

An International Information Network for Marine Protected Areas

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Abstract

Programs aimed at managing unique or representative areas of the ocean are emerging in all regions of the world. The new programs vary considerably in their objectives and management approaches. However, they do share a need for ready access to marine sciences information. An international network of marine protected area managers has been established to improve information access and exchange.

This paper reviews the basic information needs of marine protected area managers as reflected by the experience of several countries. Since these managers represent a new and growing user group for marine information centers, recommendations are made for close collaboration between this group and the existing international network of marine libraries and information centers.

Introduction

In 1986, Ecuador proclaimed the establishment of a new marine reserve around the Galapagos Islands(1). Simultaneously, a marine park program was initiated in the Cayman Islands(2) and Malaysia was moving quickly towards the establishment of marine parks around 22 offshore islands(3). Proposals for new marine protected areas and enabling legislation were a few months away from approval in Canada, the United Kingdom, Belize, and several other countries.

Recent inventories concur that the number of marine protected areas has been growing rapidly in all major ocean basin regions(4). This trend was apparent at the recent **International Marine Protected Area Management Seminar** organized by the Sanctuary Programs Division, Department of Commerce in collaboration with the U.S. Man and the Biosphere Program, Department of State. As a result of the Seminar, marine protected area managers from several countries have been making efforts to organize themselves into an international network. One of the primary motives for this network has been to improve access to marine sciences information particularly as this information relates to the day-to-day management of marine protected areas. Since these managers can be thought of as a new and rapidly expanding user group for marine library systems and information centers, it is useful to examine further their specific information needs.

What are Marine Protected Areas?

The term and concept of marine protected area deserve a brief clarification. The term generally refers to areas of the ocean (including nearshore areas) that have received a special designation because of significant natural, cultural, or economic values and where resources are being managed to protect or enhance these values.

Depending on the country, the concept can include sites designated for a variety of purposes such as **marine sanctuaries** in the U.S., **marine national parks** (Canada, Colombia, France, Indonesia, Malawi) or **fisheries reserves** (Australia, New Zealand) Table 1. The United States system includes an unusually diverse array of sites ranging from the submerged wreck of the historic Civil War Ironclad, the U.S.S. Monitor, to sub-tropical coral reefs and cold temperate offshore areas (Key Largo National Marine Sanctuary in Florida, and the Point Reyes-Farallon Islands National Marine Sanctuary in California).

How prevalent are marine protected areas? Recent surveys indicate that between 7-80 countries have initiated a program(4). At the international seminar, 29 delegates from 22

Table 1.

EXAMPLES OF MARINE PROTECTED AREA DESIGNATIONS

<u>DESIGNATION</u>	<u>COUNTRY</u>
Aquatic Reserve	Australia
Ecological Reserve	United States
Fish Habitat Reserve	Australia
Fisheries Reserve	Australia, New Zealand
	Philippines
Historic Site (Submerged)	Canada
Marine Life Refuge	United States
Marine National Park	Canada, Colombia, Indonesia,
Malawi,	West Germany
Marine Nature Reserve	Fiji, Indonesia, United Kingdom
Marine Park	Dominican Republic,
	Indonesia, Malaysia,
	Philippines
Marine Scientific Reserve	Australia, Costa Rica,
	Denmark, Philippines
	Panama, Indonesia, Thailand
Marine Sanctuary	United States
Marine Wildlife Reserve	Denmark
Maritime Historical Park	Australia
Maritime Park	New Zealand
Natural Monument	Belize
Underwater Park	Canada, Netherlands Antilles

Sources: Miscellaneous national and regional surveys including Woods Hole Oceanographic Institution, 1986, UNESCO 1981.

countries provided representation of all the major ocean basins. The newly formed network includes managers and administrators from more than sixty developing and developed nations.

Not all countries are at the same stage of development in their system of marine protected areas. The attendants at the Seminar illustrated this quite well. There were representatives from well-established programs such as Australia's Great Barrier Reef Marine Park Authority and New Zealand's fisheries reserve program administered by the Ministry of Agriculture and Fisheries. Both have a complex planning process and carry out research and inventory activities to support the management of their sites. However, a majority of the programs have been established within the last five years and are only beginning to implement on-site activities.

Marine protected area programs differ not only in their stage of development but also in their goals, the marine resources being protected, institutional arrangements, and management approaches. In the tropical and sub-tropical realms for example, most of the sites protect coral reef habitats or a combination of mangrove/seagrass/coral reef habitats. In the cold temperate realm, marine protected areas may include giant kelp habitat, submarine canyons, and areas of concentrations for whales and seabirds. Sites that protect shipwrecks and other submerged cultural resources are found in a few countries including the U.S., Australia, Canada, and Sweden.

Despite these differences, marine protected area programs have many problems - an important one being access to readily available, management-related information. Access to existing marine information centers is particularly important for marine protected area programs in developing countries since the latter do not have the in-country resources to create their own marine data bases.

Information Needs of Marine Protected Area Managers

Information needs tend to evolve with the status of a program and this appears to have been the experience of both Australia and the United States. Very early on during the establishment of a country-wide system of areas, the focus tends to be on general national scale information relating to criteria for identifying and selecting suitable sites. Following designation, many countries enter an intensive planning and implementation phase. The focus then shifts to management-related information aimed at helping planners and managers decide complex issues such as facility development options, zoning and other regulatory schemes, on-site enforcement strategies, and interpretive opportunities.

From a management perspective, the information needs can be broadly categorized as follows:

1. Marine Geographic Baselines

The most fundamental information need relates to the distribution of critical resources and activities to be managed within a marine protected area. Baseline studies generally refer to studies of the abundance, distribution, and movement of species. From a management perspective, baseline studies can also include characterizations of commercial and recreational activities within a site. Baseline data are usually needed for multiple applications such as delineating zoning schemes, planning enforcement patrols, and identifying priority locations within the marine protected area for oil spill emergency response.

The types of baseline data required by a marine protected area manager need not necessarily be the result of exhaustive original surveys conducted for that site alone by the management agency. In fact, adequate baseline information can often be derived from past survey efforts con-

ducted by a fisheries management agency or a research institution. The manager can usually obtain a complete environmental profile particularly for a nearshore site by synthesizing readily available information. Thus, the problem becomes less one of carrying out additional inventories and more one of knowing what past baseline surveys have been conducted that also cover the area of concern. Marine information centers that offer the capability to search for past baseline studies within a specified marine geographic area can play an important role in fulfilling this management need.

2. Monitoring Data

Marine protected area managers are often faced with the difficult question of whether or not an investment should be made in monitoring programs. Monitoring programs are designed to indicate short and long-term changes in populations and communities in a marine protected area through repeated observation and recording of "indicators" of abundance, reproduction, recruitment, and mortality. Past experience has shown that such investments can be monumental.

The decision of whether or not to initiate a monitoring program can best be made with prior knowledge of existing marine monitoring programs within the region of concern. One very useful tool provided by some marine information centers is a regularly updated directory of marine monitoring programs specifying geographic coverage, sampling frequency and density, and other data base characteristics. Under ideal conditions, managers should be able to consult an on-line directory to obtain listings of current monitoring programs that have relevance to a specified marine protected area. Where there are no on-going programs, a manager may want to evaluate sampling techniques used for comparable marine areas in other regions or even other countries.

A few of the larger marine information centers are now offering specialized services for marine protected area programs and there are examples of cooperative arrangements between management agencies and data centers in Australia and Europe.

It is important to note that the solution for developing countries lies in establishing linkages with marine information centers maintained by international technical assistance agencies such as various United Nations organizations (FAO, UNEP, and UNESCO are good examples), government agencies for bi-lateral aid, and marine research institutions with an international program. Marine protected area managers in developing countries are not always aware of the services offered by these centers. One of the objectives of the network is to inform managers of the availability of these services and how to use them effectively.

A need that is related to both monitoring and baseline data is access to contacts or marine experts that can help managers interpret monitoring data or develop research programs. Once again, several international centers have now started maintaining regularly updated directories of marine scientists and experts that are available for consultation by managers.

3. Special Data Needs

As managers gain a clear understanding of their program's objectives and priorities, other specialized types of marine information become increasingly important. For example, representatives from developing countries (and indeed industrial countries) have stressed that economic data are critical for continued institutional support of their programs. Relevant economic data include studies on economic benefits of recreational use of marine parks, tourism development, but also increased fisheries productivity. In many parts of the world, managing a marine protected area also means developing programs that are compatible with traditional coastal cultures. In this context, cultural and historical information (relating to marine tenure systems,

traditional fisheries) play an important role in management decisions. On a related subject, managers have repeatedly expressed the need to know about available marine education curriculum material developed for various marine habitats, regions, and in selected languages. Aware of this need, several marine information centers are now maintaining updated catalogues of such material as well as listings of local and regional marine education associations.

International Marine Protected Area Network

Effective management of marine protected areas depends on access to relevant and accurate marine sciences information. The creation of the international network is seen as a first step towards improving access for marine protected area managers. The group represents a broad range of experiences including regional and national programs for marine scientific reserves, underwater parks, marine national parks, and various types of multiple use areas. The network also includes individuals from non-government organizations and supporting foundations that are concerned about marine protected areas.

Over the course of the past few months several activities have been initiated to encourage the exchange of marine management information. Among them:

- A bi-monthly newsletter providing updates on country programs, newly designated sites, current issues and new techniques, upcoming workshops and training opportunities, and recent publications dealing specifically with marine protected areas:
- An automated data base providing access to marine protected area experts and services; and
- Special pilot projects and activities focusing attention and advancing capabilities in key aspects of marine protected area management such as marine education.

There is a concern for not duplicating the services of existing regional or international networks that focus on marine sciences. A concerted effort is being made to learn about such networks and establish linkages with our group of marine protected area managers.

While there can be little doubt that managers stand to gain from working closely with existing marine information centers and libraries, the latter can also benefit from continued exchange with the international network. Marine protected areas around the world are currently the setting for vast marine research efforts in the biophysical and socio-economic sciences as well as marine education projects. Access to the network is an effective way of keeping informed of these activities and receiving updates that might otherwise be difficult to obtain.

Conclusion

Marine protected area managers are likely to become a growing user group for marine information centers. Their needs vary with the stage of development of their programs, resource protection issues, and socio-economic context.

Most programs, particularly those of developing countries, have very limited resources for maintaining marine sciences data bases. Managers will therefore benefit significantly from learning about the services and capabilities of marine information centers. With close collaboration in the future, it may also be possible to tailor some services to their specific needs.

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