

Improving the Use of Marine Protected Areas



GOAL: *Improve management of coral reef resources through a strengthened and expanded network of coral reef marine protected areas.*

Rationale for Action

Marine protected areas¹ (MPAs) can be an important tool for protecting coral reefs from harmful activities. MPAs vary in size and can be designed to manage a multitude of activities.

Creating a network of well-managed MPAs helps protect the biodiversity and ecological integrity of coral reef resources. MPAs can also serve an integral role in an ecosystem approach to coral reef management and conservation.

¹ Marine protected area is used as defined in the MPA Executive Order 13158 as “any area of the marine environment that has been reserved by federal, state, territorial, tribal or local laws or regulations to provide lasting protection for part or all of the natural or cultural resources therein.”

OBJECTIVES

OBJECTIVE 1: Conduct and support national, state, and territory assessments of the effectiveness and gaps in the existing system of U.S. coral reef MPAs.

OBJECTIVE 2: Enhance the effectiveness of existing MPAs and strengthen their capabilities to protect coral reef resources through existing authorities, management plans, programs, and the involvement of all constituencies.

OBJECTIVE 3: Establish additional coral reef MPAs where needed, including the establishment of additional no-take ecological reserves in a balanced suite of representative

U.S. coral reefs and associated habitats, with the goal of protecting at least 5 percent of all coral reefs and associated habitat types in each major island group and Florida by 2002, at least 10 percent by 2005, and at least 20 percent by 2010.

OBJECTIVE 4: Strengthen and support cooperation with and among the Freely Associated States and international partners to establish networks of MPAs to protect and conserve reef ecosystems.



Like their terrestrial counterparts, MPAs can protect critical habitats and endangered species, enhance tourism and recreation, and serve important roles in public education and outreach on the social, economic, and ecological benefits of marine ecosystems and their protection. By providing a framework for the application of adaptive management, MPAs can establish and maintain feedback loops between science and policy. Multiple-use MPAs address the differing objectives of a wide variety of stakeholders, thereby helping to resolve conflicts between users of marine and coastal ecosystems, while providing conservation benefits to coral reef ecosystems.

Recognizing the urgent need to protect reef habitats from further decline, the USCRTF called for strengthening and expanding the Nation’s existing network of coral reef MPAs (USCRTF 2000). Based on a growing body of scientific information, the USCRTF recognized the special value of one type of MPAs—no-take ecological reserves² (reserves)—as a key tool to address the impacts of fishing on coral reef ecosystems (see also chapter 6). The USCRTF also called for designing coordinated networks of coral reef MPAs in U.S. waters and other areas to help ensure the long-term viability, ecological integrity, and sustainable use of coral reefs.

Summary of Implementation

Successful implementation of MPAs requires a science-based approach and the meaningful and sustained participation of stakeholders in all phases of system design, implementation, and evaluation. Since 2002, USCRTF members have made progress on many MPA-related objectives, underscoring the value of these tools in management of coral reef ecosystems.

A variety of coral reef protected areas are managed by federal agencies, such as NOAA’s national marine sanctuaries and fishery management zones

and the U.S. Department of the Interior’s (DOI’s) national parks and national fish and wildlife refuges. However, most shallow coral reefs occur in state waters where significant strides have been made in using protected areas as tools in reef management. Since 2002, USCRTF member agencies have worked to design and implement coral reef protected areas. For example, new MPAs and reserves were established in several jurisdictions, including the U.S. Virgin Islands (USVI), Hawai’i, Puerto Rico, American Samoa, and the Commonwealth of the Northern Mariana Islands (CNMI) (see table 5).

In addition to establishing new coral reef protected areas, USCRTF members have conducted a variety of activities to strengthen effectiveness of existing coral reef MPAs. Management plans and regulations have been developed or completed for several coral reef MPAs in Florida, Hawai’i, and Puerto Rico. These plans and regulations are essential to

Table 5. State, Territory, and Community Marine Protected Areas Established Between 2000 and 2003

The following table shows the number of new state, territory, and community marine protected areas (MPAs) designated between 2000 and 2003. This table is composed of preliminary data from the National Inventory of Marine Managed Areas being completed by the National MPA Center.

| Jurisdiction | 2000 | 2001 | 2002 | 2003 |
|--|------|------|------|------|
| American Samoa | | 2 | | 5 |
| Commonwealth of the Northern Mariana Islands | 3 | 2 | | |
| Florida | 2 | | 3 | |
| Hawai’i | | | | 1 |
| Puerto Rico | 3 | | 2 | 2 |
| U.S. Virgin Islands | 1 | | | 1 |

² Reserve in this case is defined in the *National Action Plan To Conserve Coral Reefs*. Ecological reserves are no-take zones used for maintaining biodiversity, productivity, and ecological integrity of coral reefs and other marine habitats.

effective implementation of existing protected areas, help agencies enforce and manage reef resources, and provide mechanisms for public involvement and evaluation of management efforts.

USCRTF members have mapped and monitored habitats and fish assemblages in MPAs throughout U.S. jurisdictions to gather critical baseline information. Through these efforts, managers tracked abundance and distribution of recreational and commercial fish species and, if populations were decreasing, identified when management action was needed. Florida, Puerto Rico, the USVI, and the CNMI developed stronger management regimes for MPAs through policies, legislation, and plans involving broad public input and stakeholder involvement. All of these actions enhanced the effectiveness of existing sites and strengthened their capabilities to protect coral reef resources.

USCRTF federal agencies also provided technical assistance and funding to states and territories to strengthen the management of MPAs. To enhance state and territory capacity, the USCRTF held several regional and local workshops that addressed the role of MPAs and reserve management in recreational overuse, lack of awareness, fisheries management, and climate change.

Highlights of Task Force Member Activities

OBJECTIVE 1: Conduct and support national, state, and territory assessments of the effectiveness and gaps in the existing system of U.S. coral reef MPAs.

National Inventory of MPAs Nearly Completed

In 2001, NOAA and DOI, in cooperation with other USCRTF members, began an extensive inventory of

coral reef protected areas in U.S. waters as part of a nationwide review of U.S. marine managed areas (MMAs). Data on the location and characteristics of federal, state, and territory coral reef protected areas will be collected and posted on the National Inventory's online database to help assess the current status of U.S. coral reef protected areas. Data for coral reef protected areas in Puerto Rico, Florida, Hawai'i, Guam, American Samoa, and the USVI have been collected and are under review. The CNMI has completed the data collection, and the data are available on the website. For more information on the MMA inventory and the MPA initiative, visit <http://www.mpa.gov>.

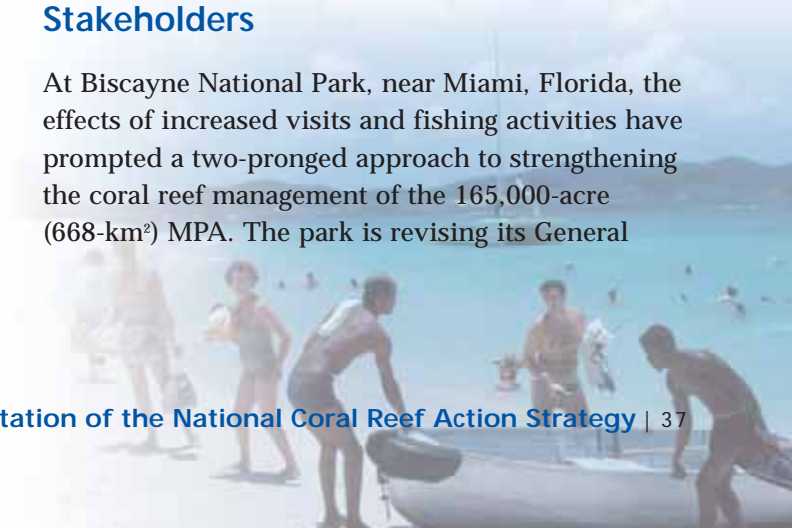
Recreational Use Study


The State of Hawai'i and the Hawai'i Institute of Marine Biology conducted a study of human use in four MPAs. Researchers found that despite high visitor numbers, diving and snorkeling activities have only minor impacts. Study findings suggested that boat-based snorkeling and diving tours with pre-dive briefings led to reduced impacts, so the report concludes that mandatory pre-diving briefings should be required for tours entering MPAs.

OBJECTIVE 2: Enhance the effectiveness of existing MPAs and strengthen their capabilities to protect coral reef resources through existing authorities, management plans, programs, and the involvement of all constituencies.

Biscayne National Park Embarks on Resource Management Plans With Stakeholders

At Biscayne National Park, near Miami, Florida, the effects of increased visits and fishing activities have prompted a two-pronged approach to strengthening the coral reef management of the 165,000-acre (668-km²) MPA. The park is revising its General





Management Plan (GMP) and creating a joint Fisheries Management Plan with the Florida State Fish and Wildlife Conservation Commission. Each planning process has benefited from extensive public input. In fall 2003, the park released preliminary draft alternatives for the GMP in which activities such as boating, scuba diving, snorkeling, and fishing would be zoned to reduce conflicts, enhance visitor experiences, and protect sensitive resources.

Northwestern Hawaiian Islands (NWHI) Coral Reef Ecosystem Reserve Implementation and National Marine Sanctuary Designation Process

Executive Order 13178 created the NWHI Coral Reef Ecosystem Reserve, the second largest marine conservation area in the world. The Order required development of a Reserve Operations Plan and mandated that a process be carried out to consider whether to establish a National Marine Sanctuary in the region. Reserve management efforts in close cooperation with the State of Hawai'i and the Hawaiian Islands Fish and Wildlife Refuge have included extensive marine debris clean-up operations (see chapter 8), research cruises (see chapter 2), and extensive outreach activities. *The Draft Final Reserve Operations Plan* was completed in early 2004.

In 2002, the Reserve held nine public meetings across Hawai'i and one in Washington, D.C., to solicit information and comments from stakeholders on the range and significance of issues related to the designation and management of a NWHI National Marine Sanctuary. More than 1,000 people attended the meetings, and more than 14,000 comments were received. Support for the conservation of the area was overwhelming. The process of collaborative input fostered the vision, mission, principles, goals, and objectives for the proposed sanctuary. Stakeholder comments and input will be

used to identify management issues for the proposed sanctuary management plan and environmental impact statement (EIS). NOAA is scheduled to release the draft EIS, draft management plan and proposed regulations for the proposed designation by January 2006. For more updated information, visit <http://www.hawaiiireef.noaa.gov>.

Culebra Management Plan Moves Forward

In 2003, Puerto Rico began a multistakeholder process to develop a management plan for Luis Peña Channel [Canal Luis Peña] No-Take Natural Reserve. The management plan will address enforcement, awareness and education, habitat protection and restoration, pollution, and other issues. The Authority for the Conservation and Development of Culebra and the Puerto Rico Department of Natural and Environmental Resources (PRDNER) are developing the plan with funding provided by NOAA and the National Fish and Wildlife Foundation (NFWF). The planning process, conducted with community stakeholders and a multidisciplinary working group, will provide a framework and action plan for managing the reserve.

American Samoa Creates New Territorywide MPA Program

American Samoa created a territory MPA program and hired an MPA coordinator to develop an MPA management plan. The plan seeks to protect 20 percent of the coral reef resources and coordinate all MPA efforts throughout the territory. In recognition that coral reef conservation issues extend beyond territorial boundaries, the newly hired MPA coordinator will work to establish a precedent-setting regional MPA program between American Samoa and the countries of Samoa and Fiji.

Community-Based Monitoring and Reef Watch Programs in Hawaii's Newest MPA

The Hawai'i Division of Aquatic Resources provided technical assistance to help a local community establish and develop a comprehensive monitoring program in a coral reef protected area. This locally driven program:

- Monitors coral reef resources, water quality, and human use patterns;
- Educates the public about new MPA rules and reports violations to the state; and
- Manages the removal of litter and marine debris through the Kapoho Reef Watch program at the Waiopae Tide Pools Marine Life Conservation District.

The Kapoho Reef Watch program is locally driven; the community that lives adjacent to the MPA provides all funding and staffing resources. Involving the community in the management of the area results in several benefits: The community members develop a sense of pride and stewardship over the resources; and they are more willing to call for enforcement when they see a violation, work with uninformed users to try to correct misuse, and educate users visiting the area on proper etiquette. These benefits lead to reduced violations and fewer negative impacts from recreational misuse of the reef.

Guam Continues as Leader in Use of Ecological Reserves for Reef Conservation

Guam has been a leader in developing a network of no-take ecological preserves³ to sustain coral reef ecosystems, including three areas with very limited

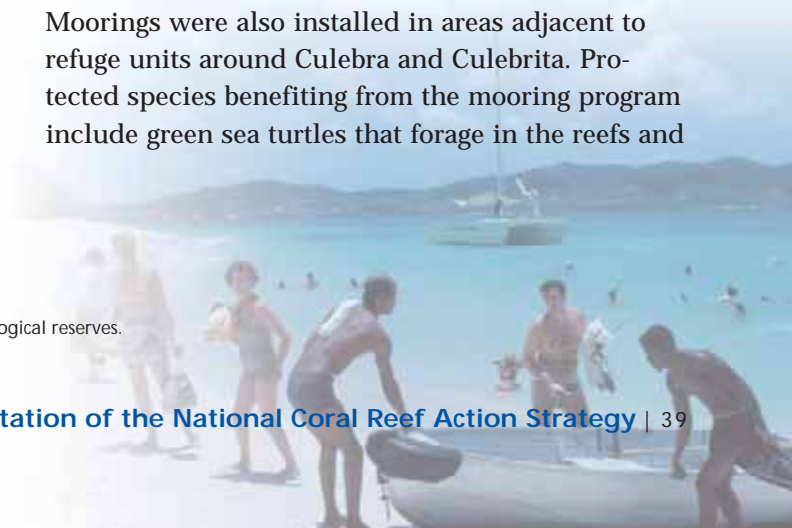
take of seasonal and culturally important species that still function biologically as no-take MPAs. In 1997, Guam established five marine preserves around the island, accounting for 11 percent of the shoreline and an estimated 28 percent of Guam's reef area. The Guam Department of Agriculture's Division of Aquatic and Wildlife Resources established baseline levels of fish populations in two preserve areas and suitable control sites prior to full enforcement on January 1, 2001. Data generated by continued monitoring of the fish communities at these sites will be compared with pre-implementation data to determine the long-term effectiveness of the preserve system. Compared with nonpreserve areas, preserve areas have shown increases in fish abundance, diversity, and spawning mass within 2 years after implementation.

Mooring Buoys Improve Habitat Protection in Puerto Rico Reserve

On holiday weekends, popular marine areas in Puerto Rico can have hundreds of vessels anchoring per day. In the areas of heaviest visitor use, PRDNER partnered with the U.S. Fish and Wildlife Service (USFWS) to install low-impact mooring buoys that reduce anchor damage to seagrass beds and coral reefs. The first buoys were installed in Puerto Rico's first no-take zone, the Luis Peña Channel [Canal Luis Peña] Natural Reserve. Reduced impacts because of significantly less anchor damage to seagrass meadows are evident with improved seagrass, coral, and associated hard-bottom habitats. In addition to protecting resources, mooring buoys provide a popular service to the boating community.

Moorings were also installed in areas adjacent to refuge units around Culebra and Culebrita. Protected species benefiting from the mooring program include green sea turtles that forage in the reefs and

³ The Government of Guam uses the term "preserves" to refer to no-take ecological reserves.



associated hard-bottom habitats such as sponge, soft coral, and algal areas. It is anticipated that, with improvements to turtle habitat, species recovery will be enhanced. The mooring buoy program and partnership between Puerto Rico and USFWS will eventually install 270 mooring buoys throughout Puerto Rico's high-traffic coastal waters.

OBJECTIVE 3: Establish additional coral reef MPAs where needed, including the establishment of additional no-take ecological reserves⁴ in a balanced suite of representative U.S. coral reefs and associated habitats, with the goal of protecting at least 5 percent of all coral reefs and associated habitat types in each major island group and Florida by 2002, at least 10 percent by 2005, and at least 20 percent by 2010.

East End Marine Park Established

In 2003, the USVI, with assistance from federal agencies, nongovernmental organizations, and community stakeholders, created the East End Marine Park at St. Croix. The 97-square-kilometer marine park contains beaches, mangroves, seagrass meadows, and coral reefs. A zoning plan protects the



park's sensitive resources while allowing for compatible recreational uses, including diving, snorkeling, boating, and swimming. Portions of the park are designated as no-take ecological reserves, while others are open to commercial and recreational fishing. Oil and gas extraction and commercial shipping are prohibited in the park.

U.S. Virgin Islands Monuments No-Take Prohibitions Implemented

In 2003, DOI implemented regulations to protect the new 12,708-acre (51-km²) U.S. Virgin Islands Coral Reef National Monument and the newly expanded 19,000-acre (77-km²) Buck Island Reef National Monument. These no-take marine reserves were created in 2001 to restore the coral reef ecosystem and replenish fish and shellfish populations. (Fishing for baitfish and blue runner is allowed at designated locations in the U.S. Virgin Islands Coral Reef National Monument.) The regulations had been delayed while the Government Accountability Office reviewed ownership claims to the area advanced by the territorial government.

The National Park Service (NPS) began developing general management plans to determine long-range (15–20 years) conservation efforts for the two national monuments in collaboration with various stakeholders, including local communities and the USVI territorial government. NPS and NOAA are collaborating on joint scientific surveys of fish and invertebrates, benthic mapping, and habitat characterizations at these two monuments (see chapter 1).

DoD Evaluates Johnston Atoll's Potential as a National Environmental Research Park

The U.S. Department of Defense (DoD) funded a study to evaluate whether Johnston Atoll has the potential to be a national environmental research

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park and designated for the study of the environmental impacts of industrial byproducts and other human-related activities. As part of the base closure process, USFWS is coordinating with DoD for the contamination and hazardous waste cleanup activities necessary after several decades of military use and testing at Johnston Atoll.

Puerto Rico Designates Third No-Take MPA

In January 2004, the Tres Palmas Marine Reserve was designated as the third no-take reserve in Puerto Rico following a multistakeholder planning process. Long renowned for its beautiful beaches, excellent surfing, and abundant sea life, Tres Palmas also supports one of the best-preserved elkhorn coral patches (*Acropora palmata*) around the island; elkhorn coral is under consideration for potential listing as threatened under the U.S. Endangered Species Act. The reserve designation law mandates the development of a management plan and allows for the participation of stakeholders in its development and in the management of the reserve.

OBJECTIVE 4: Strengthen and support cooperation with and among the Freely Associated States and international partners to establish networks of MPAs to protect and conserve reef ecosystems.

USFWS Funds Studies of Endangered Species in Palau

In 2002, USFWS funded surveys of Palau's endangered dugongs and saltwater crocodiles, both of which are listed under the U.S. Endangered Species Act. The goal was to provide the Palau government with biological data needed to help expand an established national network of MPAs. In 2003, NOAA and USFWS co-funded a similar project to

gather information on nesting beaches for Palau's green and hawksbill sea turtles for consideration in enhancing the MPA network.


USFWS Leads Expedition—Results in Republic of the Marshall Islands' First National Park

In 2002, at the request of the people of Rongelap Atoll, USFWS led a multi-institutional expedition to assess conditions at the protected, uninhabited reef of Ailinginae Atoll in the Republic of the Marshall Islands and to evaluate its eligibility as a World Heritage Site. Participants included the College of the Marshall Islands, University of North Queensland, and University of California at Santa Cruz. State-of-the-art, high-resolution Quickbird satellite imagery assisted in the evaluation. Shortly after the expedition, the Republic of the Marshall Islands declared Ailinginae to be its first national park. A full report was due in 2004, and the United Nations Educational, Scientific, and Cultural Organization's World Heritage Centre is now beginning its evaluation of the atoll.

Future Challenges

While the members of the USCRTF have made progress towards strengthening and expanding the Nation's existing coral reef protected areas, significant challenges remain to fulfill this goal.

Complete the inventory and assessment of existing U.S. coral reef MPAs. Information on the location, distribution, purpose, and effectiveness of existing U.S. coral reef MPAs will allow coral reef managers, stakeholders, and others to assess the strengths and weaknesses of the current collection of sites. This information will also allow them to develop appropriate responses to improve effectiveness. Much of the information has been collected, and completing



the inventory and assessment will require continued commitment and cooperation by federal, state, and territory government agencies.

Increasing the effectiveness of current sites.

Although some progress has been made in increasing the effectiveness of existing coral reef MPAs, many sites lack the tools, resources, and capacity to meet their goals. Addressing these needs and increasing the effectiveness of all existing coral reef MPAs are critical steps to improving the resilience of coral reefs and the community economies that depend on them.

Increase public awareness and participation in coral reef MPAs.

Public awareness and participation in coral reef management are critical to the long-term success of these efforts. This is especially true with the use of MPAs as management tools. Increasing public awareness and participation in the design, creation, implementation, and evaluation of coral reef MPAs is essential for the effective management of these protected areas.

Conduct targeted research to design and implement coral reef MPA networks.

Effective management of coral reef ecosystems includes understanding how reef habitats are connected to each other across spatial scales and understanding how these linkages may change over time. Targeted research is

needed in a number of areas to improve the design and implementation of coral reef MPA networks. This includes research on such questions as:

- What is the flow and distribution of larvae, juveniles, and adults among reef systems (i.e., connectivity)?
- How would this connectivity affect the possible survival and recovery of reef habitats?
- Which reef habitats are most likely to survive current and possible adverse future conditions?
- What combination and design of coral reef MPAs would help provide the best possible chance for long-term sustainability of the reef ecosystem?

Evaluate Increased use of MPAs as coral reef management tools.

The implementation of coral reef MPA networks can help sustain the Nation's valuable reef ecosystems and the communities and economies that depend on them. Every jurisdiction has made progress in implementing ecological reserves, but only the NWHI and Guam have met (and exceeded) interim USCRTF goals. Open and participatory processes involving all stakeholders should be used in assessing gaps, needs, and possible alternatives for use of protected areas for effective sustainability of coral reef ecosystems.