retrieve the gear. This could also explain the low number of cases recorded officially by the Forest Department. Not surprisingly, fishing communities see the restrictions imposed and the related confiscation of gear as harassment, and conflicts and antagonism between communities and forest guards are common.

The fishing community has taken various initiatives to deal with the situation that affects them in such negative ways. Together with the neighbouring village of Thoopukadu, they have decided on the following self-imposed regulations:

- prohibition on collection of protected species;
- prohibition on destruction of coral reefs and collection of corals;
- prohibition on cutting of mangroves and woods in the islands;
- prohibition on catching turtles, and harvesting of sea cucumbers; and
- restriction on the number of days on which seaweeds can be collected, with collection allowed for only 12 days in a month.

These regulations are enforced by a guard from within the community, appointed by the villagers. The regulations are being strictly observed, especially as there are penalties for violation, including handing over of violators to the forest guards. Although the villagers have taken these steps, they are not recognized by the Forest Department, and villagers still have to pay off huge amounts on a regular basis as bribes to local forest guards and rangers to collect seaweed.

The fishermen are also in conflict with pair trawlers fishing from the Pamban landing centre, which target the same pelagic species. The major issues facing the fishing community are thus:

- the lack of access to traditional fishing grounds and fisheries resources;
- threats due to the operation of pair-trawling fishing vessels;
- continued harassment by Forest Department officials; and
- lack of long-term alternative livelihood options.

Thoopukadu

Men and women in the community of Thoopukadu (near Pamban) are actively engaged in fishing and seaweed collection around the islands. Women harvest crabs and collect seaweed. There are 148 households, with 212 active fishermen. There are 51 plank-built canoes (*vathais*), mostly with rows and sails, and very few *vallams* with OBMs. Different kinds of gear, including crab nets, large-mesh gillnets and cast-nets are used to catch *madava* (mullet) and *kendai* (milkfish).

Women from the village are actively involved in shore-seine/beach-seine (*ola valai/kara valai*) operations, besides seaweed collection. The shore-seine operation requires 50 women to actively participate in pulling the net in, while the men are involved in setting the net in the sea. Women earn about Rs25 (approx. US\$0.62) per person per day during periods when shore-seines are operated. In some cases, women sell the catch at the local market, located 5 km away from the village. As there are no transportation facilities available to the village, women have to walk to the market, carrying the catch.

Earlier, fishers used to go to the nearby island, set their nets, stay overnight, and return to the village the next morning. This practice continued even after the declaration of the national park in 1986. Since 2002, however, forest guards do not allow people to fish close to the islands, or to stay overnight on the islands. The buoys set up to demarcate the boundaries of the park near the Krusadai islands, prevent the fishermen from accessing the best fishing grounds. While people from the community continue to fish close to the buoys, conflicts with forest guards have increased, fishing gear are confiscated regularly, and villagers pay huge amounts as bribes to retrieve the gear, just as in Chinnapalayam. The villagers here too have taken the initiative to self-regulate fishing activities considered destructive.

Vedhalai

Vedhalai, a small fishing village on the Mandapam side of the GOM region, with 400 households and 500 active fishermen, is also dependent on the marine resources around the islands for livelihood. The community is involved in seaweed collection, ornamental shell collection, and fishing near the islands of Muyal, Mannali and Putti. A major source of livelihood for fishermen in the village, until recently, was collecting sea cucumbers. This has now been prohibited under the ban introduced by the MoEF. As in the other two villages, several instances of conflict with forest guards have been reported, when fishermen have been caught fishing and harvesting close to the islands.

Meenarvarkuppam, Keezhakarai

Meenarvarkuppam, a small fishing hamlet on the Keezhakarai coast of Ramanathapuram District, in the southern part of the GOM, has 34 motorized fishing vessels with OBMs, 10 non-motorized fishing vessels, and 89 active fishers. There are 50 women engaged in seaweed collection near the islands. They regularly visit the islands of Appa, Valai, Muli, Musa and Manali. Earlier, they used to stay on the islands during the peak season—from December to February—and collect seaweeds. They also collect other molluscs and ornamental shells. The fishermen

in the village have also been collecting seashells by diving in the waters around the island. However, as in the other villages, since 2002, they have been denied access to the fishing grounds near the islands. Fishers here also face problems with trawlers fishing within three nautical miles from the shore, disrupting their fishing operations.

Keezhakarai

Keezhakarai is known for its sea cucumber fishermen, who traditionally collected sea cucumbers and *chanks* by diving. The sea cucumber fishery around the islands is the main source of livelihood for about 25,000 people. According to the fishermen, the recent increase in the number of trawlers fishing in the same inshore waters, has led to the depletion of sea cucumbers, as they form a part of the trawler bycatch. The ban on sea cucumber collection in 2001 under the WLPA has only exacerbated their problems. While sea cucumbers are still collected illegally, due to the lack of other livelihood options, their price has been brought down drastically by the traders from about Rs80 per piece in around 2004 to Rs45-50 (US\$1.12-1.25) per piece in 2007. This has affected the livelihoods of about 25,000 people who depend on the sea cucumber resource. Sea cucumbers are collected in the three-month October-December period at a distance of about 8 km from the coast, near the islands, where the waters are shallow. Divers dive up to a depth of 90 ft, with 10-kg weights attached to the rope as sinkers. They collect the sea cucumbers and get out of the water within 60 seconds. It is estimated that over the last few years, around 100 people from this village have lost their lives while diving.

Box 4: Seaweed Collection

Seaweed collection plays a major role in the livelihoods of small-scale fishing communities in the GOM area. There are 5,000 women who directly depend on seaweed collection, from the fishing villages in the Pamban islands to those in the Keezhakarai area, farther south of the GOM. There are another 5,000 people dependent on seaweed-related activities and industries in the region. Women in the area have traditionally been collecting seaweeds, and some even reach the seaweed grounds rowing the boats themselves. The women often need to submerge themselves in neck-deep water, with their backs bent for eight hours at a stretch, to collect seaweeds. Until recently, a few villages from the Keezhakarai area were using sharp metal objects as scrapers to collect seaweeds. The women wear goggles to protect their eyes, and tie a net around their waist to store the harvested seaweeds. They leave home at 6 a.m. and, depending on the distance of the islands from the villages, return in the late afternoon or evening. Typically, around 10-15 women go out early morning in a *vallam* to collect seaweed on all days of the week, apart from Fridays. The trip takes about three hours, and the women return by mid-day with 10-15 kg of seaweed per person. The price for the seaweeds varies from species to species—*G. acerosa* sells at Rs4 (US\$0.1) per kg, while *Sargassum spp.*, in wet form, sells for Rs10 (US\$0.25) per kg, and Rs15 (US\$0.38) per kg if sold in dried form.

The species collected in large quantities are *Gelidiella acerosa* (*marikozhundu passii*), *Gracilaria edulis* (*Agarophytes, Kanchi passii*) and *Sargassum spp.* (*kattakorai*) *Turbinaria* (*Alginophyte, pakoda passii*) and *Ulva lactuca*. These species grow in the shallow waters around the 21 islands. The collection is seasonal; for example, *Sargassum spp.* is available only during October to December. The peak collection season is from October to March, when it is not very windy. The women earn Rs100-150 (US\$2.5-3.75) per day, when they sell the seaweed in wet form, and Rs150-200 (US\$3.75-5) per day, when in dry form. These seaweeds are sold to the agar processing industries located in Madurai, a city 150 km from Ramanathapuram. It has also been noted that there has been an overall decrease in the production of seaweeds in Tamil Nadu, from 5,800 tonnes (dry weight) in 1978 to 3,250 tonnes (dry weight) in 2002-03 (Rao, 2006). This has been because of the restrictions imposed on accessing seaweed beds.

With the declaration of the GOMNP and GOMBR, fisherwomen have been denied access to the seaweed resources. They are now forced to collect

seaweeds in an 'illegal' manner. Until recently, the women used to collect seaweeds on a daily basis from near the islands. However, after an inter-village community meeting, the villagers have now collectively decided that seaweed collection will be allowed for only 12 days in a month.

In June 2006, to minimize the problems faced by the men and women collecting seaweeds, the Ramnad Fishermen's Union, the Keezhakarai Seashell Divers' Union, the Mayakulam Township Fishermen Welfare Association and the Erawadi Country Boat Fishermen's Union (Artisanal), agreed on regulations on seaweed collection. These included a ban on the use of metal scrapers for collecting seaweeds, as this was considered damaging to the propagation of seaweeds. Traders were asked not to buy seaweed harvested using scrapers. It was also decided that the season for harvesting *Sargassum spp.* would be from 15 July to 31 March.

In December 2006, a joint meeting of seaweed collectors, wholesale merchants, traders, seaweed-processing industries, research institutes, the GOMNP Wildlife Warden, GOMBRT and other allied stakeholders dependent on the sector, was organized. The meeting agreed on regulations to prevent the reduction in seaweed resources and to harvest them in a scientific manner. Some of the decisions included: avoid collection of seaweed resources in the GOMNP; ban on collection of seaweeds using indiscriminate tools (such as metal scrapers); and ban collection of seaweed from March to May. Traders were asked to fix reasonable prices for seaweed. The GOMBRT was asked to organize SHGs for seaweed culture in the region, and national park authorities were requested to assure protection to resources in the GOMNP.

This was the first meeting where all stakeholders were invited to agree on management regulations. It is yet to be seen how these decisions will be implemented. With the three-month ban on collection of seaweeds and various other regulations, men and women seaweed collectors are left without a major source of income, even as no alternative source of livelihood has been provided. However, discussions are under way between GOMBRT and various other research institutes for culture of *G. acerosa* and *Gracilaria spp.* in the area, following a notification from the Government of Tamil Nadu, which prohibits the culture of the exotic *Kappaphycus alvarezii* in the GOM area⁵¹. The culture of these two species has been carried out only at an experimental level, and still needs to be tried out in the field. Meantime, the livelihoods of thousands of people continue to be at stake.

5.1.10 MAJOR ISSUES

As observed earlier, the situation in a number of fishing villages along the GOM area, from Pamban to Keezhakarai, where small-scale fishing communities are dependent on the marine resources around the islands for their livelihoods, is difficult. There are few studies, however, that highlight the socioeconomic issues related to the declaration of the GOMNP.

In summary, and drawing also on interactions with fishing communities affected by the GOMNP, as well as on discussions with the Ramnad Fishermen's Union, the following issues can be identified from a small-scale fishing-community perspective:

- a) ***Comprehensive socioeconomic data:*** No clear gender-segregated baseline data on the population dependent on marine resources in, and around, the GOMNP is available, and no monitoring system is in place to gauge the socioeconomic impacts of implementing PA management. Fishing communities claim that the livelihood profiles of the affected communities that have been prepared do not reflect the true situation, and that their traditional dependence on fishing and related activities has not been taken into account.
- b) ***Community participation in management:*** Participation of local communities in decision-making processes and in deciding on management options has been limited, and the decision-making process remains largely top-down. In this context, it is pertinent to note that though the management plan for GOMNP and GOMBR has recently been finalized (and is awaiting approval by the State government), fishing communities contend that consultation with them was limited, at best. While communities play little or no role in management, they are expected to participate in implementation, SHGs and other economic activities, reducing the concept of participation to tokenism.
- c) ***Conflicts in implementation:*** Given the above situation, fishing communities are either not aware of, or do not subscribe to, regulations that are being implemented in the area. There is, at the same time, no proper demarcation of the boundaries of the national park and biosphere reserves, though demarcation work was initiated in 2006 for two islands. It is not surprising, therefore, that cases of conflict between the Forest Department and fishing communities are on the rise. The punitive action taken by Forest Department officials, denying fishing communities access to their traditional fishing grounds, is perceived as harassment. Fishing communities also report instances of bribery and corruption. The fact

that relatively few cases of violations are recorded by the Wildlife Warden's office, while fishing communities report frequent cases of harassment, may be seen as lending credence to this allegation.

- d) ***Institutional structure for governance:*** Fishing communities claim lack of transparency in the institutional structure for governance, given the multiplicity of institutions involved. For example, regulations/administrative orders are being put forward by several departments: the Forest Department, the Directorate of Fisheries, the District Administration, and the Joint Task Force on Coastal Security.
- e) ***Securing livelihood options:*** Although the livelihoods of around 100,000 people from the fishing community have been affected as a result of the declaration of the GOMNP, consultation with fishing communities regarding fishing practices consistent with sustainable-use principles that can be allowed within the GOMNP and GOMBR, as well as alternative livelihood options of their choice, have been limited. Long-term alternative livelihood options, which are sustainable and acceptable, are yet to be provided to fishing communities. Fishing communities claim that most alternative livelihood projects have benefited communities other than fishing communities.
- f) ***Self-regulation initiatives.*** The self-regulation initiatives for conservation and sustainable use that are being undertaken by communities are yet to be adequately recognized or supported. Traditional ecological knowledge systems (TEKS) of communities, and their understanding of their ecosystems, have not been utilized in formulating the management plan and in deciding on management regulations.
- g) ***Impact of non-fisheries developments:*** There has been an almost exclusive focus on regulating fishing activities in the GOMNP, with fishing being identified as the major threat. Little effort has been made to regulate pollution, sedimentation and related impacts from ongoing developmental and industrial activities in the region, which are known to affect the fragile and unique ecology of the area in highly damaging ways.

The above issues and concerns are also substantiated by the findings of earlier studies. In the global review on poverty and reefs (Whittingham, 2003), the GOM case study reveals that 65 per cent of the population does not have any form of secondary activity apart from fishing. The study was based on interviews in three villages—Indiranagar, Idinthakalpudur and Thavakadu. The study results showed that the main vulnerability and risks faced by the three communities were associated

with their sea-based livelihoods. The study pointed out that restriction of access due to conservation measures adds risks to traditional fishing occupations, which are now officially considered illegal. The study highlights that fishermen have a holistic perspective on reefs: *“It is the reef from where everything sprouts and spreads through the entire sea.”* *“The reef is a natural nursery.”* *“It is because reefs are there and because of their fertility, we get different varieties of fish to catch and we have to have keep different nets.”*

To conclude, the GOM is undoubtedly a unique and very fertile ecosystem. It is also a region where thousands depend on fisheries and marine resources for their livelihoods. While all efforts must be taken to protect and conserve resources, it is as important to take into consideration the livelihoods of communities who have traditionally depended on the resources. Clearly, for any conservation initiative to succeed, local communities must be part of the decision-making and implementation processes, even more so where these communities have demonstrated their ability for self-regulation. It is hoped that issues of participation and livelihood will be taken more seriously in the future, so as to benefit both conservation and local livelihoods.

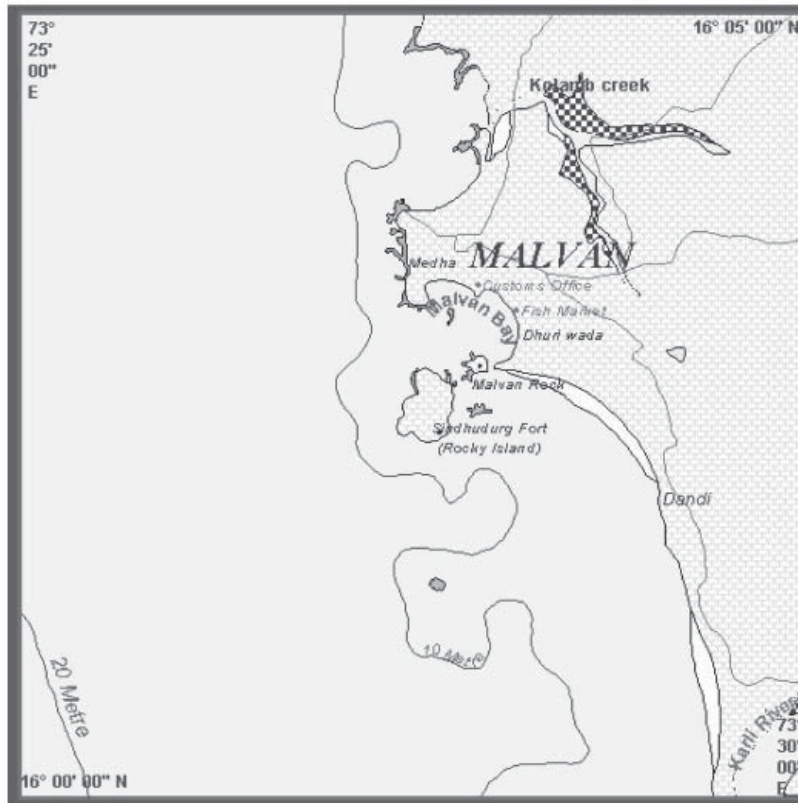
5.2 MALVAN (MARINE) WILDLIFE SANCTUARY, MAHARASHTRA

Malvan *taluk*⁵² is located in the district of Sindhudurg (meaning “fort in the sea”, an named after the Sindhudurg fort in Malvan) in Maharashtra State. Maharashtra has a total coastal length of 720 km, with 406 fishing villages located in this region, with a total fisherfolk population of 319, 397 (CMFRI, 2005b).

5.2.1 MALVAN (MARINE) WILDLIFE SANCTUARY

The Malvan (Marine) Wildlife Sanctuary was designated on 13 April 1987⁵³ by a notification by the Forest Department, Government of Maharashtra. The total area of the sanctuary is 29.12 sq km, with a core zone of 3.18 sq km and the rest (25.94 sq km) as the buffer zone (see Figure 5). The core zone includes the Sindhudurg fort, Padamged island and other submerged rocky structures. The proclamation notice for the sanctuary from the District Collector’s office was issued in 1991, subsequent to the notification from the Department of Forests and Environment in 1987. Another notification in 1992 designated the area of the sanctuary.

Figure 5: Malvan (Marine) Wildlife Sanctuary



Source: ICMAM, DOD Report, 2001

5.2.2 BACKGROUND INFORMATION

The Marine Ecosystem of Malvan

Scientific studies were undertaken by the National Institute of Oceanography (NIO) in 1979 to assess the marine biodiversity of the region. The first report, produced by NIO in 1980, highlighted the importance of the area from a biodiversity perspective. Other reports have also indicated that this is one of the most biologically diverse areas in Maharashtra.

The Malvan coast is classified into six habitats—rocky shore, sandy shore, rocky island, estuarine, muddy and mangrove habitats. It has a small patch of coral reefs surrounding the Sindhudurg fort area. There are 49 species of marine algae, seaweeds (*Ernodemis verticilata*) and mangroves in the area. There are 198 species of shallow sea and inter-tidal animals identified, besides hard corals, live pearl oyster and red corals. Olive ridley turtles and dolphins have been sighted along

the coast. There are 367 species of flora and fauna reported for the Malvan coast, though recent records show only 279 species. The Malvan town is bound by three creeks—Karli, Kolamb and Kalavali.

Fisheries in Sindhudurg District, Maharashtra

The district of Sindhudurg has a coastal length of 121 km, that is, 17 per cent of the total coastal length of Maharashtra. It has a total population of 868,825 and a fisherfolk population of 23,999 in 71 fishing villages. There are eight major fishing centres in the district—Vijaydurg, Devgad, Achara, Malvan, Sarjekot, Kochara, Vengurla and Shiroda—and 33 landing centres (see Table 4).

Table 4: Salient Features of Maharashtra and Sindhudurg Fisheries

	Maharashtra	Sindhudurg	Percentage
Coastal length	720 km	121 km	16.8
Fisherfolk population	319,397	23,999	7.5
Fishing villages	406	71	17.5
Fish landing centres	152	33	21.7
Active fisherfolk	72,074	5,772	8
Women employed in other fishing/allied activities	56,277	4,518	8
Fishing Craft	23,508	3,106	13.2
Total mechanized	13,053	653	5
Motorized	3,382	1,062	31.4
Non-motorized	7,073	1,391	19.6

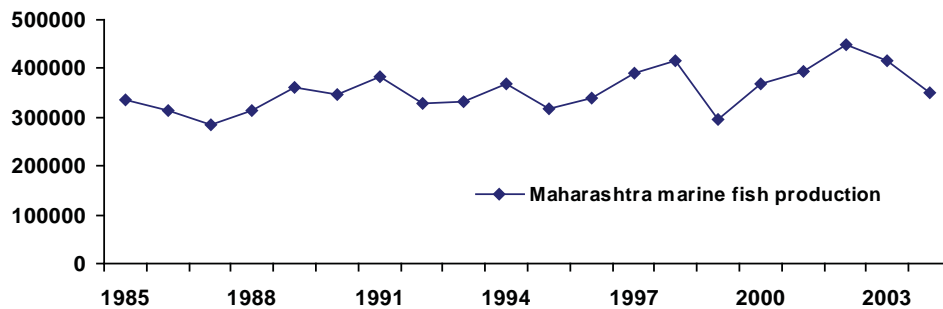
Source: CMFRI, 2005b

The total marine capture fish production of Maharashtra (see Figure 6) was 420,077 tonnes in 2003-04, of which 4.6 per cent came from Sindhudurg District (19,273 tonnes) (Government of Maharashtra, 2005). The total marine capture fish production of Malvan zone was 2,282 tonnes in 2003-04. Almost the entire marine fish production in Maharashtra (99 per cent) is by the mechanized sector. The situation is quite similar in Sindhudurg District, where the contribution of the mechanized sector is 92 per cent. Seven per cent of production is from *rampans*⁵⁴. The mechanized fishing vessels of Maharashtra are registered with the Maharashtra Maritime Board.

There has been a decline in marine capture fish production from Sindhudurg District in the last five years. The main species caught in Maharashtra are non-penaeid shrimp, penaeid shrimp, Bombay duck, ribbonfish, sardines, croakers and

anchovies. The main species caught in Sindhudurg District are ribbonfish, goatfish, sardines and penaeid shrimp, while in Malvan, the major catch is sardines. Lobster fishing is also carried out using gillnets. There are different kinds of gillnets used—for catching pomfret, mackerel and shrimp. Trawl fishing, bagnet fishing, gillnet fishing and purse-seine fishing are the main fishing methods in Maharashtra.

Figure 6: Total Marine Capture Fish Production of Maharashtra, 1985-2004



Source: CMFRI 2006

There are 19 fishing villages in Malvan *taluk*, and Malvan town is a major fishing centre. There are 1,957 households, with a total fisherfolk population of 9,012, an active fishermen population of 2,128, and 1,106 women employed in allied activities (CMFRI, 2006). There are 12 registered fishermen's co-operative societies, and 1,068 fishing vessels, which include 186 mechanized vessels, 390 motorized vessels and 492 non-motorized vessels (CMFRI, 2006). The fishing gear is mainly composed of trawl nets (648), gillnets (11,441) and hooks-and-line (1,225). The mechanized fishing vessels are anchored in the Sindhudurg fort area, and the catch is transported to the shore by carrier vessels. The mechanized fishing vessels undertake one-day fishing operations. The traditional fishermen from the region own 50 trawlers, while the rest of the trawlers are owned by outsiders⁵⁵. Besides the trawlers, there are fibre-glass OBMs (of *gorai* type) that fish using different kinds of gillnets. The *rampans* are traditional fishing gear used in the region, requiring 50 people to drag the net to the shore. The major catches of *rampans* are mackerel and sardines.

Fishing Regulations

The Maharashtra Marine Fishing Regulation Act was notified in 1981 by the Government of Maharashtra, to provide for the regulation of fishing by fishing vessels in the sea along the coastline. The Rules were notified in 1982. The MFRA

declares waters up to a depth of 5-10 fathom as reserved for fishing only by traditional craft.

The notification, dated 13 October 1999, declared that no purse-seine shall be operated by mechanized fishing vessels within the territorial waters (12 nautical miles) of Greater Mumbai, Thane, Raigad, Ratnagiri and Sindhudurg Districts, and that the catch of vessels operating purse-seines outside the 12-nm zone can be landed only in the Mirkarwada port in Ratnagiri District⁵⁶. Another notification bans the use of trawl gear with mesh size less than 35 mm in the waters of Greater Mumbai, Thane, Raigad and Sindhudurg Districts, and not less than 25 mm in Ratnagiri District⁵⁷. According to the Malvan *taluk* Fisheries Department, 220 cases were registered in 2005-06 for violation of the MFRA.

Since 1996, Maharashtra has also observed an annual closed season for fishing during the monsoon, from 10 June to 15 August. In 2007, this was changed, when a uniform fishing ban was put in place for all States on the west coast of India, from 10 June to 29 July.

5.2.3 CURRENT STATUS OF THE MALVAN (MARINE) WILDLIFE SANCTUARY

Although declared in 1987, the Malvan sanctuary is not really operational for various reasons. There are three main villages in the core area—Sindhudurg fort, Padmagarh and a part of the Malvan town. The process of settlement of rights to land included within the sanctuary is yet to be completed, and the rights to the private land of 17.68 ha inside the fort have not yet been acquired (which includes nine households traditionally living inside the fort, and a school). The Sindhudurg fort was declared as a national monument, and is being maintained currently by the Archaeological Survey of India (ASI) (GOI, 2001b)⁵⁸ and it is not clear how the Forest Department would also manage an area currently maintained by the ASI. The process of determining the limits of the area of the territorial waters with the Chief Naval Hydrographer of the Central government, after taking adequate measures to protect the occupational interests of the local fishermen, is yet to be completed in Malvan.

After the sanctuary was declared in 1987, it was under the management of the Wildlife Warden, Kolhapur, until 1988. Its management was then transferred to the Deputy Conservator of Forests (DCF), Sawantwadi, Sindhudurg District. According to Forest Department officials, there are now discussions on moving the management of the sanctuary back to the Wildlife Division, Kolhapur, considering the technical and practical difficulties in managing the sanctuary area, and also because it was felt that the Forest Division of the Department was not competent to handle the management. There appears to be a lack of clear-cut

responsibilities between the Forest Division and the Wildlife Division within the Forest Department; in most States it is the Wildlife Division that is involved in the management and day-to-day activities of PAs.

In the meantime, the Forest Department has recently, in 2007, requested the NIO to undertake another survey on the status of the marine resources in the sanctuary area, and a report is awaited. As of March 2007, in short, there has been no implementation of regulations in the Malvan (Marine) Wildlife Sanctuary, and demands from local politicians for de-notification of the wildlife sanctuary are still being made.

5.2.4 THE STRUGGLE OF THE FISHING COMMUNITY AGAINST THE MALVAN SANCTUARY⁵⁹

The proposal for developing a marine park on the Malvan coast was put forth by NIO to the GOI in 1980. That year, the Malvan area had 100-150 fishing craft, including mechanized craft. The area was proposed as a marine park in view of its undisturbed flora and fauna, and in order to increase the educational and recreational value of the area. The proposal stated that activities like dredging, release of effluents of any kind, or any type of damage to the marine environment through activities (except fishing) should not be allowed in the buffer zone. It was further proposed that in the core zone, the strictest conservation measures that prohibit exploitation, including fishing, or damage in any way to the marine environment and life, should be adopted. It was also proposed to prohibit discharge of wastewater by mechanized fishing vessels in the buffer and core zones (NIO, 1980).

This proposal was discussed at the *taluk* level in 1983, with NIO scientists, officials of the Fisheries and Forest Departments, the District Collector, the District Chief Officer and other government officials. At that meeting, the proposal was opposed by a number of government officers, who felt it was against the occupational interests of fishermen living along the coast, and they called for consultations with them before the proposal was taken forward. However, the advice was ignored. It was felt, instead, that it would be possible to convince the fishing communities, and thus the proposal was duly adopted.

At a press conference in 1985, the plan for creation of the Malvan national park (as originally proposed) was announced. Two fishermen were invited to participate and support the plan. Local newspapers were used to inform the fishermen. However, a copy of the plan was not made available to fishermen's organizations for comments, leading to widespread protests. In 1988, at a local meeting, the

plan was again discussed. At that meeting, fishermen demanded: the opening of the Malvan port to anchor fishing craft; effective implementation of the MFRA by the State Fisheries Department; and conservation of resources in the core zone. The fishing community felt that the main problem was that the sanctuary was declared primarily to promote tourism, rather than to support sustainable fishing.

In 1986, at a meeting organized by the Forest Department, it was mentioned that trawling would be banned in the core zone. As mentioned earlier, the core zone of the sanctuary includes the waters around the fort and the Malvan port, which is used for anchoring mechanized and non-motorized fishing vessels. The core zone is also used by a very small number of hook-and-line fishermen to fish for lobsters and sea urchins⁶⁰. The Forest Department also proposed that the port be moved to Chinwala beach. This was vehemently opposed by the fishermen, who felt that the wind direction in the area was not suitable for anchoring of vessels. There were widespread protests against the proposed closure of the Malvan port, and it was demanded that fishing be given the same priority as promotion of tourism.

In 1989, a notification was published in local newspapers regarding the declaration of the sanctuary. This was followed by written protests and rallies organized by fishermen against the Forest Department regulations. In 1992, NIO called for another meeting with the fishing communities to discuss issues dealing with the sanctuary. The fishermen declined to engage in talks, and, instead, put forth their demands to the Fisheries Department, Malvan, and to the Government of Maharashtra.

While the buffer zone demarcated in Forest Department maps is shown to include sandy beaches, fishermen say that the buffer zone includes a number of fishing villages all along the coast. In the notified buffer zone are seven villages that depend on fishing for a livelihood, with a total fisherfolk population of over 7,000⁶¹. The villages are Devbagh, Tarakali, Kakqiek, Vaini, Dandi, Malvan, Malvan-medha and Dhuriwada in Malvan *taluk*.⁶² Fishermen are demanding that the land in these villages should not be acquired, and that the buffer zone should be until the high-water mark, and should not include the landward component. These demands were reiterated again in 1998, during discussions to acquire land rights in the buffer zone. The land along the beach is also important for the livelihoods of the 55 women who use the beach for drying the fish caught by the *rampans*.

Although the Malvan fishing communities have been protesting since the 1980s against the designation of the sanctuary, they have not been involved in

discussions or decision-making processes relating to the sanctuary. Since 1998, there have been protests from local politicians and other residents of the area too, demanding the de-notification of the sanctuary. Very recently, in early 2007, for example, there was a press release from the local political leader who represents the district, demanding de-notification of the sanctuary⁶³.

During discussions, the local fishworkers' union, the Malvan Schramik Maachimar Sangh⁶⁴, highlighted that the fishers were not against the declaration of the sanctuary as such, provided their demands were met. These were as follows:

- the buffer zone should be until the high-tide line and should exclude fishing villages;
- permission to anchor fishing vessels in the Malvan port should be given;
- fishing activities should be allowed in the buffer zone and hook-and line fishing should be permitted in the core zone; and
- provisions of the MFRA, including a ban on purse-seine fishing on the coast, should be strictly implemented.

The union stressed that its members do not use destructive fishing practices, collect seaweed or engage in purse-seining in the region. The union also suggested that limiting the number of trawlers in the area to 100 would greatly facilitate resource management. It stressed that local fishing communities are willing to get involved in conservation activities if their demands are taken into consideration.

5.2.5 OTHER RELATED DEVELOPMENTS

Several recent developments, as outlined below, could have implications for the Malvan sanctuary and its management.

- In 2007, the *taluk* development council started to move ahead with a plan for the development of Malvan town as a tourist destination. Plans to encourage local tourists to visit the marine sanctuary, to increase revenues as well as other livelihood options, have been developed. A local ferry service to take tourists from the shore to the Sindhudurg fort area has been introduced, as the temple inside the fort attracts a number of locals from within the district.
- The *taluk* development council has developed the local fish market by providing facilities for women fish vendors, and there are plans to expand it. This fish market is located right on the beach, across the fort area, where fishing vessels are anchored, and is in the buffer zone of the sanctuary.
- There are State government plans to develop an export processing zone in Ratnagiri District, along the coast.

5.2.6 MAJOR ISSUES

Problems in implementation: Although the Malvan sanctuary was declared under the WLPA in 1987, it is yet to become operational. Several provisions under the Act, including the setting up of a sanctuary advisory committee, are yet to be implemented. Provisions relating to acquisition of rights and demarcation of areas within territorial waters have also not been completed. The management structure for the sanctuary is further complicated by the fact that the Sindhudurg fort in the core zone is under the management of the ASI, and that land in the core zone is still privately owned. This has posed practical problems in implementing regulations, and is one of the reasons also for the lack of a management plan for the sanctuary.

Lack of local community participation: There has been no meaningful process of consultation with fishing communities, either prior to the declaration of the sanctuary, or in the subsequent period. There has also been little response to the demands made by local organizations with respect to implementation of sanctuary regulations. This has served to alienate the local fishing communities, forgoing an opportunity to bring them on board conservation initiatives. At the same time, the impetus being given by the local government to develop the area for tourism has further alienated local fishing communities. There is strong suspicion within the fishing community that curtailment of fishing activities in the region, and other related regulations in the core and buffer zones, have been designed mainly to give a boost to tourism.

SECTION VI

CONCLUSIONS AND RECOMMENDATIONS

India's marine and coastal ecosystems constitute an important natural resource, with millions of people dependent on them for their livelihoods. This study has provided an overview of India's coastal and marine ecosystems, its fisheries and fishing communities, as well as the legal, policy and institutional framework in place for PA implementation. India has no specific legislation for MPAs, and PAs are declared mainly under the provisions of the Wild Life Protection Act (WLPA) 1972 in both terrestrial and marine ecosystems. PAs, as a tool for conservation, have been in use since the late 1960s, and, in general, the approach has been conservative and top-down, with a focus on "keeping people out" and banning extractive activities.

However, in tandem with global processes, such as the decisions taken under the Protected Areas Programme of Work of the CBD, which have emphasized community participation, there is now more focus, in legislation, policy and practice, on community participation and co-management of natural resources. Thus, the 2002 and 2006 Amendments to the WLPA have created new categories: community reserves, conservation reserves and tiger reserves, acknowledging, in the process, the principle of sustainable use. The newly enacted Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 recognizes rights (and responsibilities) of Scheduled Tribes and other traditional forest dwellers to forest land. At the level of implementation, in the GOMNP, one of the MPAs selected for this study, the activities of the GOMBRT include research into socioeconomic aspects, creating livelihood alternatives, and using participatory processes to develop the management plan.

Clearly, these are all changes in the positive direction, towards more participatory conservation regimes. However, there is a long way to go, as was evident from feedback obtained from communities during the course of both the case studies, with communities expressing strong feelings about not being consulted in MPA conception or implementation. The resistance to the MPAs in Malvan and in the GOM is partly because fishing communities feel marginalized from decisionmaking⁶⁵.

The case studies demonstrate that significant provisions in PA legislation that support the rights and occupational interests of communities are yet to be implemented in India. These include provisions that require that the rights of

communities be settled, and that the occupational interests and innocent passage of fishers in territorial waters under protection, be guaranteed. Also, while there are legal provisions to form advisory committees for sanctuaries, in practice, these are yet to be formed, in the case of Malvan.

In this context, it is worth noting that fishing communities in both the case-study areas have been asking for better implementation of existing fisheries legislation—the provisions of the MFRAs of their respective States—to control trawling, in the case of GOM, and purse-seining, in the case of Malvan. The livelihoods of small-scale fishing communities are being threatened by the poor implementation of existing fisheries legislation. Communities are of the strong opinion that control of destructive fishing practices, if effectively enforced, would have beneficial conservation impacts. In such a situation, where they perceive that their legitimate demands for better implementation of existing legislation remain unmet, the current or proposed restrictions on their relatively low-impact fishing practices, is seen as unjustifiable—catching the wrong end of the stick, as it were.

A related issue highlighted by the case studies is that while management of PAs lies with the Forest Departments, the responsibility for fisheries management within these areas continues to be vested in the Fisheries Departments. The lack of co-ordination and co-operation between these different departments leads to a host of complex regulations, little understood by communities. It is also to be noted that this lack of co-ordination means that the expertise and experience of the Fisheries Departments in dealing with fishing communities and fisheries management are not sufficiently used in PA management.

The case studies demonstrate that in both these areas, fishing communities have either taken up, or are willing to take up, management initiatives to minimize the impact of their fishing activities. However, such initiatives from communities have not received adequate support, and have not yet been incorporated into the management plans for the areas. It remains to be seen whether support to such initiatives, including through the use of existing legal provisions in the WLPA and other legislation, can be meaningfully provided.

The case studies also show that fishing is not the only threat to marine ecosystems, an issue that communities in both areas have been raising. Thus, the fragile ecosystem of the GOM is highly vulnerable to the impact of industrial pollution, dredging and similar activities. Activities that include building of ports, shipping canals, oil and gas pipelines, and tourist infrastructure, as well as industrial pollution, are posing a significant threat not only to the health of the ecosystems, but also to the communities that are dependent on the marine resources.

As India sets its sights on bringing more marine areas under protection, expanding the current area under MPAs from 6.16 per cent of the area in the coastal biogeographic zone to 7.12 per cent (SCBD, 2006), the abovementioned issues need to be addressed. The recommendations that follow, respond to the key issues and concerns highlighted in the case studies:

- There is need for a comprehensive framework, backed by corresponding legislation, for the management of marine and fisheries resources, drawing on fisheries and integrated coastal area management approaches. A review, and if necessary, revision, of existing legislation, to ensure coherence and complementarity, is required. MPAs should be seen as one of the tools within this larger framework for effective protection and management of coastal and marine resources⁶⁶. This is particularly important, given the growing impact of industrial and development activities on coastal and marine ecosystems, within and outside MPAs.
- Provisions in existing international legal instruments supporting the rights of traditional and small-scale fishing communities with respect to conservation initiatives should be better reflected in national legislation and policy.
- Existing provisions in national legislation, such as those relating to settlement of rights, taking into account the occupational interests of fishermen in territorial waters falling within PAs, and setting up advisory committees in PAs, should be urgently implemented.
- Initiatives by local communities to conserve and manage resources, traditional or otherwise, should be supported, including through use of provisions in existing legislation. Lacunae or drawbacks in existing national legislation that prevent extending legitimate support to community initiatives and institutions, or undermine their autonomy, should be addressed, with suitable amendments to the legal framework.
- Effective participation of communities in management and conservation activities should be ensured, especially in view of the understanding and knowledge that communities have about their ecosystems, and, as importantly, about their social environment. This knowledge is essential to decide on what types of management measures will work, and what will not in a particular socio-cultural and environmental context. Where communities are part of the decision-making process, the likelihood of compliance with management measures will correspondingly increase, minimizing, at the same time, conflicts between communities and the various official regulatory and implementing agencies.

- Related to the above, conservation initiatives should seek to address community concerns *vis-à-vis* environmental degradation and destruction, choosing the approach to be adopted through a consultative process. This means that the choice of appropriate management/conservation tools, the objectives of management, the management plan, the governance structure, provisions for community representation, and the implementation and monitoring plan, should be decided in consultation with local communities. For instance, communities may or may not see MPAs as the most effective management measure in their context.
- Economic and socio-cultural benefits from PAs (and not only the costs) should directly flow back to local communities, guided by the principle of equitable benefit sharing.
- Gender-segregated baseline socioeconomic data must be collected and collated at the time of designation of PAs, and regularly thereafter. This data should form the basis for regular spatial and temporal monitoring, to assess the social and economic impacts of MPAs, and to help implement measures to minimize negative impacts.
- Long-term, functional and sustainable alternative livelihood options need to be developed, in consultation with the communities. Alternative livelihoods should not, by definition, mean activities alternative to fishing and fisheries. There could be various options within the fisheries sector, involving low-impact gear and techniques, or improved processing and marketing, which would need to be considered.
- Greater institutional co-ordination between the various departments involved in the management of marine and coastal ecosystems is called for, also to ensure coherence between various regulations in place, reducing their complexity and enhancing possibilities of compliance. This will also require coherence between the various legislations used for the management of coastal and marine resources.
- The role of the State-level Fisheries Departments in management of MCPAs needs to be recognized, secured and enhanced, given their expertise in fisheries-management issues, and their understanding of the social dimensions of the fisheries sector.
- Capacity building of PA managers, from both the Forest and Fisheries Departments, is needed, especially in adopting a participatory approach to management. A change in mindset, from viewing communities as encroachers, to communities as allies, is needed. Capacity building is also needed to develop and strengthen local community organizations to take up conservation, management, and economic activities.

In conclusion, there is little doubt that there is need to improve management and conservation of India's rich and diverse marine and coastal resources. However, it is as important that this is undertaken in partnership with local and traditional communities dependent on these resources. Without such a balanced approach, the conservation goal of MPAs will never go hand-in-hand with the larger aim of poverty alleviation.

Endnotes

1. A biodiversity 'hotspot' is a biogeographic region with significant biodiversity that is threatened with destruction. There are two criteria for a biodiversity hotspot: it should have a very high share of endemic species; and requires protection, as most of it is lost, due to habitat destruction.
2. These figures exclude the fishing population on the islands, as their figures are not available for the same time period.
3. Marine and coastal protected areas (MCPAs), as defined by the Convention on Biological Diversity (CBD).
4. Notification dated 20 January 2003, Act No. 16 of 2003. (*Source:* <http://envfor.nic.in>)
5. The Wildlife Protection Amendment Act, 2006. Act No. 39 of 2006, dated 3 September 2006 (*Source:* www.Indlaw.com)
6. Fish was included in the definition of an animal in the 2002 Amendment to the Act.
7. These were based on Notifications dated 5 December 2001, 11 July 2001 and 28 May 2001, from the MoEF.
8. Section 29, WLPA 1972.
9. Grazing and movement of livestock may be permitted inside a sanctuary, not in a national park (Section 35 (7)), and forest produce removed if for non-commercial personal use.
10. Upadhyay and Upadhyay, 2000, as quoted in <http://envfor.nic.in/divisions/ic/wssd/doc2/ch10.pdf>
11. Section 26A(1), included in the 1994 amendment
12. Section 26A (2)
13. Section 50 under Chapter VI
14. Protected Area database of the Wildlife Institute of India, Envis: Wildlife and Protected Area. http://www.wii.gov.in/envis/pa_database.html (visited on 3 December 2007)
15. <http://www.panchayats.org/downloads/Comments%20on%20WP%20Bill.PDF>
16. "Tigers and Tribals: Tug of War Continues." *Down to Earth*, Editorial, 15 November 2007.
17. Section 18(3)
18. Kalpavriksh, in its draft proposal to the NBA on the definition, highlights biodiversity heritage sites as "areas with significant biological diversity as also important ongoing human association with this biodiversity", and could include

sites such as landscapes (including marine areas and wetlands) that contain a mosaic of natural, semi-natural and human-made habitats, which, together, contain a significant diversity of life forms, including small areas that offer refuge or corridors for threatened or endemic fauna and flora, such as community conserved areas or urban greens and wetlands.

19. This was passed in the Lok Sabha (lower house of Parliament) on 15 December 2006, and in the Rajya Sabha (upper house of Parliament) on 18 December 2006, and the Rules were notified on 7 January 2008.
20. The fishing laws of the various States need to be revised into a Central legislation and thereafter to be effectively implemented. Similar legal coverage needs to be extended to other aquatic life forms and ecosystems, especially sponges, corals and shells.
21. <http://www.forestcaseindia.org>.
22. 2-4 April, 2007, Dehradun, India.
23. It needs to be recalled that Programme Element 2 on governance, participation, equity and benefit sharing stresses the importance of full and effective participation of indigenous and local communities in the management of PAs, in full respect of their rights and in recognition of their responsibilities. It calls for mechanisms for effective sharing of both the costs and benefits of the establishment and management of PAs by 2008.
24. WII protected areas database (Accessed on 4 December 2007)
25. http://www.wii.gov.in/envis/pa_database.html (Accessed on 8 November 2007)
26. It is important to note that in India, MCPAs can be declared under any of the four categories of PAs, under the WLPA 1972.
27. These figures exclude the islands.
28. <http://www.wii.gov.in/envis/panetworks/panetwork.html>
29. <http://pib.nic.in/release/release.asp?relid=32348> (Accessed on 2 November 2007)
30. http://www.forests.tn.nic.in/WildBiodiversity/wildbiodiversity_home.html
31. GOM No. 226, dated 3 March 1980.
32. GOM No. 962, dated 10 September 1986.
33. The islands closer to Tuticorin District include Vantivu, Kasuwar, Karaichalli and Villaguchalli. The islands closer to Ramanathapuram District are Upputhanni, Pulvinichalli, Nallathanni, Anaipar, Valimunnai, Appa, Poovarasampatti, Talairi, Valai, Mulli, Hare, Manoli, Manoliputti, Poomarichan, Pullivasal, Krusadai and Shingle.
34. Manipulation activities are extractive and commercial activities that can be carried out inside a buffer zone of the reserve.

35. www.gisdevelopment.net/.../ma06_259a.htm
36. It is important to note that the landings of Palk Bay include those from the landing centres of Rameshwaram, Pamban and Mandapam, where vessels that fish beyond Palk Strait waters also land their catches.
37. According to the Directorate of Fisheries, Ramanathapuram District office, there are 80 trawlers registered in Pamban, 500 in Mandapam and 720 in Rameshwaram.
38. The mechanized trawlers are mainly the stern trawler boat (STB) type, with wooden or plank frames, of length 10.8 to 12.6 m, most fitted with Ashok Leyland IBEs of 88-120 hp. The motorized boats, also called *vallams* (Tuticorin type) in the local language, are 28-32 ft in length, with 12-18 hp IBE. The non-motorized plank-built canoes, called *vathais*, are 18-25 ft in length, and are used to fish in the waters very close to the islands, using rows and sails. *Kattumarams* are also used further south in the Keezhakarai and Tuticorin area.
39. Based on observation of fisheries statistics reports, the exact date of the order could not be traced as it was an administrative order for maintaining law and order.
40. According to the minutes of the Joint Task Force on Coastal Security on 13 May 2003.
41. Interview with the sea cucumber fishermen's union in Keezhakarai on 12 January 2007.
42. Pers. comm. from the GOMBRT Director.
43. As on January 2007, based on discussions with the Wildlife Warden, there was no change in the situation.
44. G.O.Ms.No.263/ E & F FR (V) Dated: 18.12.2000 and registered under Tamil Nadu Society Registration Act 1975.
45. At the time of writing this part of the report, the draft report has been submitted to the Chief Wildlife Warden, Department of Forests and Environment, Government of Tamil Nadu.
46. The formation of VMCs and EDCs was approved by the Government of Tamil Nadu, vide G.O.NO.42 dated 04.04.2005. The VMCs and EDCs are registered societies.
47. SIPPO has been asked to prepare business plans for 12 villages so that they could tie up with villages.
48. The activities of the Trust are carried out under a Director, an Indian Forest Service (IFS) officer, deputed from the Tamil Nadu Forest Department and appointed by the Government of Tamil Nadu, and an Eco-development Officer, also an IFS officer from the Forest Department.

49. <http://www.greensl.net/docs/Evaluation%20of%20the%20EIA%20%20for%20the%20Proposed%20Sethusamudram%20Ship%20Canal%20Project.doc>.
50. <http://www.environment.tn.nic.in/soe/images/CoastalandMarine.pdf>
51. G.O.Ms.No.229, dated 20 December 2005, on Environment-Seaweed Cultivation by SHGs in the Sea Waters North of Palk Bay and South of Tuticorin Coast. This Notification allows the culture of this species in waters north of Palk Bay and south of Tuticorin, and not in the GOM region.
52. A *taluk* is a smaller administrative unit of governance, at the district level.
53. Schedule of Revenue and Forest Department, No. PGS. 10S6 17724 / F5
54. The *rampam* is a shore-seine net operated along the Goa, southern Maharashtra, Karnataka and Malabar coasts. During its operation, one extremity of the net remains on the shore, while the rest of the net is carried out to sea in a boat, paid out in a semi-circular path and the other extremity brought to another point on the shore. The two ends are then slowly dragged towards the beach from both sides.
55. The structure of the fishing fleet has changed in recent years and, according to local sources, in 1985, there were more *rampams* along the Malvan coast than trawlers (*Source*: pers. comm.).
56. No.Lavesu 499/14141/(CR-88)/ADF-14, http://www.icsf.net/icsf2006/uploads/resources/legalIndia/pdf/english/state/1112240339823***Maharashtra_Notification_dated_13th_October,_1999.PDF
57. http://www.icsf.net/icsf2006/uploads/resources/legalIndia/pdf/english/state/1112240287095***Maharashtra_Notification_dated_12th_December,_1997.PDF
58. <http://icmam.gov.in/MAL.PDF>
59. This section is mostly based on discussion with Dahulker, in Malvan, on 30 January 2007, and where documents are used, the references are provided in parentheses.
60. Discussions with John Narayana, vice-president, Malvan Schramik Maachimar Sangh, on 30 January 2007.
61. CMFRI statistics. This is only the fisherfolk population; there are others living there, especially along the main Malvan town, who are also dependent on allied activities. Thus, the total population dependent on fishing and related activities could be around 12-15,000 people.
62. These were villages highlighted by the fishing community; some of the names of the villages do not match with the spellings given in the CMFRI census report.
63. 26 January 2007, local Sindhudurg newspaper.
64. The Malvan Schramik Maachimar Sangh, registered in 1987, is an active fishworker union in the district, and a member of the NFF.

65. The table in the Appendix summarizes the major issues in the two case studies.
66. The need for a comprehensive approach, and a comprehensive legislation that will support this approach, is also one of the demands of the main fishworkers' union in India, the NFF, as outlined in a declaration at a recent workshop on marine reserves in India (see "Charter of Declaration", *SAMUDRA Report* No. 48, November 2007. http://www.icsf.net/icsf2006/uploads/publications/samudra/pdf/english/issue_48/art11.pdf).

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Appendix

Summary of Case Studies

	Gulf of Mannar National Park	Gulf of Mannar Biosphere Reserve	Malvan (Marine) Wildlife Sanctuary
Location	Tamil Nadu	Tamil Nadu	Maharashtra
Status and notification	National Park, 1986	Biosphere Reserve, 1989, declared under the UNESCO-MAB programme	Wildlife Sanctuary, 1987
Area (sq km)	560	10,500	29.12
Ecosystem	Coral reef, seaweeds	Coral reef, seaweeds	Coral reef, mangroves
Zonation	Waters around the 21 islands, including the land component of the island are closed	Core zone: 21 islands (National Park) Buffer zone: Immediate seas around the islands	Core zone: 3.182 sq km Buffer zone: 25.94 sq km
Issues	<ul style="list-style-type: none"> • Fishing not allowed in the National Park area • Small-scale canoe fishermen affected • Activities of women collecting seaweeds restricted • Management plan prepared without much consultation from community 	<ul style="list-style-type: none"> • Fishing in core area of Biosphere Reserve not allowed; efforts on to re-establish boundaries of the reserve, with more marine component. • Prohibition proposed for anchoring of fishing vessels in core area • Management plan prepared without much consultation from community 	<ul style="list-style-type: none"> • Prohibition proposed for anchoring of fishing vessels in core zone • Proposal to prohibit fishing in core zone (can affect small-scale hook-and-line and gillnet fishers)
Population affected		125 villages and livelihoods of more than 100,000 people	Seven villages located in the buffer zone

Management plan	<ul style="list-style-type: none"> • Draft management plan developed by WII, still pending approval by Govt. of Tamil Nadu • Secondary notification and demarcation of boundary with the help of Chief Naval Hydrographer's office yet to be undertaken • Settlement of rights not yet undertaken 	<ul style="list-style-type: none"> • Separate management plan for Biosphere Reserve developed by WII, in draft form • Socioeconomic data collected from affected villages, but VDCs yet to play active role in major fishing villages • Management council meets regularly but no major decision taken yet, besides the initiation of scientific studies in the National Park and reserve area 	<ul style="list-style-type: none"> • Not yet developed, except for the yearly plans • Sanctuary advisory committee not set up yet • Settlement of rights not yet completed
Institutions involved in management	Chief Wildlife Warden, Forest Department, Fisheries Directorate	Conservator of Forests, Forest Department, Fisheries Directorate Gulf of Mannar Biosphere Reserve Trust	Deputy Conservator of Forests, Forest Department,
Other development issues	<ul style="list-style-type: none"> • Initiation of Sethusamudram canal project, Tuticorin port and thermal power station located near the southern tip of the National Park (and the core zone of the reserve) • Conflicts between trawler fishermen and small-scale fishermen 		<ul style="list-style-type: none"> • Tourism development • Purse-seine fishing from neighbouring districts • Increase in number of trawlers

SAMUDRA Monograph

Marine Protected Areas in India

This study on marine protected areas (MPAs) in India analyzes the legal and institutional framework for their establishment, and uses two case studies—the Gulf of Mannar National Park and Biosphere Reserve, and the Malvan (Marine) Wildlife Sanctuary—to document and understand the experiences and views of local communities, particularly fishing communities, with respect to the various aspects of design and implementation of protected areas. Stressing the need for fishing communities to be equal partners in all aspects of MPA design, implementation and monitoring, the study concludes with specific recommendations.

The study finds that while there is now more focus, in legislation, policy and practice, on community participation and co-management of natural resources, there is yet a long way to go. Much remains to be done to secure full and effective participation of fishing communities, and to improve governance, participation, equity and benefit sharing, as outlined in Programme Element 2 of the Programme of Work on Protected Areas of the Convention on Biological Diversity.

This publication will be useful for analysts, researchers, non-governmental and fishworker organizations, and anyone interested in issues related to fisheries, biodiversity, conservation, communities and livelihoods.



ICSF is an international NGO working on issues that concern fishworkers the world over. It is in status with the Economic and Social Council of the UN and is on ILO's Special List of Non-Governmental International Organizations. It also has Liaison Status with FAO. As a global network of community organizers, teachers, technicians, researchers and scientists, ICSF's activities encompass monitoring and research, exchange and training, campaigns and action, as well as communications.

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