

Re-discovering Cordell Bank: Technical dive expedition 30 years later

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Introduction:

For the first time since the designation of the Cordell Bank National Marine Sanctuary (CBNMS) in 1989, and 32 years after the initial exploration of Cordell Bank by SCUBA divers from the non-profit group Cordell Expeditions, technical scientific SCUBA divers revisited the shallowest parts of Cordell Bank's reef crest (123-193ft) on October 7-9th, 2010.



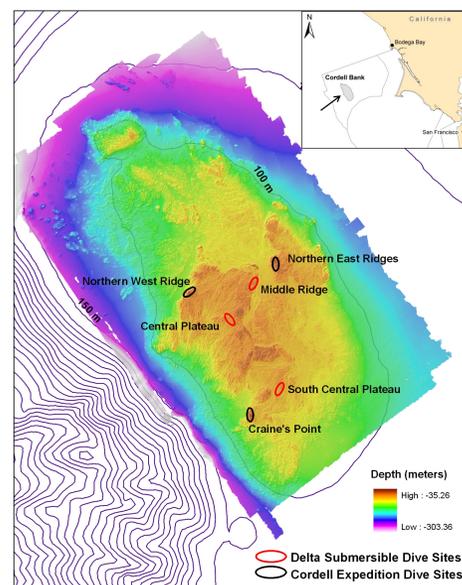
Scientific Goals and Objectives:

- 1) Characterize invertebrate species composition, distribution and abundance, richness, and habitat associations
- 2) Collect invertebrate specimens for archival at California Academy of Sciences (CAS) and photo-document samples *in situ*
- 3) Revisit Cordell Expeditions sampling sites to assess qualitative changes in community composition over time and compare with historic collections archived at CAS
- 4) Collect high definition video and still images for general site characterization of the habitats and species composition of the reef crest environment

Methods:

Six technical dives were completed in rigorous conditions at five sites on Cordell Bank. Three of the dive sites had previously been sampled by Cordell Expeditions in the 1980s, while two other sites had been surveyed by a submersible in the 2000s.

Each dive included two science divers and one safety diver on the bottom, as well as two mid-water science support divers who assisted in gear transfer during decompression drifts. Technical divers breathed a trimix of gases during their time on the bottom, and switched to nitrox and oxygen during decompression stages. Bottom time ranged between 20 and 30 minutes, while total dive time (including decompression drift) ranged between 56 and 73 minutes.



Map of SCUBA dive locations on Cordell Bank. All sites were sampled except for South Central Plateau.

Findings:

- 112 specimen lots collected by the divers have been sorted by taxonomists at CAS. Of these lots, 22 are Mollusca, 21 Porifera, 21 Arthropoda, 16 Echinodermata, 13 Cnidaria, 8 Bryozoa, 6 Annelida, 2 Brachiopoda, 2 Chordata, and 1 Sipinacula.
- Four lots of the hydrocoral *Stylaster* having different colony morphology were collected and will contribute to our understanding of the unique role played by Cordell Bank as habitat for the northern *S. venustus* and the southern *S. californicus* whose ranges overlap at Cordell Bank.
- Specimens of the barnacle *Megabalanus californicus* and some decapod shrimp revealed northern range extensions for these taxa.
- One sediment sample was collected and analyzed for Foraminifera by Mary McGann (USGS). It contained a diverse microfaunal assemblage of 45 species of benthic foraminifera and 6 species of planktonic foraminifera that appear remarkably similar to fauna collected at Point Sur Pinnacles, approximately 70 km to the south.
- A striking observation on the shallower areas of Cordell Bank was the abundance of juvenile rockfish indicating a successful recruitment in 2010.
- A human-created hole originally described by Robert Schmieder (Cordell Expeditions) was found to still contain a metal pipe left by Cordell Expeditions divers 30 years ago. Today, there is 100% invertebrate coverage in and around the hole versus the virtually bare rock documented by Cordell Expeditions in 1981.

Next Steps:

The photos, video, and invertebrate specimens are being used to compare the current community composition to historical conditions and will serve as a baseline upon which to measure future change on Cordell Bank.

