

# A first look at deep-sea corals and sponges on the continental slope west of Cordell Bank, California

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## Introduction

Interest in the conservation of deep-sea coral and sponge (DSC) communities has grown over the last decade. Deep-sea corals and sponges are often long-lived, slow growing, fragile animals; characteristics that make them particularly vulnerable to physical disturbance such as bottom trawling, oil and gas development, and the laying of undersea cables. The structurally complex morphology of DSC can provide valuable habitat for fishes and other invertebrates.

NOAA's Deep-Sea Coral Research and Technology Program initiated a three year research effort to identify and protect DSC sensitive habitats and evaluate the effectiveness or expansion of Essential Fish Habitat management areas for DSC on the US West Coast.

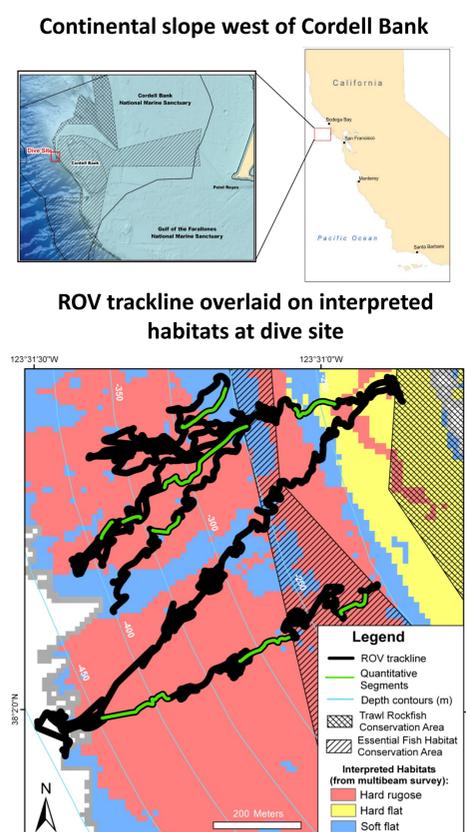
## Research Objectives

- Characterize the distribution, abundance, size, and condition of DSC communities in the Cordell Bank National Marine Sanctuary (CBNMS) using a remotely operated vehicle (ROV)
- Evaluate function of DSC as habitat
- Collect limited DSC specimens to confirm taxonomic identification
- Make visual observations of sea floor substratum to refine habitat classifications derived from multibeam sonar data



## Dive Location

- Dive sites planned in areas with substrate type most likely to support DSC communities
- Substrate character map developed from multibeam sonar data
- High seas and wind preempted all operations except for one 11 hour ROV dive on an area of continental slope west of Cordell Bank predicted to be hard rugose habitat
- Nine quantitative ROV segments
- Depth range: 167-497 meters



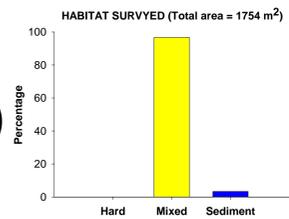
## Acknowledgments

NOAA's Deep-Sea Coral Research and Technology Program; Peter Etnoyer and Jeff Hyland (NOAA's National Centers for Coastal Ocean Science); Guy Cochrane (US Geological Survey); Jan Roletto (NOAA's Gulf of the Farallones NMS); Researchers from: Olympic Coast NMS, Channel Islands NMS, Southwest Fisheries Science Center (SWFSC), Fisheries Ecology Division; Jan Mason (SWFSC); University of Connecticut K2 ROV team; NOAA R/V McArthur II captain, officers and crew.

## Results

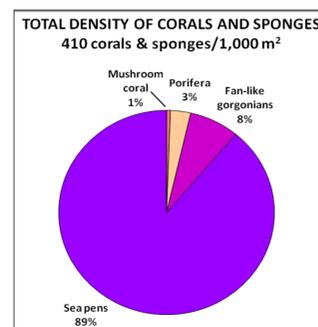
### Habitat:

- Over 95% of the total area surveyed was mixed substrate (primarily sand with cobbles) instead of the predicted hard rugose habitat



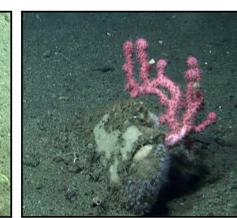
### Corals and Sponges:

- Few observations of structure forming corals and sponges
- Dominant single species of sea pen in the family Virgulariidae



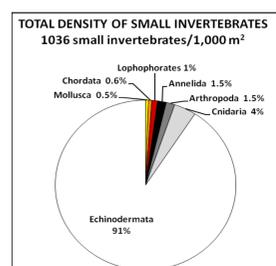
Scientific name	Common name	Number
<i>Anthomastus ritteri</i> *	Mushroom coral	4
Porifera	Unidentified upright flat sponge	1
Porifera	Unidentified vase sponge	1
Porifera	Unidentified mound sponge	4
Porifera	Unidentified leaf sponge	11
Porifera	Unidentified barrel sponge	5
<i>Paragorgia</i> sp.*	Bubblegum coral	1
<i>Plumarella longispina</i> *	Primnoid	53
Virgulariidae*	Sea pen	639

\* First verified observation in CBNMS

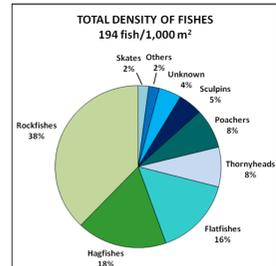


### Small Invertebrates and Fishes:

- Invertebrates dominated by echinoderms; the fragile pink sea urchin (*Allocentrotus fragilis*) represented 59% of all taxa



- Fish species abundance was more evenly distributed than was observed for invertebrates. The rockfish family (Sebastes) represented at least 11 species



## Conclusions

- Low diversity and abundance of sponges and corals is likely due to suboptimal habitat which lacks consolidated rugose bedrock
- Bottom trawling has likely contributed to habitat degradation and may have removed many of the large DSC. Forty bottom trawl tow hours occurred in the ROV dive region between 1997 and 2001 and a derelict trawl net was observed
- A reduction in trawl effort due to fishery closures enacted over a decade ago may have allowed the establishment of the small and uniform in size DSC we observed
- Due to the limited data collected, further mapping and exploration of the continental slope is needed to identify and characterize these sensitive DSC habitats