

EFFECTIVE CORAL REEF MARINE PROTECTED AREAS (MPAs): A solution for survival

Coral reefs are one of the most productive, yet most threatened, ecosystems on the planet.

A wide variety of activities ranging from coastal development to global warming to overfishing have endangered coral reef health. Marine Protected Areas (MPAs) provide a comprehensive approach to addressing these threats and are one of the most promising solutions for the survival of coral reefs and the many benefits they provide to people.



WHAT ARE MPAs?

MPAs are areas of coastal land and water that are specifically designated to protect natural resources and ecosystems. MPAs create a framework for sustainable use and resource management that is designed to sustain coral reef health. MPAs provide sites that allow for the preservation of biodiversity and the restocking of fish and shellfish populations. Also, MPAs can improve water quality by including adjacent watersheds as a means to control the impacts of sedimentation and pollution. Effective MPAs must be part of an integrated approach where coral reef communities are protected from multiple stresses, so they can recover faster from any single disturbance. The two components of this approach are: 1) an overall plan for sustainability and protection from activities that have direct impacts on biological diversity; 2) the presence of areas strictly protected from fishing and other extractive uses ("no-take zones").

WHO WILL BENEFIT FROM MPAs AND WHY?

Once established and properly managed, communities will benefit from coral reef MPAs:

- **Artisanal Fishers:** Studies show that catches increase significantly in areas near no-take zones. MPAs that have "no-take" zones have been shown to have higher fish biomass, higher fish density, larger carnivorous fish and invertebrates, increased fish larval supplies, and higher biodiversity than fished areas.
- **Local Communities:** MPAs can improve the quality of life by protecting cultural heritage, increasing local people's income, and providing food. MPAs can also provide attractive sites for sustainable SCUBA diving and snorkeling. Tourism based around diving and snorkeling can generate sufficient income to replace the community's reliance on destructive activities such as dynamite fishing or curio collection (see tourism sector).
- **Policy Makers:** MPAs can preserve natural resources and thus sustain the value of a country's assets. Coral reefs are among the most valuable ecosystems because of their biological diversity, economic value, and the environmental services that they provide. One research group estimates that the world's reefs generate US \$375 billion each year from living resources, fish, souvenir manufacturing, mariculture, coral sand mining, bioprospecting for new products, tourism, and coastal protection from erosion, waves and storm damage.
- **Scientists:** MPAs with effectively managed reserves allow researchers to examine short and long-term trends of marine resource management. This information can assist local communities in improving how they manage reef fisheries. In addition, new biomedical applications derived from reefs can generate additional revenue to communities.
- **Tourism Sector:** Reef-based tourism can be a non-extractive industry that attracts millions of divers and snorkelers each year. Hawaii claims tourism revenue brings in \$8.6 million per square mile of coral reef. In the Caribbean, travel and tourism is expected to generate US\$34.3 billion in 2002, increasing to US\$74.1 billion by 2012. Sustainable tourism is currently the most profitable sector of the tourism industry and continues to grow at a rapid pace.

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The Coral Reef Alliance (CORAL)
417 Montgomery Street Suite 205 San Francisco, CA 94104
Phone: (415)834-0900 Fax: (415)834-0999
www.coral.org • info@coral.org



WHO WILL BENEFIT FROM MPA'S AND WHY? *(continued)*

- **Tourists:** MPAs with high aesthetic appeal will attract more tourists. Tourists prefer to visit pristine reefs and will pay more for the privilege. Furthermore, divers will pay more for the best dive spots and are willing to do so through MPA user-fees. This can generate much-needed revenue to keep a MPA functioning.

CREATING EFFECTIVE MPAs

The following strategies are useful for creating effective MPAs. A model MPA would incorporate many or all of the following attributes:

1. **Involve local stakeholders and consider their socio-economic needs.** When local communities are fully incorporated in the decision-making process, MPAs are more likely to succeed. In addition, there is an even greater likelihood for success if stakeholders can see the benefits of the MPA through an increased availability of marine resources, protection of cultural heritage, and tangible economic benefits.
2. **Use local knowledge.** Engage local communities to share and learn traditional knowledge related to reef conservation.
3. **Inventory coastal environments, resources, and programs** to learn, improve the health, and better manage the coastal environment.
4. **Set goals for coastal zone management.** Determine short-term and long-term goals to create coastal zone management strategies that serve to protect coral reef and related ecosystems.
5. **Support plans with a legal and institutional framework.** Create and enforce a strong legal and institutional framework, including economic incentives, to reinforce desired behaviors and outcomes.
6. **Develop a strong coastal management constituency** with partnerships at the local, regional and national levels.
7. **Establish no-take reserves** to protect, preserve, and sustainably manage the species and ecosystems of special value (this includes threatened species and habitats).
8. **Perform Environmental Impact Assessments (EIAs)** on all development projects in the terrestrial and aquatic sections of the coastal zone.
9. **Assess and monitor pollutants in the water column** and make a plan for pollution control.

POLICIES AND INTERGOVERNMENTAL ACTIVITIES THAT SUPPORT MPAs:

Convention on Biological Diversity: The 8th Article commits all government parties to establish systems of protected areas to conserve areas high in biodiversity. The Article also reaches beyond individual sites to promote practices that ensure activities in areas adjacent to potential sites do not harm those protected reserves.

The Convention on Wetlands of International Importance (Ramsar Convention): This convention originally focused on waterfowl protection and has designated thousands of sites worldwide, including marine areas. Member states are required to identify and conserve sites considered of international importance, such as the Isla del Coco in Costa Rica which has extensive coral reefs and is an area rich in native species where up to 24,000 fish per square km can be observed.

UNESCO's Man and the Biosphere (MAB) Programme: This program encourages management of areas of significant biodiversity for research, monitoring, and biodiversity conservation and sustainable utilization of natural resources. It focuses upon developing models of sustainable human and environment interaction.

World Heritage Convention: To identify and protect the world's outstanding cultural and natural heritage sites such as Komodo National Park in Indonesia, the Great Barrier Reef, Australia and Aldabra Atoll, Seychelles.

IUCN World Parks Congress: The IUCN World Congress on Protected Areas takes place every 10 years to provide an honest appraisal of progress and setbacks and chart the course for protected areas.

For more information contact:

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