

MARINE PARKS MALAYSIA—MANAGEMENT STRATEGY

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ABSTRACT

The coral reef is one of the most and productive ecosystems in the world. It provides a variety of resources and services and thus needs to be protected. The Marine Parks Malaysia was established with the objectives of conservation and protection as well as education. The Department of Fisheries has been given the task of managing the Marine Parks Malaysia as its establishment comes under the purview of the Fishery Act 1985. In its effort to manage the Marine Parks Malaysia sustainably the Department of Fisheries has to overcome several issues related to marine protected areas. Having a multi tiered governing structure has somehow added to the complexity of managing the Marine Parks Malaysia. With the Department of Fisheries having only powers within the waters of the marine parks, issues regarding terrestrial developments need to be addressed jointly with the relevant authorities. Other issues that needed attention are with regards to the conflict of use of the Malaysia for tourism and the lack of awareness among the public regarding the importance of the marine environment. The Marine Parks Malaysia also provide sites for long term research to understand marine ecosystems and ecosystem services in developing sustainable management and to explore and evaluate options for new forms of use. Other than these issues the Department of Fisheries also strives to overcome operational and management issues in terms of capacity building and sustainable financing.

■ INTRODUCTION

Coral reefs are among the most biologically diverse ecosystem on the planet. It is also sometimes known as the 'Rain forest of the sea' due to its highly productive biological diversity. Coral reefs cover over 1 million square km worldwide. A single reef is capable of supporting habitats for hundreds of fish species and other related living animals and plants. Though it covers less than 25% percent of the oven surface area, coral reefs provide protection and food security as well as livelihood to millions of the world's coastal community.

Though the coastal waters are rich fishing grounds there is a general consensus that the fishery resources in these grounds are currently intensively exploited (Ibrahim, 1987, DRM 1994, MoA 1994). Sheppard, (1992) showed that there is a steep decline in the fish catch

per unit population from 1970 to 1990. In order to overcome or at the least, sustain the situation, there is a need for a sustainable resource management, rational development policy and management approach.

Other important symptoms in the decline in the fishery sector that indicate the need for better marine environment management are the fact that fishers are fishing for smaller and lower-value species. This is further aggravated by the fact that the fishers have to fish further from home bases and the destruction or degradation of fish habitats in coastal areas. This paper will discuss the management strategies taken up by the Department of Fisheries Malaysia as a primary government agency to manage, protect and conserve the living marine resources by way of establishing MPA's particularly the Marine Parks of Malaysia.

■ **SETTING UP OF THE MARINE PARK**

Proper management of the marine environment has increased its current and potential range of uses. The marine environment has been seen as a source of providing new industries such as tourism and even medical with the development of new forms of drugs from marine resources. Like fisheries, unless these uses are managed sustainably, they can threaten, change and destroy the very processes that they depend on.

Though parks and reserve were established as early as in 1925 (Jasmi, 1996), they were confined only to land areas. It was only in 1983, steps were taken to initiate for the conservation of the natural marine habitats in the form of marine parks and marine reserve (Ch'ng, 1990). In the initial stage only waters around Pulau Redang, Terengganu were gazetted. This was followed in 1985 by the gazettelement, under the Fisheries Act 1963, of water areas surrounding 21 islands in Terengganu (including Pulau Redang), Kedah, Pahang and Johor as Fisheries Prohibited Area.

The Fisheries Act of 1963 was later replaced by the Fisheries Act of 1985 to cater for the rapid expansion of the fishing industries and for the management, protection and conservation of marine habitats and other living marine resources such as corals, marine mammals and turtles. Under the Fisheries Act of 1985, a provision for the establishment of marine park or marine reserve was made under Part IX – Marine Parks And Marine Reserve (Sections 41 – 45).

■ **OBJECTIVES OF THE MARINE PARKS**

In order to fulfil the need for a more sustainable marine resource the Marine Parks Malaysia was set up to meet the following objectives:

1. To conserve and protect biological diversity of marine community and its habitats;
2. To upgrade and conserve the natural habitats of endangered species of aquatic life;

3. To establish specific management zone for the conservation of aquatic flora and fauna; and

4. To establish zones of recreational use consistent with the carrying capacity of the area.

■ **SIZE OF THE MARINE PARKS MALAYSIA**

The size of a Marine Protected Area depends on what is there that needs to be conserved. Though much has been said about the size of protected areas, the Marine Parks Malaysia is thus defined as an area of 2 nautical miles measured from the lowest watermark of its lands that has been gazetted as marine parks. To date a total of 40 islands have been gazetted as marine parks as seen in Appendix 1.

■ **REGULATIONS PERTAINING TO THE MARINE PARKS MALAYSIA**

For the Marine Parks Malaysia to be effectively managed there need to be in place a set of regulations in order to govern them. As such the do's and don'ts revolves around making sure that the Marine Parks Malaysia is always kept in the best state of health. Activities that are of destructive in nature are not allowed while activities that are of non-destructive in nature are encouraged. The Marine Parks Malaysia is therefore a no take zone within the confines of the marine park areas.

■ **MANAGEMENT OF MARINE PARKS MALAYSIA**

In an effort to provide continuous protection of resources within the Marine Parks the Department of Fisheries Malaysia set up several marine parks centres. At present there are 7 centres with the latest being the centres on Pulau Perhentian, which went operational in April 2003. See Appendix 2.

■ IDENTIFYING ISSUES IN MARINE PARKS MALAYSIA

The Marine Parks Malaysia is very new and young as compared to other marine parks in the world, thus there are plenty of things to do and learn. It has only been more than 10 years since the first marine park in Malaysia was first established, thus it is not unusual that issues that plagued other marine parks are also felt here. Though there appears to be a non exhaustive list of issues and problems, among those that have been identified are:

Institutional Arrangement

The challenge to manage the fragile marine resources wisely, to attain sustainable development and to protect the environment, habitats and the resources should not be address in isolation (Thomas, 1996). These must be pursued by quarters (scientist, economist, policy maker), social institution (NGOs) and the most importantly by public consciousness and willingness to pay/accept.

The structure of governance in Malaysia is based on a three-tier system structure around the Federal, State and the Local Government. While the structure of the tiered system appears simple, actual implementation is more complicated and complex and usually involves a combination of several governance levels and a myriad of policies, legislation, bylaws and guidelines (MIMA, unpub.). As such, the administration and management of landmass, water body and biodiversity in marine parks of Malaysia involved in one way or another all level of government. Failure of implementation at any level may causes adverse effect on the environment and the complexity of the institution framework and jurisdictions make management difficult.

Policy and legislative framework must take into consideration the needs, roles and functions of all relevant authorities, relevant organizations and local communities as to ensure that the resources in the resources in the marine parks have the necessary policy and legal protection for its sustainability.

Development Integrated Management Approaches

The institutional and legal issues coupled with the revolutionary development of marine parks uses have added to the management complexities. The existing marine parks objectives and policies need to be augmented and strengthened in order to meet demands from 'new users'. Management decision must justify not only in terms of benefits to the environment, but also in terms of public accountability and support.

Effective management will have to involve integrated planning and management of both land and sea and must be co-managed by the State, Federal and the public. In states where there is in existence a State Park or Development Board, a Joint Technical Committee will be established to foresee and facilitate management and conservation issues. Such joint committees have been planned in the near future between the Department of Fisheries and Tioman Development Authority; and between the Department of Fisheries and the Johor State parks. Other similar co management committees can be stimulated via the Marine Parks Advisory Committee at every State where marine parks are established.

Lack of awareness

Awareness on environmental issues, especially on marine related issues among the stakeholders that need to be increased. The low information base and lack of knowledge on the resources available and the importance of conserving these resources were identified as major underlying causes of the immediate threats to marine biodiversity (Vidisha *et al.*, 2000).

Marine Parks Malaysia recognised the importance of people management through communication. An informed community will promote the conservation and sustainable use of the marine parks assets and help to ensure marine parks meets its obligations under the national policy. More awareness campaigns are being brought about in order to facilitate the stakeholders to fully understand the idea of the marine parks.

Research

Our knowledge on the resources and the potential yields are limited by the degree of uncertainty of natural life processes. Inadequate information put resource managers in a difficult position. More often than not management is undertaken with any available data with the hope of minimizing risk,

Research within the Marine Parks Malaysia is encouraged, as this will add to the prevailing data on the parks. As a marine protected area (MPA) the Marine Parks Malaysia provide broad benefits as sites for reference in long term research to understand marine ecosystems and ecosystem services, to develop and evaluate techniques for verifiably sustainable management and to explore and evaluate options for new forms of use. In many coastal areas the ecosystems are highly degraded. These degraded areas are now the focus of attempts to restore the original services, such as healthy fisheries and research and exploration in biological diversity, which is still lacking in Malaysia.

Other examples of the economic value of maintaining biodiversity lie in the discovery of medical drugs and other valuable chemicals from marine plants and animals.

The Marine Parks Malaysia as protected areas can provide sites for repeated field surveys by over many years that can provide good information about long term change that cannot be obtained in any other way. This also has the advantage that by collecting and analyzing a particular year's data, it is likely to provide a good understanding of change in comparison to earlier years. It is also possible to inform managers in future decision making about marine environments and resources.

e. Tourism

When the marine parks were set up, the main objectives were conservation and education. With the increasing interest in marine nature tourism, more and more tourists are now looking at the sea for their enjoyment as such; the marine park soon became targets by the tourism industry. Marine Parks of Malaysia experienced an upsurge of visitors

in recent years as shown in Appendix 3. Tourism is a globally competitive activity that depends on repeats businesses, positive word-of-mouth recommendation and marketing but is vulnerable to fashion cycles and negative reports by customers.

The quality of the natural environment is important for the setting and the activities, yet coastal and marine tourism areas are vulnerable to hasty and inappropriate development with consequent beach erosion and beach and water pollution. Unmanaged or inadequately managed visitation can lead to rapid resource and site degradation and a decline in visitor numbers. However, though the management of the marine parks is motivated by the philosophy of conservation and protection, of late there has been an increasing pressure to manage the people and the activities generated by them.

Sustainable financing

Maintaining a 'clean', healthy and sustained MPA is not cheap. When natural resources are depleted, there's often a hidden cost. The Government of Malaysia provided all the financial allocation for management and development programs through the Five Years Malaysian Plan and the Marine Parks Trust Fund set up in 1987. To date, the Government had spent more than RM 21.6 million (approximate USD 5.68 million) on the development of marine parks centres and the acquisition of surveillance boats. The Government of Malaysia is also committed to maintain the management and conservation cost which include emolument for the staffs, allowances, maintenance of assets and equipment, petrol, diesel and other conservation activities which total up to nearly an average of RM 2.0-2.6 million yearly.

In view of the increasing number of visitors and an ever increasing cost, Marine Parks Malaysia must develop new but sustainable use of the environment and at the same time adequately meet financial obligation. There is a need to manage the marine parks profitably and thus create a revolving fund. This has been spurred by the

increase willingness to pay for leisure and recreational services. Thus, with proper planning and implementation, tourist development can bring significant financial benefit to the marine parks and subsidise the management and development cost required. As such, the payment of the 'Conservation Charge' for entrance to the Marine Parks Malaysia was enforced beginning January 1999 in Marine Parks of Kedah, March 1999 in Terengganu and June 1999 in Pahang and Johor. The fee charged is RM5.00 (USD 1.32) for adults and RM2.50 (USD 0.65) for children, student and pensioner.

The collection from the 'conservation charge' when it was first introduced was around RM 840,000 and in 2003 the collection was about RM 1.2 million. The conservation charge has managed to generate some income into the Marine Parks Trust Fund that was set up but still far from being sustainable in order to support the management and developmental cost needed to run the Marine Parks Malaysia. Co financing by other organisations in implementing projects in the Marine Parks Malaysia is welcomed and there has been great interest generated among the private sector.

Training and education and capacity building

Since ignorance is a major factor in human damage to coastal and marine environments, marine environments, marine protected areas can play a role in education. Reflecting a long-term commitment to establish and strengthen human resource and institutional capabilities, Marine Parks Malaysia recognises the importance of improving knowledge and skill, managerial capacity and experiences, enterprise development, scientific and technical know-how of the government personnel and the stakeholders.

The Marine Parks Malaysia play an important role in the training of resource management staff involved in policy development and implementation of a wide range of activities in coastal and marine areas. Courses being run at the marine parks can provide a valuable introduction and contribute

to understanding and implementation of measures to achieve sustainability and maintain ecosystem processes. Most of these courses are in a way to improve in the capacity building of the staffs and to create awareness among the public. They play an increasing role in developing community understanding and demand for sustainable management of their marine environment.

The marine park centres also play an important role in tourism through providing training and support for local people involved in the industry. The centres themselves often provide an attraction for visitors seeking local knowledge of the area.

Fisheries Benefits

Within the fishing communities, few people understand how marine ecosystems function, how fish develop, how fishing and pollution affect the ecosystem that produces the fish and how to avoid damage or how to sustain fisheries for the future. This should not stop them from reaping the benefits of the marine parks. It is hoped that the Marine Parks Malaysia can benefit the fishing industry and community by;

Providing a spill over of an exploited species

Fish tagging studies show that fish species move out of a marine protected area and into surrounding waters, and with the evidence of record sizes, is evidence for a substantial level of spillover of these fish species from the marine protected area into the adjacent recreational fishery (Kenchington, 2002). The Marine Parks Malaysia thus, can provide a good supply of fishing resources for the fishing community while providing a base to support fishery stability. This is particularly significant for fish species that have been heavily exploited.

Protecting nursery grounds

By having a marine protected area the nursery ground of important commercial species can be protected. Even the Northern Prawn Fishery in Australia has recognized that

“no take” areas are an important management tool that can benefit the fishing industry by providing greater protection to critical nursery habitat than can currently be provided by the Australian Fisheries legislation.

Improving socio-economic standings of local communities.

Studies of Marine Protected Areas with “no-take” zones established in coastal and island areas that showed evidence of over fishing have demonstrated benefits of significantly improved fish catch. On the local front the anchovy fishery of Langkawi has shown improvement in catches in recent years and they attributed this to the setting up of the Pulau Payar Marine Park in Kedah.

Other strategies employed

- Establishing networking amongst managers, scientists, practitioners and local communities to share information and develop guidelines on appropriate restoration and rehabilitation practice to mitigate damage and restore damaged ecosystems;
- Taking steps to update and review existing management plans as well as the policy and legislative framework pertaining to the Marine Parks Malaysia, to be able to augment and take into consideration the necessary interventions to overcome all the threats identified.
- Review be made of restoration and rehabilitation methods and initiatives in order to evaluate cost effectiveness in recovering damaged ecosystems and the contribution towards the effectiveness of Marine Parks.

■ CONCLUSION

Preserving marine biodiversity is critically important if we are to achieve verifiably sustainable management of coastal and marine resources. The marine and coastal habitats of marine parks are subjected to threats due to multiple usage and especially man-made influence. Direct physical damage due to high development; visitor pressure especially in easily accessible shallow water coral reefs;

damaged by illegal fishing activities such as by trawlers; and anchoring contribute to the degradation of the reefs. The Marine Parks Malaysia is established so that threats can be addressed but at the same time sustain the health and biodiversity of the marine resources.

The benefits of ecosystem services are often unrecognized because they are often taken for granted. Marine protected areas can help to ensure continuity and future options for those benefits by protecting the health of marine ecosystems. Well-managed marine protected areas have become major tourist attractions. Well-managed tourism can be a major source of income and pride for local communities, as well as for governments. There is now widespread experience from many countries to show that protected areas often earn significant revenue and make an important contribution to local economies.

We may be able to identify and value the current range of goods and services provided by a particular marine or coastal ecosystem but we know little of what the ocean might provide in the future in the way of new products, new resources and new opportunities to create wealth. Keeping samples of the ocean ecosystems in their natural form is a prudent investment in the future. Having a marine park with a “no-take” zone will ensure that areas are fully protected and this provide the most effective tool to avoid foreclosing on future opportunities for marine goods and services.

By having education centres on Marine Park Islands with ‘no take’ zones can be particularly important because they provide areas where people can experience and study marine plants and animals that are undisturbed by fishing and collecting. They can thus become points of comparison where people can observe and compare what they see with more impacted areas and appreciate the issues of sustainability.

Nevertheless, the success of the Marine Parks of Malaysia depend on the level of acceptance and compliance of policy and legislative framework and cooperation by all parties concerned.

Appendix 1

List of Islands Gazetted As Marine Park of Malaysia

State	Name of Islands	Water Area (Square miles)
Kedah	Payar	54.91
	Kaca	42.50
	Lembu	46.13
	Segantang	44.19
Terengganu	Ekor Tebu	40.60
	Kapas	21.33
	Lang Tengah	61.50
	Lima	43.90
	Nyireh	14.40
	Perhentian Besar	91.21
	Perhentian Kechil	81.07
	Pinang	48.90
	Redang	127.50
	Susu Dara	14.28
Tenggol	24.00	
Pahang	Chebeh	44.92
	Jahat	45.20
	Labas	44.78
	Sembilang	60.60
	Sepoi	44.57
	Seri Buat	77.20
	Tioman	251.15
	Tokong Bahara	45.13
	Tulai	63.03
Johor	Aur	97.45
	Besar	84.14
	Goal	45.70
	Harimau	49.00
	Hujung	52.35
	Mensirip	46.60
	Mentinggi	43.99
	Pemanggil	87.90
	Rawa	50.80
	Sibu	42.60
	Sibu Hujung	11.83
	Tengah	51.49
	Tinggi	101.80
FT Labuan	Kuraman	na
	Rusukan Kechil	na
	Rusukan Besar	na

Appendix 2

Location of the marine park centres

1. Pulau Payar – Kedah
2. Pulau Redang – Terengganu
3. Pulau Perhentian Kecil – Terengganu
4. Pulau Tioman – Pahang
5. Pulau Tinggi – Johor
6. Mersing – Johor
7. Labuan -

Statistic on visitations to Marine Parks Malaysia

Year	Total
1988	1,373
1989	1,942
1990	4,312
1991	8,338
1992	15,519
1993	20,686
1994	40,524
1995	93,994
1996	109,893
1997	331,927
1998	342,834
1999	377,470
2000	465,858
2001	484,233
2002	287,031
Total	2,585,934