

NATIONAL CORAL REEF MONITORING PROGRAM



Coral reefs are among the most valuable ecosystems on earth, providing people with goods and services that include food, storm protection, and recreational opportunities. Despite their importance, coral reef ecosystems are in decline from a myriad of man-made and natural threats.

In response, the NOAA Coral Reef Conservation Program established an integrated and focused monitoring effort with partners across the U.S.—the National Coral Reef Monitoring Program.

This program is a strategic framework for conducting sustained observations of biological, climatic, and socioeconomic indicators in U.S. states and territories. The resulting data provide a robust picture of the condition of U.S. coral reef ecosystems and the communities connected to them.



ABOUT THE DATA TRACKING BIOLOGICAL TRENDS

Fishing pressures, climate change, and pollution are just some of the many stressors on marine life within coral reef ecosystems. Researchers identified the following biological indicators to assess the condition of coral reefs and associated reef fish communities.

- Coral reefs – coral diversity, distribution, abundance, colony size, and condition
- Reef fish – reef-related fish diversity, distribution, abundance, and size
- Habitats – composition, complexity, and key species

Data are collected through diving surveys of shallow-water (0-30 meters) areas. Scientists and coastal managers then use these data to evaluate coral reef and fish population management strategies, document endangered or invasive marine species, and assist with local monitoring efforts.



NOAA CORAL REEF CONSERVATION PROGRAM





MONITORING CLIMATE-DRIVEN IMPACTS

A changing climate is impacting the nation's coral reef ecosystems. Increases in ocean temperature and changes to ocean chemistry are causing widespread coral bleaching, more frequent disease, and reduced coral growth rates. Key indicators used to identify and monitor climate-driven trends are listed below.

- Thermal stress – changes in sea temperature
- Ocean acidification – changes in ocean chemistry and pH
- Ecological impacts – data on coral growth rates, erosion, and community structure to understand impacts of thermal stress and ocean acidification on the ecosystem

Data collection methods include moored oceanographic and ecological instruments stationed at fixed points in the Atlantic and Pacific Oceans, water samples collected by divers, and satellite-based observations.

These extensive monitoring data provide a comprehensive view of climate change impacts on coral reef ecosystems and help identify areas of resilience and vulnerability. The data are also used in modeling efforts.

UNDERSTANDING SOCIOECONOMIC CONNECTIONS

People are very much a part of coral reef ecosystems, and their connections can have lasting impacts. This human component is the focus of sustained socioeconomic monitoring that includes the collection of a range of socioeconomic data.

- Public knowledge, attitudes, and perceptions
- Participation in coral reef activities, such as fishing
- Economic and cultural value of coral reefs
- Community well-being
- Population changes and the distribution of people in coral reef locations

Researchers collect data through periodic surveys that include standardized questions, as well as questions specific to local management needs. Data from sources such as the U.S. Census Bureau and local government agencies supplement these results.

In addition to using this information for conservation and restoration efforts, scientists and communities use these data to measure social and economic conditions and document how people use coral reef resources.

ABOUT THE CORAL REEF CONSERVATION PROGRAM

The Coral Reef Conservation Program brings together expertise from a wide array of NOAA offices. The program works in strong partnership with coral reef managers to protect coral reefs by addressing national threats and implementing local conservation activities.

The National Coral Reef Monitoring Program is supported by dozens of partners from organizations at the federal, territorial, and state levels, as well as academic institutions and nongovernmental organizations.

MORE INFORMATION

www.coralreef.noaa.gov

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