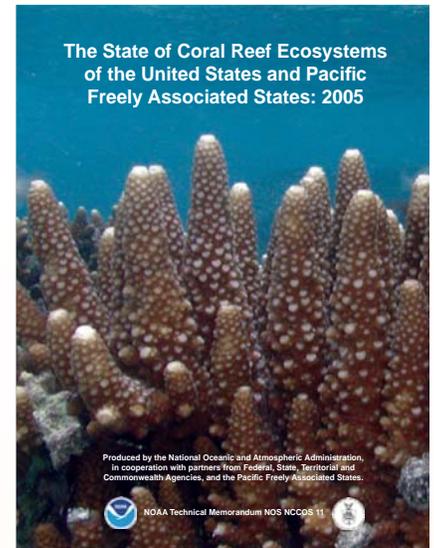




## ***The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005***

*The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005* represents an initial effort to determine the present condition of shallow water coral reef ecosystems based on quantitative results of assessment and monitoring activities conducted by Federal, State, Territory, Commonwealth, non-governmental, private, and academic partners. The report, which is the second in a series<sup>1</sup>, was produced in close collaboration with teams of experts that authored chapters on the condition of coral reef ecosystems in each of 14 jurisdictions. Data and information presented in the report represents the contributions of over 160 scientists and managers working throughout the country as part of a growing coral reef integrated observing system. The National Oceanic and Atmospheric Administration's (NOAA) Center for Coastal Monitoring and Assessment's *Biogeography Team*, part of the National Centers for Coastal Ocean Science, led the development of the report with support from NOAA's Coral Reef Conservation Program. The report was called for in the *National Coral Reef Action Strategy* (NCRAS) and was designed to address the primary threats, goals, and objectives outlined in the NCRAS, the Coral Reef Conservation Act of 2000, and other guidance documents developed by NOAA's Coral Reef Conservation Program, the U.S. Coral Reef Task Force, and its member organizations.



### ***Coral Reef Ecosystem Monitoring and Reporting Efforts***

*The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005* is organized by area and includes a chapter for each of the 14 jurisdictions that contain coral reef ecosystems. Each of the jurisdiction chapters provides a wealth of information that includes descriptions of the geographic extent of reef ecosystems, existing monitoring activities, and summary information on water quality, benthic habitats, and associated biological communities, as well as providing discussions of key threats to ecosystem health, current conservation management activities, and recommendations for future research and management actions. The national summary chapter synthesizes results and information from the jurisdiction chapters to present broad-scale conclusions about the state of coral reef ecosystems, primarily in a qualitative format. Data collection and integrated reporting of information is crucial to management efforts to protect and conserve coral reef ecosystems. It is hoped that this and future reporting efforts will help identify and fill gaps in the current state of knowledge about U.S. coral reef ecosystems. The goal of this effort is to provide up-to-date, accurate, comprehensive scientific information to enable managers and others to slow or reverse the general decline in coral reef ecosystem health that has become evident in the last several decades.

### ***Report Highlights***

Each chapter provides a great deal of valuable information about the condition of coral reef ecosystems in the jurisdictions. A small sample of key findings from the report chapters appears below.

**National Summary:** +Significant progress has been made in building an integrated observing system to map, monitor, and assess shallow water coral reef ecosystems. Many jurisdictions have also developed Local Action Strategies to focus attention on priority threats. Marine protected areas have been helpful in increasing fish biomass and protecting some habitats; -Coral reef ecosystems continue to face numerous stressors from natural and human sources including disease, climate change and coral bleaching, tropical storms, and overfishing—stressors which appear to be increasing in many jurisdictions. Continued investments in human and financial resources are needed to fully implement a comprehensive and coordinated coral reef ecosystem monitoring program that will allow comparisons across all 14 jurisdictions, which is important in supporting long-term management of the nation's coral reef ecosystems.

<sup>1</sup> The first report, produced by the National Centers for Coastal Ocean Science in 2002, provided a primarily qualitative assessment of coral reef ecosystem condition.

**U.S. Virgin Islands:** +Over 350 mooring buoys have been installed to protect benthic habitats in the USVI; -The absence of large fish from USVI reefs compromises the reproductive success of species and hurts local fisheries.

**Puerto Rico:** +Puerto Rico has significantly revised fisheries laws to address major reductions in recreational and commercial catches, which declined by 69% between 1979 and 1990; -Algae has become the dominant cover type at many reef sites while live coral cover has decreased, especially at shallow water reefs.

**Navassa:** +Navassa is the only jurisdiction reporting increases in the abundance of threatened Elkhorn coral (*Acropora palmata*) populations; -Large fish were virtually absent from Navassa and fish biomass values were very low, which is likely a result of fishing activity by migrant Haitian fishers.

**Florida:** +Queen conch abundance increased between 1992 and 2003 and scientists believe the stocks are beginning to recover, primarily in areas distant from human settlements; -Scientists recorded a decrease in the number of coral species found at 74 monitoring stations between 1996 and 2003. The mean percentage of live coral cover declined by over 30% in the Florida Keys National Marine Sanctuary during the same period.

**Flower Garden Banks:** +Coral cover is very high on the coral caps in the Flower Garden Banks National Marine Sanctuary, ranging from 51-61.8%, and scientists have observed very little incidence of disease or bleaching; -An invasive coral species native to the Pacific has colonized some of the 6,500 oil and gas platforms in the region.

**Main Hawaiian Islands:** +30% of the west Hawaii coast has been designated as Fishery Replenishment Areas (FRAs), and studies confirmed increases in the abundance of the top 10 aquarium fish species inside FRAs; -Alien marine algae have proliferated on many Hawaiian reefs and pose a significant threat to Hawaii's unique native marine biodiversity.

**Northwestern Hawaiian Islands:** +The NWHI support healthy populations of apex predators and other fish, coral, algal, invertebrate and seabird species, many of which are endemic; -In 2002, the NWHI's first recorded coral bleaching event caused bleaching in 77% of corals in the northern 3 atolls; a milder bleaching event occurred in 2004.

**American Samoa:** +A coordinated assessment and monitoring program has been designed and is being implemented in the territory to support coral reef ecosystem management; -Population density on the main island of Tutuila is increasing rapidly and suggests a related increase in fishing pressure and other anthropogenic threats.

**Pacific Remote Island Areas:** +Scientists visiting the islands on cruises from 2000-2004 report that the average density of large fish is greater at these islands, especially at Jarvis, Palmyra and Kingman, than at any other U.S. jurisdiction; -The population of crown-of-thorns seastars, a species that feeds on live coral, quadrupled at Kingman Reef between 2001 and 2004, and is a likely cause of recent coral mortality at this remote reef ecosystem.

**Marshall Islands:** +Comprehensive biodiversity assessments conducted at several atolls since 2001 found large areas of high live coral cover and robust fish populations, particularly at remote locations; -A rapidly progressing coral disease has devastated some reefs, especially near islands with high human population densities.

**Federated States of Micronesia:** +Corals in many parts of FSM are generally healthy, and studies have documented areas where live coral cover reaches 80%; -Fish surveys in Kosrae in 2004 showed a major decline in bumphead parrotfish, humphead wrasse, and grouper species, which are all important to commercial fisheries.

**CNMI:** +The first collaborative multi-disciplinary assessment of the entire archipelago, conducted in 2003, greatly increased scientists' understanding of ecosystem components; -Densities of large fish were higher in the remote northern islands, suggesting more intense fishing pressure at the southern, more densely populated islands.

**Guam:** +Over 10% of Guam's coastline is contained within marine reserves, and scientists have noted increases in fish size and abundance within reserves; -Erosion of upland areas due to construction and wildfires, has resulted in sedimentation of nearshore habitats. Other key threats to Guam's reefs include overfishing, pollution, and heavy recreational use.

**Palau:** +Palau's Protected Areas Network Act of 2003 created a national framework to support the creation and coordination of marine reserves; -A massive bleaching event in 1997-98 killed approximately 30% of Palau's corals and up to 90% of corals at some sites. Acroporid corals suffered the highest mortality of all coral species.

## To Learn More

*The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005* will be available for free download from the following website on August 18<sup>th</sup>, 2005:

[http://ccma.nos.noaa.gov/ecosystems/coralreef/coral\\_report\\_2005](http://ccma.nos.noaa.gov/ecosystems/coralreef/coral_report_2005)

To request a hard copy of the document, please email a request to [CoralReport2005@noaa.gov](mailto:CoralReport2005@noaa.gov).

Center for Coastal Monitoring and Assessment  
National Centers for Coastal Ocean Science  
<http://www.ccma.nos.noaa.gov>



Coral Reef Conservation Program  
National Oceanic and Atmospheric Administration  
<http://www.coralreef.noaa.gov>