

Cordell Bank National Marine Sanctuary

2015 Sanctuary Science

2015 was a year of growth for Cordell Bank National Marine Sanctuary (CBNMS), as NOAA expanded our boundaries from 529 to 1286 square miles, encompassing area to the west and north of Cordell Bank, including Bodega Canyon. This additional area creates challenges and opportunities for research and monitoring. This year research staff spent about 25 days at sea collecting data to inform sanctuary management on issues such as the threat of ship strikes to whales, changing oceanographic conditions, and characterization of sensitive benthic habitats in the sanctuary, including the newly added area. Specific projects are highlighted below.

Major Activities in 2015

ACCESS Project Records Unusual Ocean Conditions in 2015

The Applied California Current Ecosystem Studies (ACCESS) project completed three research trips in 2015 in CBNMS and Greater Farallones National Marine Sanctuary (GFNMS). ACCESS is a collaborative partnership of Point Blue Conservation Science and CBNMS and GFNMS to provide ecosystem information for management. Sampling includes abundances of seabirds and marine mammals, zooplankton prey availability, and oceanographic conditions. Unusual sightings related to the anomalous warm ocean temperatures included common dolphins (rarely found north of Southern California) in September, corresponding to an absence of the usual Pacific white-sided dolphins, and one specimen of a pelagic red crab in our trawl (last seen following the 82/83 El Niño). The data collected helps gauge the severity of the warm-water “blob” and the onset of El Niño to our region. This project helps sanctuaries assess the health of the marine ecosystem, synthesizes data for evaluating conservation efforts, and facilitates work with academic partners on targeted research projects. Read more about this work and significant findings at accessoceans.org and cordellbank.noaa.gov.

Story map dives into ROV research in CBNMS

CBNMS now has a new tool to share remotely-operated vehicle (ROV) research and high definition video imagery with the public, thanks to the story map created by CBNMS 2015 summer intern James Seward. James organized, catalogued, and provided metadata for video files collected on Cordell Bank in 2014, and edited video to create the final outreach product – an ESRI story map. The story map combines spatial information, slides, text, still images, and video to tell a story. James developed a narrative about conducting ROV research on Cordell



Photo: Kirsten Lindquist/ACCESS/ONMS/Point Blue

Common dolphins observed in September during ACCESS surveys

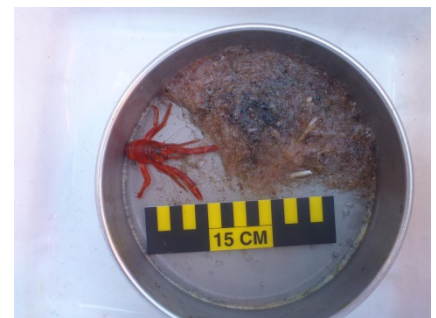


Photo: Jan Roletto/ACCESS/ONMS/Point Blue

A red pelagic crab was captured during a net tow in September. This species is normally found from Mexico to South America.

Science and Education

In 2015, research staff connected science to education and outreach by hosting a NOAA teacher-at-sea on an ACCESS mission; providing public outreach through print, televised, and social media on ACCESS, hypoxia monitoring, and acoustic buoy field activities; and providing mentoring for a college student.

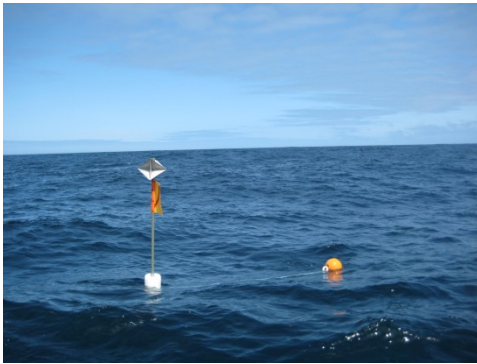


Photo: CBNMS

Two buoys with instruments to record temperature and dissolved oxygen were deployed at Cordell Bank.

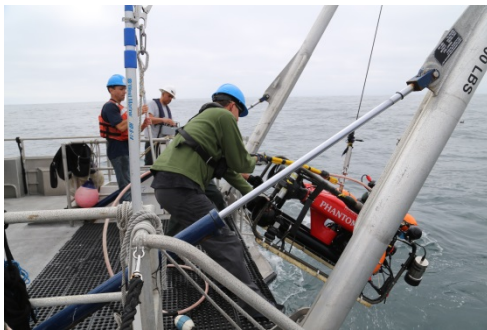


Photo: CBNMS

In 2014 CBNMS staff used the ROV shown here to collect images. Analysis was completed in 2015.



Photo: Jason Thompson/CBNMS

The acoustic buoy, with multiple components totaling 2000 lbs, was deployed from the Research Vessel Fulmar.

Bank and the videos highlight the interesting geologic features, and invertebrate and fish inhabitants of Cordell Bank. The internship was a collaboration with California State University Council on Ocean Affairs Science and Technology (CSU COAST). View the project at cordellbank.noaa.gov.

Hypoxia Monitoring Moorings Deployed at Cordell Bank

Two moorings outfitted with oceanographic instruments were deployed at CBNMS for the second year in a row in a collaboration between CBNMS and Dr. John Largier at UC Davis Bodega Marine Laboratory (BML) to monitor dissolved oxygen conditions on the bank. Low oxygen water naturally occurs in the deep ocean but shallow intrusions of hypoxic (meaning "low oxygen") water has been found in more shallow waters along the US west coast in recent years. The bank is inhabited by a vibrant invertebrate and rockfish community which could be vulnerable to hypoxic conditions. Cordell Marine Sanctuary Foundation again provided funding to CBNMS for the project this year.

2014 Expansion ROV analysis completed

CBNMS researchers completed data analysis from 2014 ROV surveys in CBNMS and GFNMS. The surveys focused on two areas that have since been incorporated into the newly expanded boundaries of CBNMS and GFNMS: an area near Bodega Canyon in CBNMS and an area called "The Football" in GFNMS. Other contributors to the analysis included scientists from GFNMS, NOAA's National Centers for Coastal Ocean Science, US Geologic Survey, and California Academy of Sciences. Highlights of the surveys included observations of catshark and skate nursery areas where hundreds of eggs were observed, and a new species of coral that was collected and is being taxonomically described. The work makes significant contributions to characterizing the habitat types and the fish and invertebrate species associated with these features. The report is undergoing review for publication as an Office of National Marine Sanctuaries Conservation Series report.

Cordell Bank Ocean Noise Reference Station Deployed

CBNMS deployed a Noise Reference Station (NRS) acoustic buoy in the sanctuary in 2015 to record the underwater ambient soundscape. The project is a partnership between CBNMS and NOAA's Pacific Marine Environmental Lab (PMEL) and is the 11th buoy in the NOAA NRS Network. The data will allow CBNMS to characterize the local soundscape, understand how ambient sound varies over time in CBNMS, and analyze how it compares to other reference sites. Characterizing the ambient soundscape, including biological and anthropogenic noise, is a first step towards understanding the impact that sound has on sanctuary resources. The instrument will record underwater sound for 2 years before the buoy is recovered and the data are analyzed. Funding was provided by the International Fund for Animal Welfare, PMEL, and CBNMS.

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