

# MPA

Issue Briefs for the Caribbean

*Lessons learned for building and sustaining effective marine protected areas*



## ZONING

*Dividing the pie, and making and applying the rules to consume each piece*

### WHAT IS THE ISSUE?

Zoning is a component of the spatial planning and management. It establishes the framework for the management to achieve specific conservation objectives in a finer spatial resolution within the boundaries of the MPA. Often, it is not adequate to achieve those objectives with one set of rules for the entire area. Thus, it is more appropriate to apply different rules to distinct sections of the managed area. The planning process of an effective zoning scheme entails the delineation of different zones and the development of regulations and the tools for their enforcement to the use of the coastal and marine resources (habitats, species, biological communities, ecosystems services) of the MPA.

A zoning scheme requires some knowledge of the spatial distribution of marine resources as well as a basic indication of usage patterns and conservation status of the area. Gaining knowledge of the environmental features and resource conditions within and outside an MPA may require more or less sophisticated tools depending on the size and distribution of the

marine resources of the area and the available material resources. At minimum, this may include the distribution of biological resources and usage patterns, and the development of the enforcement capability that support the specific regulations for each area. Information about land use is very important too.

The most common used zone types generally include the following:

- 1) strict conservation (no entry allowed other than for scientific surveys or experiments),
- 2) no-take (fishing and other resource extraction are prohibited),
- 3) regulated fishing (certain kinds of fishing gear or methods are allowed),
- 4) fishing only (no other use is allowed);
- 5) recreation (for visitation or tourism uses such as snorkeling/diving, marine wildlife viewing and yachting),
- 6) scientific (for scientific observation or experimentation only);
- 7) multi-use (where several uses are allowed).

Hereafter, the attributes advantages and challenges of these types of zones.

## Strict conservation

<b>Attributes</b>	<p>Extractive and other activities (tourism, dredging, etc.) are not allowed.</p> <p>Applied to areas that are particularly sensitive to human impact, contain species, habitats or ecological processes of high conservation value or are highly degraded.</p>
<b>Advantages</b>	<p>Provides an opportunity for a potentially fast recovery of ecological conditions in a small area and for research and control sampling or experimental areas.</p> <p>May serve as a “banner” or “advertisement” for local communities and other users and stakeholders on the benefits derived from high levels of protection in the sustainable conservation of the entire area.</p>
<b>Challenges</b>	<p>Can be difficult to enforce if located in a traditionally fished area or in remote locations.</p> <p>Conservation success is not ensured if not adequately placed, sized and monitored or their ecological health depends on areas outside the zone or the MPA.</p>
<b>Examples of MPAs that exhibit this practice and can be used as learning center</b>	<p>Hol Chan Marine Reserve (Belize); Banco Chinchorro Biosphere Reserve, and Area of Wildlife Protection Isla de Cozumel (Mexico). (Mexico), Bonaire Marine Park.</p>

## No-take (marine reserve)

<p><b>Attributes</b></p>	<p>A type of strict conservation zone where resource extraction (animals or plants) are prohibited but other recreational uses may be allowed (snorkeling, diving and boating).</p>
<p><b>Advantages</b></p>	<p>No-take (marine reserve) Provides an opportunity for the recovery of biological communities and fisheries species spill over to surrounding areas.</p> <p>May generate massive appreciation of MPA benefits and attract financial resources.</p> <p>May reduce user conflicts between fishers and tour operators if properly delineated and accepted by conflicting stakeholders.</p> <p>May realize community benefits and improved compliance if stakeholder interests are incorporated during early planning stages.</p> <p>May integrate the best aspects of both top down and bottom up Management protection in the sustainable conservation of the entire area.</p>
<p><b>Challenges</b></p>	<p>May be hard to reconcile conflicting uses (recreational, fishing).</p> <p>Restoration and sustainable conservation is not ensured if the zone is not well placed and sized, impacted by nearby pollution, or unmanaged upstream, biologically connected marine areas.</p>
<p><b>Examples of MPAs that exhibit this practice and can be used as learning center</b></p>	<p>Exuma Cays Land and Sea Park (Bahamas); La Caleta Marine Park (Dominican Republic), Hol Chan Marine Reserve (Belize); Soufriere Marine Management Area (St Lucia); Saba, St. Eustatius and Bonaire marine parks (Dutch Caribbean); Florida Keys National Marine Sanctuary (USA).</p> <p>Arrecifes de Cozumel, Arrecifes de Puerto Morelos, Costa Occidental de Isla Mujeres, Punta Cancún y Punta Nizuc, and Arrecife Alacranes National Parks (Mexico); Punta de Manabique Wildlife Refuge (Guatemala); Barras de Cuero y Salado Wildlife.</p>

Fishing	
Attributes	A zone where regulated fishing is the only activity allowed.
Advantages	<p>May reduce conflicts with other types of users (divers, boaters).</p> <p>May provide an opportunity for local fishers to be granted exclusive management rights to the zone.</p> <p>Provide opportunities for the strict enforcement of fisheries regulations.</p> <p>Promotes compliance of no-take zones by fishers.</p>
Challenges	Requires strong fishing regulations and effective enforcement by MPA staff to avoid overfishing and damage to the surrounding area (within or outside the MPA).
Examples of MPAs that exhibit this practice and can be used as learning center	Hol Chan Marine Reserve (Belize); Soufriere Marine Management Area (St Lucia); Sian Ka'an and Banco Chichorro Biosphere Reserves, Area of Wildlife Protection Isla de Cozumel , and Arrecife Alacranes National Park (Mexico); Seaflower Biosphere Reserve (Colombia).

Fishing	
Attributes	Less strict regulations but still with restrictions.
Advantages	Advantageous if the number of uses is low and not conflictive.
Challenges	Many conflictive uses are conducive to conflicts among specific users and eventually a weak compliance with regulations. Hard to enforce.
Examples of MPA learning center	Most MPAs.

## Recreation

<b>Attributes</b>	Specific recreational uses are the only allowed (yacht anchoring, snorkeling/diving).
<b>Advantages</b>	Allows for community-based management if local tourist businesses are organized and have agreements with the MPA authority.
<b>Challenges</b>	Recreational use can lead to deterioration of the ecosystem service that management intends to protect. A close control by the MPA authority is needed to avoid such overuse.
<b>Examples of MPAs that exhibit this practice and can be used as learning center</b>	Hol Chan MR, SMMA (St. Lucia), Arrecifes de Cozumel, and Arrecifes de Puerto Morelos, Costa Occidental de Isla Mujeres, Punta Cancún y Punta Nizuc and Arrecife Alacranes National Parks (Mexico). Area of Wildlife Protection Isla de Cozumel (Mexico).

## Scientific

<b>Attributes</b>	A type of strict conservation area that allows for scientific research, through a permitting process.
<b>Advantages</b>	Serves as a control area to assess the impact of different uses outside the zone and commonly attracts research resources from academia.
<b>Challenges</b>	The permitting processes should include a careful examination of the requested research. If approved, an expeditious granting of the permit is needed. Research results to be applied as soon as possible to improve management.
<b>Examples of MPA learning center</b>	The permitting processes should include a careful examination of the requested research. If approved, an expeditious granting of the permit is needed. Research results to be applied as soon as possible to improve management.

## WHAT LESSONS MAY APPLY TO MY MARINE PROTECTED AREA?

---

### ■ Incorporate MPA zoning within a broader Integrated Coastal Zone Management scheme.

MPAs are integrated coastal management (ICM) as they are small areas with conservation goals that are strictly regulated. If there is legislation in place or an institution in charge of ICM, consider incorporating lessons learned and the expertise developed during the ICM process development. The opposite is also applicable: the lessons learned at the MPA scale can be applied to a larger scale of spatial planning.

■ **Use the best available information.** The right delineation of a zoning scheme is a process. Use the best available information to draft a map of potential zones. In the absence of scientific data, anecdotal knowledge possessed by local recreational and commercial fishers can provide indication in small accessible areas and inform data gathering efforts. In fact, it may be surprising of how much information can be acquired from people making a living from the harvest of marine resources, or having a long history of recreational use in the area (fishers, divers, boaters). An initial web search may reveal scientific and technical papers or reports on the area of interest. You can use the existing information while seeking and attracting research resources from universities and conservation programs that are interested in applying scientific approaches or methodologies or a site for a dissertation work or a conservation project. Many zoning schemes of large MPAs are drafted in a room with a group of knowledgeable people. It can be further improved. However, if you have a habitat map or zoning plan developed by a research team don't put it in a drawer to sleep. Use it to attract the additional resources needed to complete the process of designing a

MPA and its zoning scheme. Remember that zoning is a dynamic tool and should be reviewed periodically if management issues arise or more information become available.

### ■ Examine regulations and patterns of land use.

An analysis of the different types of land use and traditional forms of resource use of the local communities are fundamental to the design of a good zoning scheme. This information helps to identify conflicts among different resources users (fishers, hoteliers, tour operators, land owners and upland uses) and documents a zoning scheme that balances properly larger and shorterscale and term conservation goals, and the restoration of the main ecosystem services (fisheries, tourism, coastal protection, etc).

■ **Engage stakeholders early.** It is important to engage stakeholders, particularly local user groups, to delineate zones and design specific uses for each one. This way you make allies that can assist in developing management rules, and later comply or help to enforce them. You can also identify stakeholders more likely to collaborate. Such collaborative planning is not the end of the road, but rather a foundational step towards good management. The uses and customs, and different types of uses in the area, are fundamental to the design of zoning, while help identify sites of user conflicts. Therefore, the community involvement and resource users (fishermen, tour-operators, dive shops, hoteliers, service) providers) are essential. Recognize that zoning is integral to adaptive management. Zoning schemes should be revised periodically as more information becomes available or the biophysical conditions of the area change (for better or worse) due to new types of use. Be flexible and actively seek

to increase the area with strict conservation measures, if it proves to be contributing to conservation objectives and sustainable use of the marine resources. The socioeconomic scenario of local communities can significantly change the operation of an MPA. Some changes may provide the opportunity to increase the level of protection or size of some zones.

■ **Make sure the management measures required for the proposed zoning scheme is achievable in a reasonable timeframe.** A zoning scheme has to be defined not only in space but also in time. A scheme that requires an inexistent or hard to achieve regulatory framework is doomed to fail. Start small and define a testing period of this and other components of the management plan (mostly 5 years).



## WHERE TO FIND MORE INFORMATION

■ **Roberts, C.M. and J.P. Hawkins. 2000.** [“Fully-protected marine reserves: a guide.”](#) WWF Endangered Seas Campaign, 1250 24th Street, NW, Washington, DC 20037, USA and Environment Department, University of York, York, YO10 5DD, UK.

■ **Kelleher, G. 1999.** [“Guidelines for Marine Protected Areas.”](#) IUCN, Gland, Switzerland and Cambridge, UK. xxiv +107pp.

■ **Sobel, J.A. and C.P Dalgren. 2004.** [“Marine reserves. A guide to science design and use.”](#) Island Press, Washington, Covelo and London. 383pp.

■ **Gubbay, S. 2005.** [“Marine protected areas and zoning in a system of marine spa al Planning.”](#) A discussion paper for WWF-UK. D'Abadie, J. 2011. Marine protected area zoning

– Zoning for conservation and rehabilitation on coral reefs in data poor areas. A case study of north-eastern Tobago. Dissert on paper.

■ **Grantham, H.S., Ago ni, V.N, Wilson, J., Mangubhai, S., Hidayat, N., Muljadi, A., Muhajir, Roti nsulu, C., Mongdong, M., Beck, M.W., and Possingham, H.P.** [“A Comparison of zoning analyses to inform the planning of a marine protected area network in Raja Ampat, Indonesia.”](#) Marine Policy, 38 (2013)184-194

■ Hol Chan Marine Reserve, Belize. [“Management plan.”](#)

■ **NOAA. National Marine Protected Areas (MPA) Center.** [“Marine Boundary Working Group. Federal Geographic Data Committee Marine Managed Areas: Best Practices for Boundary Making”](#). 666 pp.

