

## GOAL 5: IMPROVE THE USE OF MARINE PROTECTED AREAS IN CORAL REEF ECOSYSTEMS

### KEY THREATS ADDRESSED:

Improving the use of marine protected areas as management tools can help reduce key threats to coral reef ecosystems. The figure below is a general summary of the relative importance (H = high, M = medium, L = low) of this goal in addressing the impacts from these threats. A higher ranking suggests that activities under this goal are considered more important to addressing the threat. Lower rankings suggest that although activities under this goal may make significant contributions, they may currently be less important to addressing the threat. The rankings are a summary of input shown in Table 2. The actual importance of this goal to addressing threats to reefs will depend on location and other factors (see Tables 3 and 4 for regional comparisons).

THREATS	Global warming/ Climate change	Diseases	Hurricanes/ Typhoons	Extreme biologic events	Overfishing	Destructive fishing practices	Habitat destruction	Invasive species	Coastal development	Coastal pollution	Sedimentation/ runoff	Marine debris	Overuse from tourism	Vessel groundings	Vessel discharges
Improve use of MPAs	H	L	L	L	H	H	H	M	M	M	M	L	H	H	H

### RATIONALE FOR ACTION:

The most powerful tool for conservation of coral reef and other marine ecosystems is the establishment and effective management of a representative network of Marine Protected Areas (MPAs) for coral reefs. Widely accepted in the terrestrial environment, the principle of setting aside fully representative examples of all ecosystem and habitat types to ensure conservation of biodiversity has been adopted only recently for the marine environment.

MPAs constitute a broad spectrum of areas that are afforded some level of protection for the purpose of managing resources for sustainable use, safeguarding ecosystem function and biodiversity, and/or providing a framework for supporting uses of resources and space with a

## *Goal 5: Improve Use of Marine Protected Areas*

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minimum of conflict. They can range from small to very large, and may protect a specific resource or habitat type, to extensive areas that integrate the management of many species, habitats, and uses in a single, comprehensive plan. The level of protection can range from multiple use areas to no-take ecological reserves<sup>1</sup> that are closed to all extractive uses. Like their terrestrial counterparts, today's MPAs can provide for the protection of 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 employing a framework for the application of "adaptive management," MPAs can establish and maintain feedback loops between science and policy. Finally, multiple-use MPAs address the differing objectives of a wide variety of stakeholders, thereby providing a framework for resolving conflict marine and coastal ecosystem services users, while providing conservation benefits to coral reef ecosystems.

MPAs in the U.S. are administered at the local, territorial, state, regional and federal levels of government. This fragmented set of MPAs often results in under-representation of types of reefs and other habitats within biogeographic regions, inadequate protection of reef resources, competing or conflicting resource objectives, and lack of coordination among management agencies. Under the current system, long-term conservation and sustainable use of coral reef resources are difficult to achieve. A coordinated network of MPAs encompassing representative coral reef ecosystems could be designated to limit fragmentation and build a robust network for sustainable use and conservation of coral reef ecosystems.

Central to the success of an MPA network is the meaningful and sustained public participation by key stakeholder groups in all phases of the design, implementation and evaluation of this system. This will help ensure that MPAs, including replenishment zones, will be developed consistent with, and supportive of, local practices and traditions. Stakeholders include: (a) resource managers from governmental agencies with jurisdiction or expertise relevant to coral reef resources and habitats; (b) commercial and recreational users and stakeholders, including Regional Fishery Management Councils; (c) non-governmental organizations; and (d) coral reef scientists and other subject matter experts. Moreover, the development of an integrated network of coral reef MPAs will necessarily take into account appropriate legislative and regulatory authorities at all levels of government, with particular emphasis on involving the island states and territories in the evaluation, design, establishment and implementation of component sites.

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<sup>1</sup> No-take reserves, also called ecological reserves, harvest refugia, and fully -protected MPAs, are one type of marine protected area where all extractive uses are prohibited. Many studies have shown that no-take reserves are particularly effective in maintaining biodiversity, productivity and ecological integrity of coral reefs. No-take reserves may also serve as fishery "replenishment zones" and help sustain fisheries outside of the protected area. No-take reserves can complement other fishery management approaches such as gear restrictions and temporary or seasonal closures.

This issue is of particular importance in the Pacific Islands, where traditional, community-based and subsistence uses of nearshore coral reef habitats, including protected areas, are intimately linked to cultural values and practices.

### **CORAL REEF MPA STRATEGY**

The strategy to achieve this goal is outlined in the U.S. National Action Plan to Conserve Coral Reefs and associated documents of the Ecosystem Science and Conservation working group of the U.S. Coral Reef Task Force. For more detailed information see <http://coralreef.gov/>. The goal is to build a nationally linked and coordinated network of MPAs, including but not limited to no-take reserves, representing a functionally viable proportion of all coral reefs and associated habitats under the jurisdiction of the U.S.. The U.S. will also encourage steps in this direction in the Freely Associated States (FAS) of the Republic of Palau, Federated States of Micronesia and the Republic of the Marshall Islands.

An explanation of the scientific basis for the U.S. Coral Reef Task Force's Objective concerning no-take reserves is found in the Task Force Ecosystem Science and Conservation Working Group report "*Building a National System of Marine Protected Areas for Coral Reefs*" (available at <http://coralreef.gov>), based on numerous scientific papers (e.g., Lauck et al., 1998; Johnson et al., 1999; Murray et al., 1999; Sladek-Nowlis et al., 1999; Watson et al., 2000), and summarized in Bohnsack et al. entitled "*A rationale for minimum 20-30 percent no-take protection*" (in press in Coral Reefs). Bibliographic references are found in both documents. The goal of 20 percent by 2010 is based on the best available science and is supported from a number of scientific fields including reproductive theory, knowledge about the vulnerability of reef species to exploitation, analysis of fishery failures, and empirical and modeling studies of reserves.

The strategy outlines five key objectives to achieve this goal:

- Objective 1: Conduct and support nation-wide, state and territory assessments of the effectiveness and gaps in the existing system of U.S. coral reef MPAs.
- Objective 2: Develop proposals for establishing new MPAs and enhancing effectiveness of existing areas as appropriate through existing authorities and involvement of all constituencies.
- Objective 3: Strengthen capabilities of existing MPAs to protect coral reef resources through review and revision of existing sites, applicable management plans, programs, policies and authorities.

## *Goal 5: Improve Use of Marine Protected Areas*

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- Objective 4: Establish additional coral reef MPAs where needed. This includes establishing 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 as ecological reserves by 2002; at least 10 percent by 2005, and at least 20 percent by 2010.
- Objective 5: 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.<sup>2</sup>

### **SUMMARY OF ACCOMPLISHMENTS (2001)**

The following is a partial summary of recent accomplishments by federal and non-federal members of the U.S. Coral Reef Task Force to achieve the goal and objectives. For more detailed information see <http://coralreef.gov/>.

#### Objective 1 Accomplishments:

- Developed initial inventory of U.S. coral reef MPAs (DOI, NOAA, state and territory partners).
- Began inventory and assessment of MPA system for development of a marine gap analysis pilot project in Hawaii (Hawaii, NOAA and partners)

#### Objective 2 Accomplishments:

- Began development of a marine park management plan for the proposed East End Marine Park on St. Croix, the first Marine Park proposed under USVI jurisdiction (USVI and many partners). (see <http://rps.uvi.edu/VIMarinePark.html>.)

#### Objective 3 Accomplishments:

- Reviewed and updated the National Park Service’s General Management Plans (GMPs) for parks with coral reefs. The Dry Tortugas National Park GMP has been completed; Biscayne National Park (NP) is underway; and funding has been approved for Virgin Islands NP and Buck Island National Monument (DOI).

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<sup>2</sup> See also International Goal for broader cooperation with other countries on MPAs.

## *Goal 5: Improve Use of Marine Protected Areas*

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- Improved management of (NP) by instituting long-term inventory and monitoring programs for the National Parks with coral reefs; added coral reef coordinators for the parks; and obtained administrative jurisdiction over authorized park boundaries (DOI).
- Hawaii hired a state-wide MPA coordinator and began redesign of management regimes for the state's existing and future MPAs (includes recommendations for reaching 20 percent no-take reserve goal). (Hawaii)
- Implemented assessment surveys in four Hawaii MPAs. (Hawaii)
- American Samoa Power Authority contracted to relocate landfill on Ofu Island away from American Samoa National Park MPA. (American Samoa)
- Began enforcement of Guam's five new no-take reserves, which cover 11 percent of the island's coastline, equivalent to more than 20 percent of the area of Guam's coral reef ecosystems. (Guam)
- Surveyed areas of CNMI, including reefs of the Northern Islands, for potential designation by the Commonwealth as MPAs; and drafted regulations and final draft site rules for management of Managaha Marine Conservation Area. (CNMI)
- Provided enforcement and monitoring assistance in many U.S. coral reef MPAs; worked with government partners to help improve and coordinate enforcement. (USCG and partners)

### Objective 4 Accomplishments:

- Established 10 new coral reef MPAs including the Managaha Marine Conservation Area in Saipan and the Virgin Islands Coral Reef National Monument in USVI. (DOI and CNMI; USVI; others)
- Established 10 coral reef reserve areas (no take areas) within existing or new protected areas. (DOI; others)
- Expanded Buck Island National Monument to increase protection for coral reef ecosystem in USVI. (DOI)
- Established 2 new National Wildlife Refuges to protect coral reefs in the U.S. Pacific region: Palmyra Atoll National Wildlife Refuge (515,232 acres of coral reefs) and Kingman Reef National Wildlife Refuge (483,702 acres of coral reefs). (DOI and partners)
- Established the Tortugas Ecological Reserve in joint effort among the Florida Keys National Marine Sanctuary, the Tortugas National Park, the State of Florida and the National Marine Fisheries Service (Gulf of Mexico and South Atlantic Regional Fishery Management Councils).<sup>3</sup> (NOAA, DOI and partners)
- Established the (NHI) Coral Reef Ecosystem Reserve, creating the largest protected area in the U.S. (339,900-km<sup>2</sup> of coral reef ecosystem) and including some no-take reserve provisions. NOAA began the public process to develop a management plan for the area. (NOAA, DOI, Hawaii and other partners)

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<sup>3</sup> See also "Reduce Adverse Impacts of Fishing and other Extractive Uses."

## *Goal 5: Improve Use of Marine Protected Areas*

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- Passed new laws to established 2 new coral reef reserves (Bird Island and the Tinian Marine Sanctuary in CNMI).
- Designated two reserves on the West Florida Shelf – Madison-Swanson and Steamboat Lumps Marine Protected Areas with the Gulf of Mexico Fishery Management Council and began assessing their resources and contribution to reef and other fisheries.<sup>3</sup> (NOAA)
- Designated three new coral reef MPAs in Puerto Rico (Culebra, Desecheo, and Tourmaline). (Puerto Rico)

### Objective 5 Accomplishments:

- Developed a portfolio of marine and terrestrial conservation areas within the Federated States Micronesia that represents the full array of ecological communities, plants and animals, that when conserved will effectively protect the nation’s natural heritage for this and future generations. (DOI)

## **IMPLEMENTATION PLAN 2002-2003**

Successful implementation of the strategy is contingent on funding and other factors, including effort by a variety of partners. The Ecosystem Science and Conservation working group of the U.S. Coral Reef Task Force provided the following partial summary of key actions needed from government and non-governmental entities in 2002-2003 to help fulfill the goal and objectives. More detailed information is available from the working group or member organizations of the U.S. Coral Reef Task Force (<http://coralreef.gov/>).

### To Address Objective 1:

- Complete inventory of reef areas currently in designated protected status including descriptions of reef types, activities occurring, socio-economic conditions, management capabilities, legislated authorities and level of protection provided.
- Conduct assessment of strengths and weaknesses of existing system of coral reef MPAs, and formulate recommendations for additional protection and use appropriate for sustainable management in regional networks.
- Conduct a gap analysis to determine important representative or unique coral reef habitat types, species, and features missing from current MPA protected status.
- Work with government and non-governmental partners to evaluate the role of MPAs as possible sources and reservoirs to reduce the threats of global warming, coral reef bleaching and other climate driven impacts.
- Identify priorities in federal waters (through existing statutory processes) or state waters for establishing additional new MPAs in the gaps identified, and for improving existing

## *Goal 5: Improve Use of Marine Protected Areas*

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management policies.

- Develop an initial inventory of all coral reef habitats in the U.S. in a geo-spatially referenced database (see CRTF Mapping and Information Synthesis Working Group report). Hold workshop to assess needs and opportunities for possible new MPAs in American Samoa.
- Assess any immediate opportunities to establish new coral reef no-take zones and strengthen existing areas in sensitive areas (e.g. spawning sites). To help fill gaps and meet management needs.

To Address Objective 2:

- Develop specific proposals for additional protection or changes in management regulations at existing MPAs.
- Develop specific proposals for establishing (through existing statutory processes) new MPAs where needed to eliminate gaps and ensure conservation of biodiversity or other reef resources, and improve management of coral reef ecosystem.
- Conduct public consultation through existing statutory processes as appropriate for establishing new MPAs and improving the effectiveness of existing MPAs.

To Address Objective 3:

- Continue public process to develop final management plan for the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve.
- Develop and implement assessments of effectiveness of existing coral reef MPAs (e.g., monitoring, health indicators, fisheries stocks, etc.) to help managers meet their goals
- Develop assessment of effectiveness of the U.S. system of coral reef MPAs.

To Address Objective 4: <sup>4</sup>

- Support ongoing processes by Regional Fishery Management Councils and the National Marine Fisheries Service to identify coral reef MPAs and no-take reserves in federal waters. Identify key sensitive coral reef areas in Florida and the U.S. Caribbean such as spawning aggregation sites.

To Address Objective 5:<sup>2</sup>

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<sup>4</sup> *Note: It appears likely that the U.S. overall will not meet the Task Force National Action Plan goal for 2002 of 5 percent of coral reefs in no-take ecological reserves in each major island group and Florida. Only Guam and the NWHI have reached (and indeed exceeded) this 2002 goal. Guam has exceeded the 2010 goal of 20 percent of representative habitats in no-take ecological reserves. A status report on this goal and the area of U.S. coral reefs in protected area status is included in the 2002 State of U.S. Coral Reef Ecosystems report (Turgeon et al 2002).*

*Goal 5: Improve Use of Marine Protected Areas*

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- Work with the Freely Associated States (FAS) to determine their needs and priorities in establishing MPAs in their nations.
- Develop cooperative agreements between the U.S. and FAS to assist in establishing new MPAs based on needs and priorities assessment and coordinating management strategies for new MPAs through a regional network.