MPA design and zonation

C2

Careful attention to design is often over-ridden by social, political and economic issues when establishing an MPA. As a result some MPAs are poorly located, or are inappropriate in size or shape for achieving their objectives. This sheet describes key design components and suggests how managers may be able to progressively improve the design, even once the MPA is established.

Design aspects include size and shape, location, position of boundaries, zoning, ecological representation, and links or connectivity with other MPAs. There are also practical considerations in terms of ease of management (e.g. whether the MPA is adjacent to sources of threats such as urban areas or major fishing grounds) and access.

BOUNDARY LOCATION

The location of MPA boundaries should be based on ecological factors including breeding, recruitment and nursery grounds, fish aggregation sites, resilient habitats (e.g. reefs that survive bleaching), current patterns, and stability of populations of key species and communities. If the original designation was driven by socio-economic-political factors (e.g. interests of the stakeholders, immediate availability of an area), key ecological sites may lie outside the boundaries of the MPA but it may be feasible to change this with relatively minor alterations. It is essential to include within the boundaries ecosystems that can withstand damaging impacts, and areas of high biodiversity that have been degraded, to enable them to recover. For example, coral reefs known to be particularly resistant or resilient to bleaching (see sheet H7) should be included wherever possible, and given high protection under any zoning scheme. New threats may also necessitate changes, e.g. increasing shipping traffic has led to a proposal to extend the ship exclusion zone around Aldabra World Heritage Site.

Stakeholders must be closely involved in establishing or changing boundaries. In Menai Bay Conservation Area, Zanzibar, for example, consultations were held with fishers and village leaders to identify guiding features on which the boundaries could be based. A draft map was then prepared with key boundary points identified by GPS and this was ground truthed by government officers, MPA management personnel, fishers and scientists.

Clearly marking and maintaining the boundaries of an MPA is often difficult particularly in deep waters and/or strong currents but, if this is not done, confusion and conflict may arise. Good concise descriptions are also needed that can be translated into legally defensible boundaries in the field and make it easier for technicians, GIS specialists, and cartographers to map them.

SIZE

For ecological reasons, MPAs should be as large as possible because of the open nature of marine ecosystems. Mozambique has recently increased the size of Bazaruto Archipelago National Park from 600 to 1,430 km^2 to provide greater protection for the dugong. Large MPAs have better buffering capacity, can be zoned to accommodate a variety of uses and levels of protection, will protect a higher diversity of habitats and are more likely to retain viable populations and maintain ecological processes. However, small MPAs are often more acceptable to local communities and therefore easier to implement. Small MPAs are effective conservation tools for many marine resources, depending on their location, connectivity to other MPAs, and how well adjacent areas are managed.

ZONING

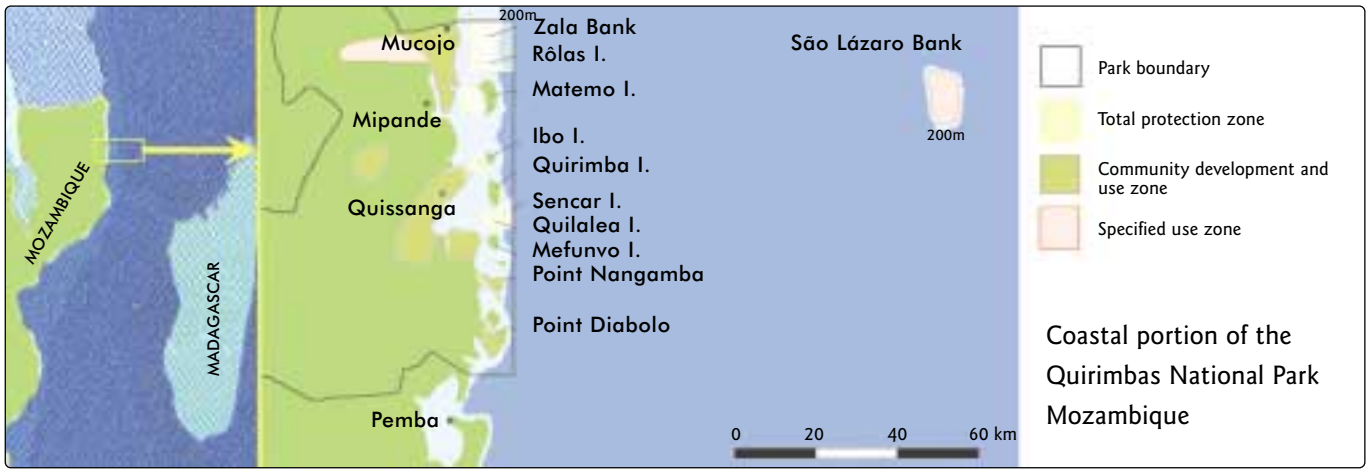
Zoning is a key management tool for multiple-use MPAs. It allows areas to be set aside for particular activities such as protection of key habitats or nursery areas and breeding sites, research, education, anchoring, fishing and tourism. Zoning helps to reduce or eliminate conflict between different users of the MPA, to improve the quality of activities such as tourism, and to facilitate compliance.

A zoning scheme generally includes areas under strict protection (see sheet I1) and areas with increasingly fewer restrictions. There may also be sub-zones, which might be modified on a seasonal or temporal basis, e.g. for boat access or because of breeding cycles of organisms. The scheme should aim to provide a balance between conservation and use, and should be as simple as possible. If it is too complex, it will be difficult to enforce as stakeholders may have difficulty distinguishing the different zones.

The zoning plan may be part of the management plan or a separate document, and in some cases the zone types are laid out in the MPA legislation. The plan should identify the boundaries of the different zones and explain how each area can be used. As with the outer boundaries of the MPA, it is essential that zones are clearly marked once agreed and approved.

CONNECTIVITY

Connections with other MPAs and other ecologically important areas should be considered. An MPA ideally needs to be part of a network of protected areas that takes account of the movements of species, dispersal of larvae, and exchange of nutrients and other matter between ecosystems. In the WIO, information on such parameters is largely lacking, but where it is known or can be obtained, it should be used. For example, information on current patterns is increasingly available, and methodologies are being developed to track the movements of animals (e.g. satellite tagging for fish and turtles, and acoustic tracking of fish). MPA design should also take into account any existing framework of integrated coastal management (see sheet A5).



KEY POINTS FOR THE MPA

- ❑ **Consider carrying out an assessment of the design of the MPA, to understand any shortcomings and to make recommendations for improvement; make any necessary changes that are feasible.**
- ❑ **For boundaries, avoid ambiguous language like 'approximate low water', and use the most detailed charts or maps available to ensure the greatest level of accuracy.**
- ❑ **Reference fixed features that will not move over time e.g. rocky headlands rather than sandy headlands or buildings.**
- ❑ **Changes in the design and zonation of an MPA must be discussed with stakeholders as their agreement and support will improve compliance.**

Sources of further information

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CASE STUDY

Zonation scheme in Quirimbas National Park, Mozambique

Quirimbas National Park covers some 6,000 km^2 of land and 1,500 km^2 of marine, intertidal and island habitat (see map above). The zoning scheme has to take into account the large area, varied depth ranges, large human population (about 55,000 people depend on the Park's resources), diversity of habitats and species and a range of uses including fishing and tourism. It can be modified provided that the area and habitat diversity within the Total Protection Zones are maintained at, or increased above, the initial levels. The zoning is prescribed as follows under the MPA legislation:

Total Protection Zones - All exploitation is prohibited but regulated tourism and scientific research are permitted. These zones are being established in collaboration with local communities and tourist operators, who may be responsible for their management. Four have been defined to date:

- the islands of Quilalea and Sencar with their surrounding waters - to be managed by the tourism company operating on the islands, in collaboration with the communities;
- a 20km^2 stand of mangroves adjacent to Ibo Island;
- seagrass beds adjacent to Matemo Island;
- Rôlas Island and Zala Bank - an exposed, and little used, reef and associated small island.

Specified Use Zones - Areas that warrant full protection but where this is not possible. The only marine example is the São Lázaro Bank, a seamount which is to be managed for sportfishing and SCUBA diving. Lying 80km from shore the bank is not used by artisanal fishers.

Community Development and Use Zones - The remaining areas of the Park are designated to allow for sustainable use exclusively by local residents. Regulations are to be developed with the communities.

Buffer Zone - A 10km wide strip all round the Park within which all developments must receive Park approval and be subject to the same environmental considerations as those within the Park.