Mesophotic Coral Ecosystems (MCEs) Studies

Issue:

Mesophotic coral ecosystems (MCEs) are deeper coral communities found between 30 – 100+ m in areas of low light, comprised of light-dependent corals, and associated algal and sponge dominated communities. Considered as extensions of shallower coral reef systems, MCEs are likely to have biological, physical, and chemical connectivity with reefs and associated communities. Although these ecosystems harbor many of the species found in their shallower water counterparts, they can be colonized by a disproportionately high number of native species of fishes and invertebrates, and a lower diversity of corals.

E. Weil

MCEs are the next frontier of ocean exploration – due to the difficulties of studying deeper realms, they have been largely ignored as an important ecosystem and refugia for coral, algal, fish, and other species. The future of light-dependent corals may depend on our efforts to protect and conserve MCEs.

Approach:

The MCEs Studies Program commenced in 2006 as part of the Coral Reef Ecosystems Studies Program (Deep CRES) in order to bridge an information gap in corals found at intermediate depths. In 2006, NCCOS/CSCOR funded a Deep CRES project in the Caribbean and in 2007 a Deep CRES project was supported in Hawaii. In 2008, CSCOR held a major international MCE Workshop to indentify emerging issues and management needs in order to assist NOAA and other government agencies in their research prioritization and strategic planning for MCEs.

Studies on MCEs are far less common due to difficulties of sampling this depth with conventional SCUBA techniques. Advances in technical diving methods and instrumentation, such as mixed gas diving, rebreathers, Autonomous Underwater Vehicles (AUV) and Remotely Operated Vehicles (ROV), are

increasingly providing easier access to study MCEs.

Management/Policy Issues

MCEs may be considered stable environments that can provide habitat to species from degraded shallow water coral reefs, thus warranting special resource management attention and protection to help maintain local and/or regional biodiversity. Protection may also offer a hedge against extinction to species native to MCEs, which are more vulnerable to disturbance due to their limited geographic ranges.

To learn more about this program and its accomplishments, go to http://www.cop.noaa.gov

Mesophotic Coral Ecosystems Resource Database

NOAA Initiates $1.4 Million Three-Year Project to Study Valuable Deep Hawaiian Coral Ecosystems view full press release here

Photo credit: DEEP CRES Caribbean

Accomplishments:

Anticipated products include:

(1) Research data (to be archived in an appropriate data center such as the NODC), assessments, publications, summary reports, and any other useful activity or product that will provide resource managers and the public with timely information that is readily understandable;
(2) Syntheses of the research that increases awareness of MCEs, and provides natural resource management agencies with the information necessary to better manage this unique environment, and;
(3) Predictive tools such as simulation models (including ecological forecasts) that will help managers determine the effect of biotic processes and abiotic factors (i.e. physical disturbance such as sediment and salinity plumes; larval transport and recruitment of reef organisms) on MCEs, and provide information on the value of considering MCEs as potential MPAs.