NEWS FROM NOAA
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION • US DEPARTMENT OF COMMERCE

Contact: Ben Sherman, NOAA Public Affairs
(301) 713-3066 x178

FOR IMMEDIATE RELEASE
February 28, 2007

NOAA STUDY FINDS HAWAIIAN MARINE LIFE CONSERVATION DISTRICTS EFFECTIVE MANAGEMENT APPROACH FOR FISHERIES REPLENISHMENT

The National Oceanic and Atmospheric Administration (NOAA) reports in a new study on the effectiveness of marine protected areas in Hawaii and their impacts on fishery stocks that areas fully protected from fishing had higher fish biomass, larger overall fish size, and higher biodiversity than adjacent areas of similar habitat quality.

Habitat complexity, protected area size, and habitat diversity were the major factors in determining effectiveness among MPAs. It also found that areas that only provided partial protection from fishing due to rotating closures or other means were no more effective than areas completely open to fishing. Further, areas with high cover of invasive macroalgae provided poor habitat for most fishes.

The NOAA report is the first comprehensive evaluation of Hawaii's system of marine protection areas (MPAs), "Fish Habitat Utilization Patterns and Evaluation of the Efficacy of Marine Protected Areas in Hawaii: Integration of NOAA Digital Benthic Habitat Mapping and Coral Reef Ecological Studies." The report examined the Marine Life Conservation Districts (MLCDs) established by the state of Hawaii and adjacent areas for biodiversity and fisheries conservation effectiveness.

"These results clearly show the impacts of fishing on coral reef fishes and the benefits that no-take marine reserves can have on protecting fish populations within their boundaries", said Alan Friedlander, fish ecologist with NOAA's National Centers for Coastal Ocean Science and the Oceanic Institute of Hawaii Pacific University, and principal investigator for this study.

One of NOAA's most important missions is developing sustainable fisheries and preserving critical habitat," notes John H. Dunnigan, assistant administrator of NOAA's National Ocean Service. "This research shows the importance of taking a total ecosystem approach to management."

Other key findings showed that top predators and other important fisheries species were more abundant and larger in the MPAs, illustrating the effectiveness of these closures in conserving these populations. A number of these species were found to utilize sand habitats for feeding and transit corridors, showing the importance of including this habitat type in future MPAs. Despite the fact that larger protected areas were most effective, all existing MLCDs appear too small to have any measurable positive influence on adjacent fished areas.

To support higher fish biomass and greater numbers and diversity of species, future protected area designs in the Main Hawaiian Islands need to include a mosaic of habitats with a range of complexities and depths to accommodate the wide range of species found on Hawaiian coral reefs. In addition, consideration should be given to the habitat requirements and life histories of the species being protected, the level of fishing and other pressures on the resources in adjacent areas, and the degree of enforcement.

Over the past four decades, the state of Hawaii developed eleven MLCDs to conserve and replenish marine resources around the state; many were initially established in support of

conservation and education objectives, rather than to enhance fish stocks. The MLCDs thus vary in their systems of management, size and habitat quality.

The methods used in this study may be used in evaluating existing MPAs in other regions, may help in defining ecologically relevant boundaries for future MPAs, and may assist in effectively managing coral reef ecosystem MPAs. The evaluation used a random sampling design guided by remotely sensed habitat maps and Geographical Information System (GIS) technology coupled with comprehensive ecological studies to determine the effectiveness of these protected areas.

NOAA's National Centers for Coastal Ocean Science (NCCOS) worked in partnership with a number of agencies and organizations, including the Oceanic Institute, the Hawaii Department of Land and Natural Resources, the University of Hawaii, Maui Community College and the National Park Service to conduct this study in state waters, which received funding from NOAA's Coral Reef Conservation Program. Results of the study derived from the technical report are in press in Ecological Applications and Marine Ecological Progress Series.

The National Oceanic and Atmospheric Administration, an agency of the U.S. Commerce Department, is celebrating 200 years of science and service to the nation. From the establishment of the Survey of the Coast in 1807 by Thomas Jefferson to the formation of the Weather Bureau and the Commission of Fish and Fisheries in the 1870s, much of America's scientific heritage is rooted in NOAA.

NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and information service delivery for transportation, and by providing environmental stewardship of our nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems (GEOSS), NOAA is working with its federal partners, more than 60 countries and the European Commission to develop a global monitoring network that is as integrated as the planet it observes, predicts and protects.

--- 30 ---

On the Web:
NOAA: http://www.noaa.gov/
NOAA National Ocean Service: http://www.oceanservice.noaa.gov/
NOAA National Centers for Coastal Ocean Science: http://coastalscience.noaa.gov/
NOAA's report, "Fish Habitat Utilization Patterns and Evaluation of the Efficacy of Marine Protected Areas in Hawaii: Integration of NOAA Digital Benthic Habitat Mapping and Coral Reef Ecological Studies": http://www.ccma.nos.noaa.gov/publications/NCCOSTm23.pdf