

Cordell Bank National Marine Sanctuary

Deep Water Communities

Management Issue

Incomplete knowledge of the presence, abundance, and habitat associations of deep water species and 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

Cordell Bank National Marine Sanctuary habitat is entirely submerged with the shallowest benthic point at 35 meters, and a large portion of sanctuary habitat is deeper than 300 meters, from the shelf break down the continental slope and within Bodega Canyon. CBNMS has the equipment and capability to sample above 300 m but not at deeper depths. It is very likely that areas within these deep waters contain abundant and diverse communities, possibly including corals and sponges. 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. For example, there are observations from underwater video of bamboo corals at 3,000 meters on the slope in the adjacent Gulf of the Farallones National Marine Sanctuary. Deep water sponges and corals are structurally complex, long lived, slow growing species that are sensitive to disturbance activities, such as bottom contact fishing gear. More surveys are needed to assess the sanctuary's deep water habitats and associated species.



Paragorgia coral on a rock in CBNMS photographed during a 2010 research cruise. Photo: NOAA

Questions and Information Needs

- 1) What are the distribution and abundance of habitat types within the deep (>300m) portions of the Sanctuary?
- 2) What are the community assemblages in habitats below 300m in the sanctuary?
- 3) Where are areas of high species diversity within deep water regions of the Sanctuary?
- 4) Where are areas that contain deep water coral and sponge communities?
- 5) Where are deep water areas of the Sanctuary that are most sensitive to disturbance?
- 6) What is the condition of habitats found in deep water?

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 (see Habitat Characterization Science Needs Assessment). Using habitat classification, determine areas that are hypothesized to have a higher probability of occurrence of biological communities
- Conduct systematic surveys for habitat characterization of locations that have a hypothesized higher probability of containing biological communities. Simultaneously conduct systematic ground-truthing of habitat classification using a ROV
- 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: 12/3/2014

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

Key Partners and Information Sources

NOAA Fisheries, NOAA Office of Ocean Exploration and Research, NOAA Deep Sea Coral Research and Technology Program, NOAA National Center for Coastal Ocean Studies, Marine Conservation Institute, United States Geological Survey, Monterey Bay Aquarium Research Institute, Humboldt State University, Marine Applied Research and Exploration, Deep Ocean Exploration and Research.

Management Support Products

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

Planned Use of Products and Actions

- Use baseline data to prevent or decrease future environmental impacts
- Work with the fishing community, conservation groups, 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
- Use data products to support outreach and education projects that inspire resource protection and stewardship

Program References

CBNMS Management Plan

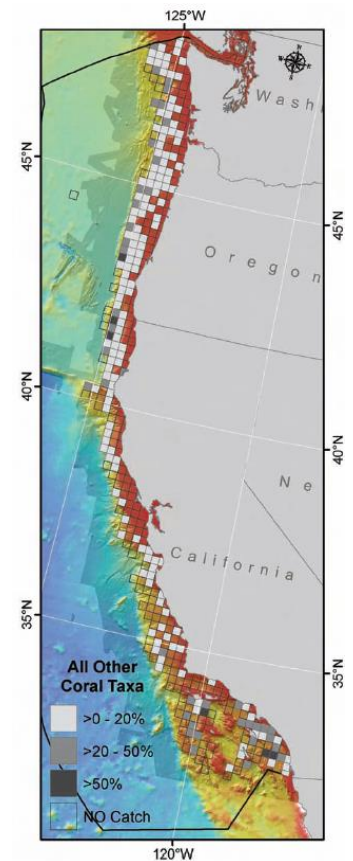
- Conservation Science Action Plan, (CS-2, CS-3, CS-4, CS-5, CS-8, CS-10)

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: Lumsden et al. 2007.

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