

Cordell Bank National Marine Sanctuary

Deep Sea Coral and Sponge Communities

Management Issue

Incomplete knowledge of the presence, abundance, and habitat associations of deep water sensitive species (e.g., corals and sponges) and their associated communities within Cordell Bank National Marine Sanctuary (CBNMS or Sanctuary) hampers our ability to protect these unique and biologically diverse communities from anthropogenic disturbances.

Description

Much of the Sanctuary is deeper than 200 meters, from the shelf break down the continental slope. It is very likely that some areas within these deep waters contain habitats that are suitable for deep coral and sponge communities. These communities have been detected along the west coast and represent unique assemblages that provide biogenic habitat for a variety of organisms, including some species of overfished rockfish. Deep water sponges and corals are very sensitive to disturbance activities, such as benthic trawling, and their populations are slow to recover from such destruction. Currently, the only information available on the habitat types and communities within the deep water regions of the Sanctuary is coral by-catch data associated with NOAA NMFS bottom trawl surveys as well as anecdotal evidence from trawlers returning to Bodega Bay with large corals in their nets.



Deep water corals and sponges discovered on Davidson Seamount within Monterey Bay National Marine Sanctuary. Photo credit: NOAA/MBARI 2006.

Questions and Information Needs

- 1) What are the distribution and abundance of habitat types (including biogenic habitat) within the deep (>200m) portions of the Sanctuary?
- 2) Where are areas that contain deep water coral and sponge communities?
- 3) Where are areas of high species diversity within deep water regions of the Sanctuary?
- 4) Where are deep water areas of the Sanctuary that are most sensitive to disturbance?

Scientific Approach and Actions

- Collect and process high resolution multibeam data of the deep water portions of the Sanctuary, which would provide bathymetric and habitat information. Conduct ground-truthing of habitat classification using ROV/submersible/AUV
- Develop models based on multibeam data to determine areas that are hypothesized to have a higher probability of occurrence of deep water corals and sponges and biologically diverse communities
- Conduct in situ exploratory investigations (ROV/submersible/AUV) of locations that have a hypothesized higher probability of containing deep water corals and sponges to ground-truth predictive models, understand factors influencing coral and sponge distribution, examine the relationship between corals and sponges and benthic communities, and collect voucher specimens for a permanent collection
- Refine models of community-habitat relationships based on ground-truthing data
- Compile a species list and library of still images and video of the deep water habitats and communities within the Sanctuary
- Develop maps of priority areas for protection from activities that could be destructive to benthic habitats and communities

Updated: 5/1/2010

For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>

Potential Key Partners and Information Sources

NOAA Fisheries, NOAA Office of Ocean Exploration and Research, NOAA Coral Reef Conservation Program, Marine Conservation Biology Institute, United States Geological Survey, Monterey Bay Aquarium Research Institute, Washington State University, NOAA National Center Coastal Ocean Science

Management Support Products

- Integrated map of the distribution of fishes, invertebrates, and habitats of the Sanctuary's continental slope environment
- Map with areas of highest sensitivity to disturbance

Planned Use of Products and Actions

- Utilize baseline data to prevent or decrease future environmental impacts
- Work with NOAA Fisheries and Pacific Fisheries Management Council to ensure that fishing activities are compatible with protection of unique and sensitive benthic habitats and communities
- Provide an ecological baseline to allow the future measurement of temporal changes in benthic communities and habitats, focusing on trawl recovery zones and communities susceptible to changing ocean conditions
- Utilize data products to support outreach and education projects that inspire resource protection and stewardship

Program References

CBNMS Management Plan

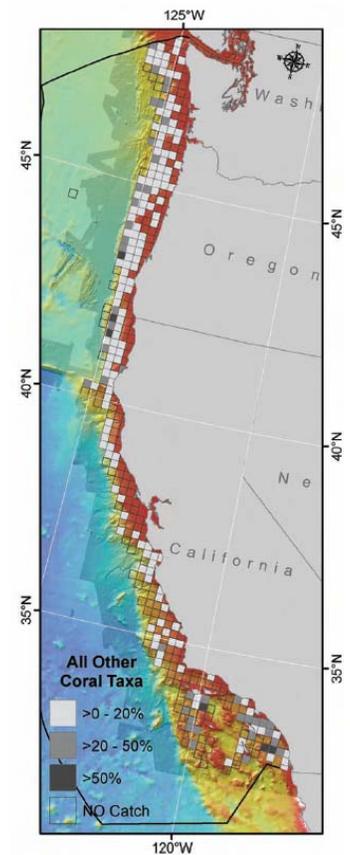
- Conservation Science Action Plan, (CS-2, CS-3, CS-5)

CBNMS Condition Report

- Abundance and distribution of major habitat types (question 5)
- Condition of biologically-structured habitats (question 6)
- Status of biodiversity (question 9)
- Status of environmentally sustainable fishing (question 10)
- Status of key species (question 12)

ONMS Performance Measures

- Number of sites in which select living marine resources, based on long term monitoring data, are being maintained or improved.
- Number of sites in which habitat, based on long term monitoring data, are being maintained or improved.



Frequency of occurrence of deep coral taxa sampled during NOAA Fisheries bottom trawl surveys (1980-2005). Source: Whitmire and Clarke2007.

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