

Monitoring, Reporting & Conservation: A User's Guide For Applying Results From *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States* to Coral Reef Management



Program # 18.721

ABSTRACT

NOAA's publication of a series of reports that use ecosystem monitoring data to describe the current condition of U.S. coral reef ecosystems represents a significant contribution to the conservation and management of the nation's coral reefs. *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005 and 2008* reports integrate the key findings of coral reef ecosystem monitoring programs undertaken by federal, state, territorial, commonwealth, non-governmental, private and academic partners. Data from the various monitoring efforts are organized into jurisdictional chapters to characterize local impacts of key threats, summarize the results of assessment and monitoring activities, and describe local and national management actions to conserve coral reefs. Since publication of the 2005 report, monitoring data have been used to justify a number of conservation management initiatives in U.S. jurisdictions, as illustrated through examples from Hawaii, American Samoa and other locations. Ongoing monitoring and assessment programs continue to provide data that further support conservation efforts by helping to identify the scope and magnitude of key threats and quantify ecosystem responses to them, delineate specific areas where negative impacts have and have not occurred, share successful conservation approaches, and compare costs and benefits of particular management strategies. Finally, the report educates scientists, managers, decision makers and the public about the current condition of U.S. coral reefs.

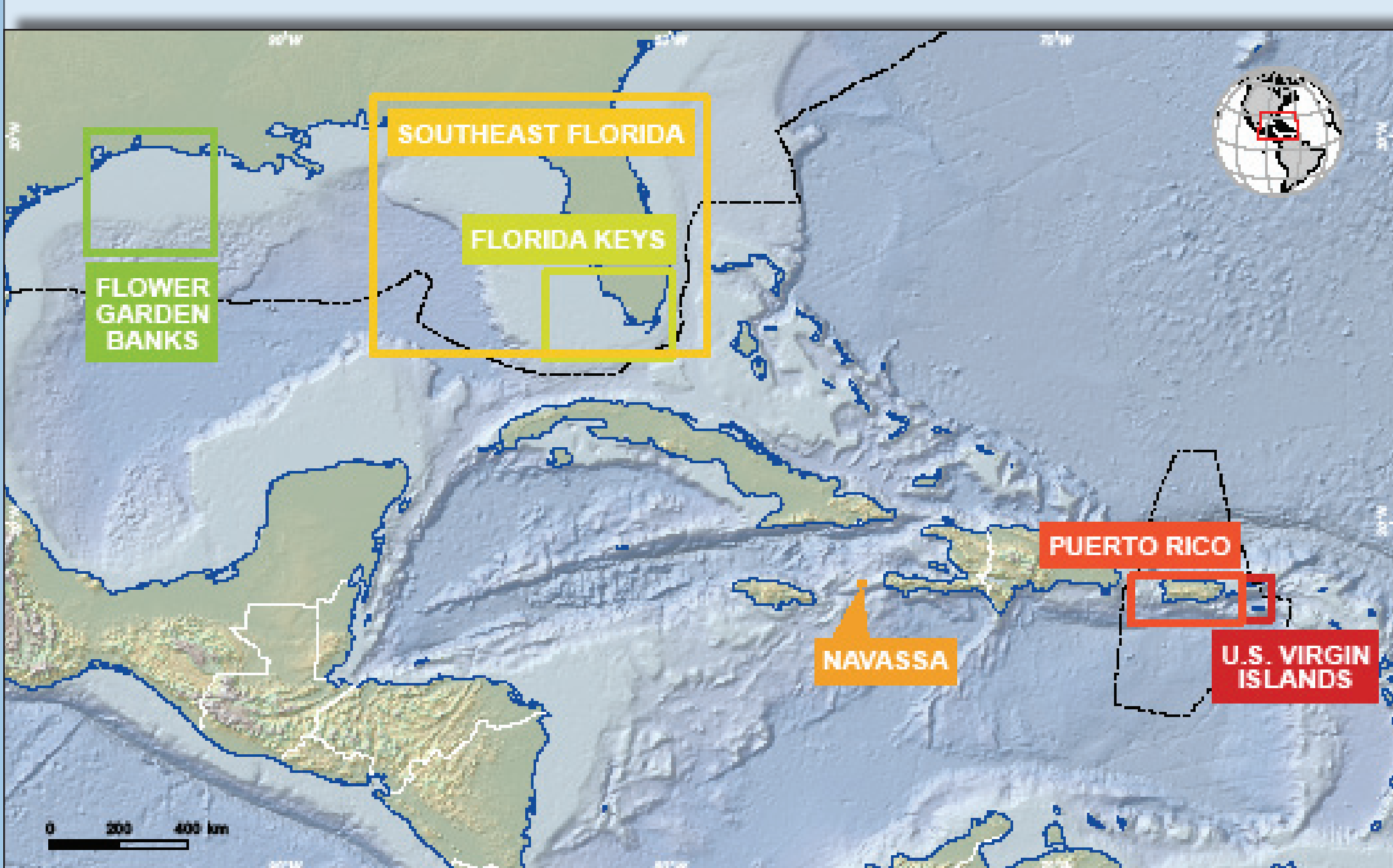
BACKGROUND

The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005 and 2008 provide information on the condition of coral reef ecosystems stretching from the U.S. Virgin Islands to Micronesia. These integrated reporting efforts offer a comprehensive look at available data in order to support national and local-level conservation management efforts.

Both the 2005 and 2008 reports are organized regionally, focusing on 15 U.S. jurisdictions containing coral reef ecosystems. Each jurisdiction-specific chapter is authored by expert writing team composed of local scientists and managers and includes descriptions and the latest data on the following:

1. The types and extent of shallow-water habitats
2. Primary threats affecting reef condition
3. Ongoing monitoring activities
4. Summary results from monitoring activities focused on measuring water quality, benthic habitats and associated biological communities

The chapters also summarize current conservation management activities and provide recommendations for future research and management actions.

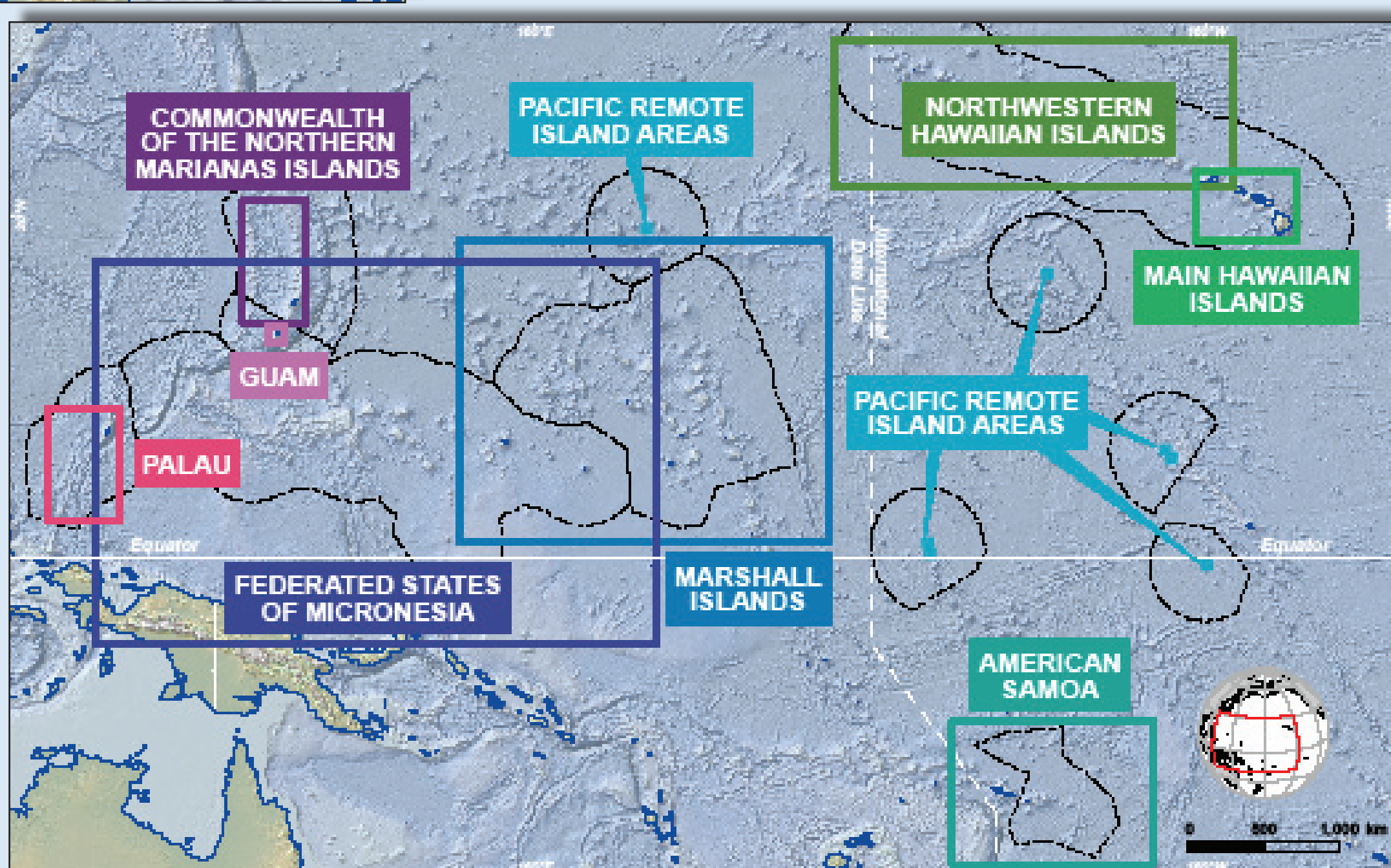


Six Atlantic Jurisdictions

U.S. Virgin Islands (USVI)
Puerto Rico (PR)
Navassa Island
Flower Garden Banks NMS (FGBNMS)
Southeast Florida (SE FL)
Florida Keys

Nine Pacific Jurisdictions

Main Hawaiian Islands (MHI)
Northwestern Hawaiian Islands (NWHI)
Pacific Remote Islands Areas (PRIA)
American Samoa
Republic of the Marshall Islands (RMI)
Federated States of Micronesia (FSM)
CNMI
Guam
Palau



APPLYING REPORT RESULTS TO MANAGEMENT EFFORTS

The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005 and 2008 present key findings of ongoing coral reef ecosystem monitoring programs undertaken by federal, state, territorial, commonwealth, non-governmental, private and academic partners from each of the 15 featured jurisdictions. This inventory of monitoring programs and their results also serves to identify information gaps and priority issues that help inform the future direction of coral reef ecosystem conservation efforts.

Below are a few examples of monitoring data presented in the 2005 and/or 2008 reports that contributed to the implementation of management actions.

Regulations & Legislation

- Location and use of anchorage areas (designation of anchorage areas in Buck Island Reef National Monument, USVI; SE FL re-configuration of the Port Everglades anchorage; the expansion of Saipan Lagoon anchorage in CNMI)
- Fishing Issues (increased protection of spawning aggregations in PR and the USVI; ban on the take of large fish and sharks in American Samoa)
- Marine protected areas (MHI support for marine life conservations districts; identification of hot spots in RMI; evaluating the location of MPA boundaries relative to fish and coral communities in USVI; Dry Tortugas resource natural areas; PMNM designation; World Heritage site nominations)
- Impact evaluation (Typhoon Ioke at Wake; 2005 coral bleaching and disease event in the U.S. Caribbean)
- Listing of Caribbean corals under the Endangered Species Act and preliminary designation of critical habitat (in progress)
- Beach protection (CNMI) and nourishment (FL to minimize impacts from dredging and sedimentation)



From left to right: Haitian fishermen off the coast of Navassa Island. Photo: M. Miller; an aerial view of a reef pass at And Atoll in FSM, an area recently declared a UNESCO Biosphere Reserve. Photo: J. O'Hare; and colonies of *Acropora palmata*. Photo: CCMA-BB.

Policy Development

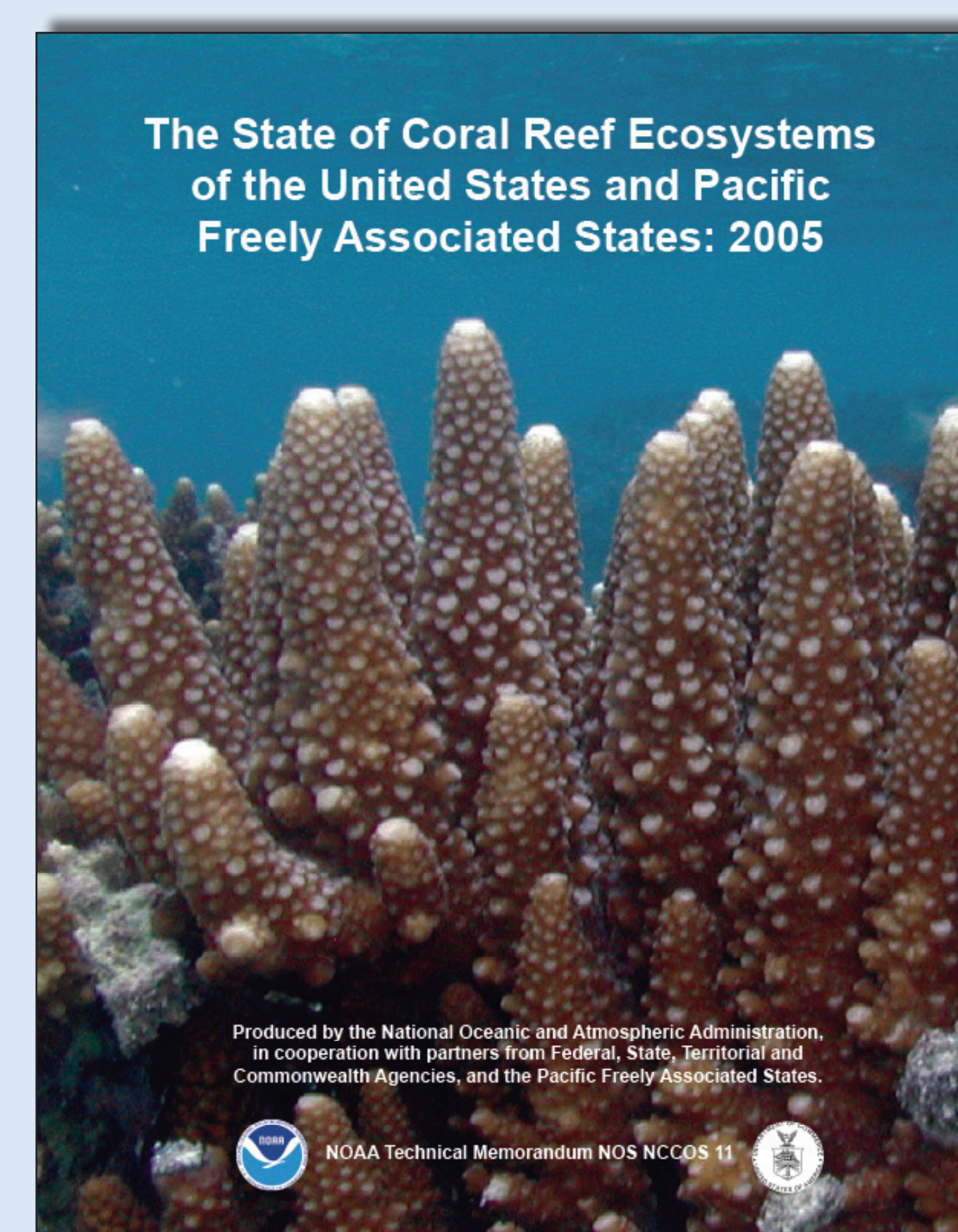
- Identified priorities and emerging issues that were incorporated as focus areas into the proposed language to reauthorize the Coral Reef Conservation Act
- NOAA Coral Research Plan
- Coral Reef Conservation Program "Roadmap for the Future"
- Additional effort is needed to monitor variables associated with climate change

Capacity Building & Training

- Monitoring workshops in the Freely Associated States, 2005-2007
- Enforcement workshops for rangers, law enforcement personnel
- Initial self-assessment of monitoring capacity and ability to utilize spatial tools and products
- Increasing involvement of community organizations in monitoring, management and conservation activities (RMI, MHI and Guam)



Participants come together to assist communities in the development of management plans in Chuuk, FSM. Photo: PIMPAC.



2008 REPORT HIGHLIGHTS AND CONCLUSIONS

The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2008 is the third document in this NOAA/Coral Reef Conservation Program series.

Data represent the efforts of over 270 scientists and managers working throughout the country to map, monitor and conserve coral reef ecosystems.

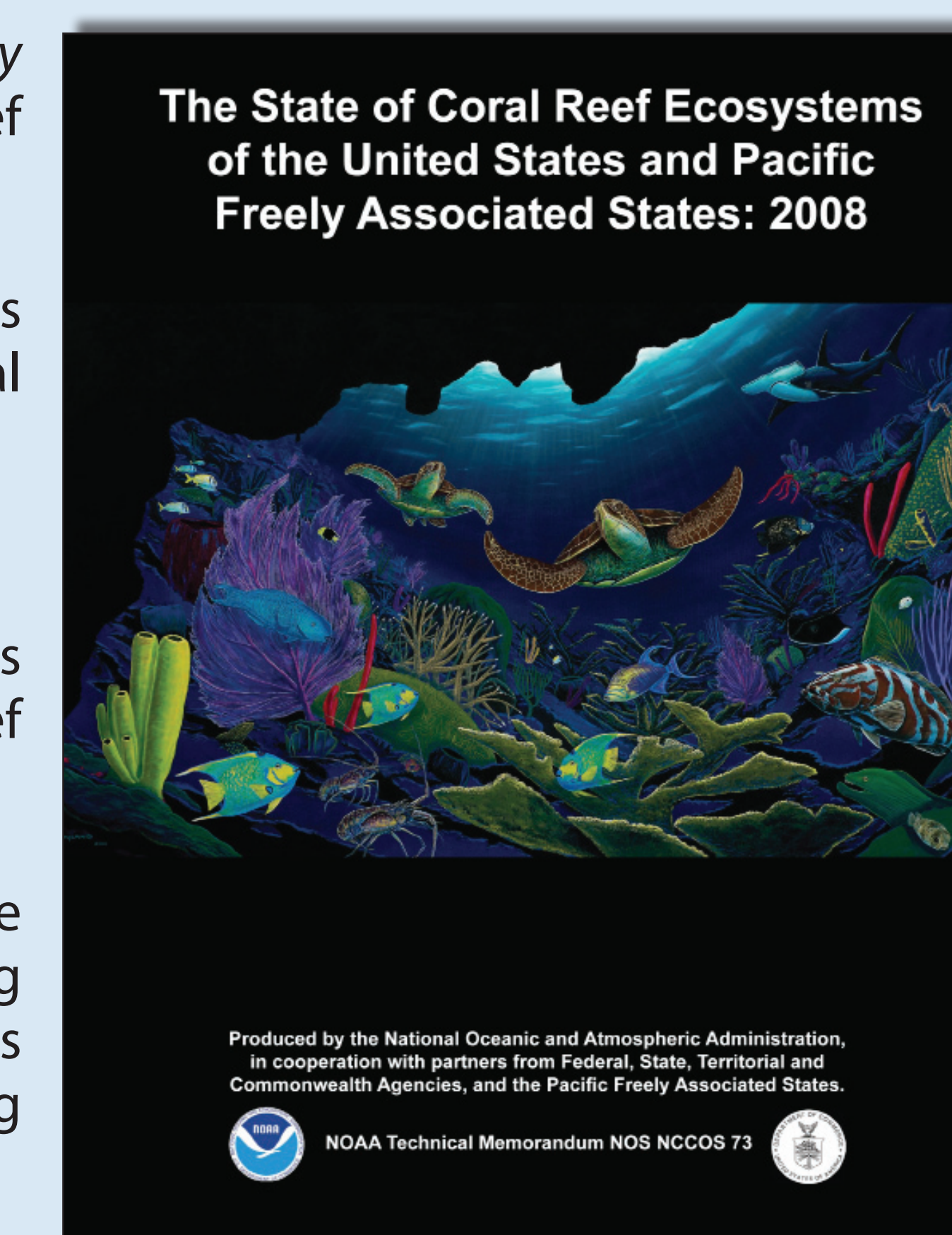
Highlights From the 2008 Report

National-Level Activities chapter describing some of the efforts underway at both regional and national levels to preserve coral reef ecosystems.

The National Summary chapter provides an overall review of the condition of four key resources and ten key threats by synthesizing the results of a multiple choice questionnaire completed by scientists and managers serving as chapter coordinators and/or expert writing team members.

Conclusions Drawn From the 2008 Report

- Approximately half of the key coral reef ecosystem resources (water quality, living coral cover, reef fish populations and harvested reef fish and macroinvertebrates) under U.S. or Pacific Freely Associated State jurisdiction are considered by scientists to be in 'poor' or 'fair' condition and have declined over time due to several natural and anthropogenic threats.
- Regionally, threats appear to be more severe and resources are in worse condition in the Atlantic/Caribbean region than in the Pacific. In the Pacific, 69% of key resources were judged to be in good or excellent condition, while in the Atlantic/Caribbean only 25% were categorized as good or excellent.
- Reefs near population centers receive greater negative impacts from tourism and recreation, fishing, sedimentation and land-based pollution.
- Reefs far from human settlements are imperiled by illegal fishing, marine debris and climate-related impacts.
- Recovery of impacted reefs is likely to take many decades.
- More tools are now available for management, including detailed digital habitat maps, but greater support is needed for local coordination of programs and training.



Bleached *Acropora palmata* colony in Puerto Rico. Photo: CCMA-BB.



Discarded shrimp net at Stetson Bank, FGBNMS. Photo: FGBNMS/NURC.

The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2008 Web site - <http://ccma.nos.noaa.gov/stateofthereefs>

Center for Coastal Monitoring and Assessment's Biogeography Branch Web site - <http://biogeo.nos.noaa.gov>

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