

# Cordell Bank National Marine Sanctuary

## Fish and Marine Zones

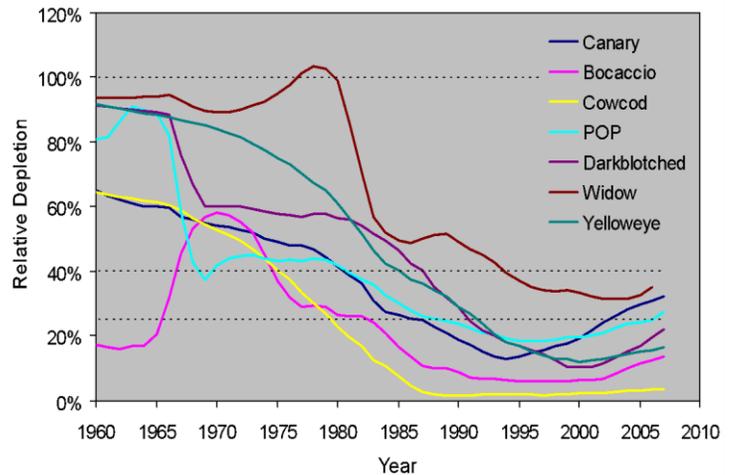
### Management Issue

Large areas within Cordell Bank National Marine Sanctuary (CBNMS or Sanctuary) have been closed to fishing as part of the Pacific Fishery Management Council's rebuilding plan for over-harvested groundfish stocks. The degree that Cordell Bank contributes to regional groundfish populations and the effect of recent closures are poorly known.

### Description

The ecological impact of over harvesting has cascading effects in the marine ecosystem. Fishes provide key links among multiple trophic levels in ocean food webs as both predator and prey, and significant ecosystem disturbances occur when fish populations are over harvested. Large portions of the Sanctuary have been closed to fishing since 2004 to facilitate the rebuilding of depleted groundfish stocks. It is unknown how well populations have recovered at Cordell Bank.

In addition, the genetic structure and source of the fish populations in CBNMS are unknown. It is possible that the unique bathymetry of the Bank coupled with its proximity to the shelf break and Bodega Canyon creates local oceanographic features that concentrate larval settlement at the Bank. It is unknown whether larvae released at Cordell Bank are retained within this local area or are widely dispersed, thus populating areas outside of the Sanctuary. To adequately protect and manage the Sanctuary, the effect of area closures and the contribution of Cordell Bank to the recovery of depleted fish populations need to be determined.



*Relative depletion of overfished rockfish species that are managed by the Pacific Fishery Management Council. Data are based on the most recent set of stock assessments. Source: unpublished data, Stephen Ralston, NOAA Fisheries, SWFSC, Santa Cruz, CA*

### Questions and Information Needs

- 1) Have area closures affected the species composition, distribution, size, and abundance of fishes and invertebrates on Cordell Bank?
- 2) To what extent have fish populations recovered at Cordell Bank?
- 3) What is the genetic structure of fish populations in CBNMS and surrounding areas?
- 4) What are the sources of fish and invertebrate recruits to Cordell Bank?
- 5) What is the contribution of Cordell Bank fishes and invertebrates to populations outside the sanctuary?

### Scientific Approach and Actions

- Determine the feasibility of a genetic study on fish populations at CBNMS
- If genetic study is feasible, collect specimens and conduct genetic analyses to determine recruitment dynamics of rockfish
- Conduct a literature search to obtain and summarize published information on physical and biological characteristics that influence fish population dynamics of the Cordell Bank region
- Conduct a data mining exercise to locate existing physical and biological data collected in the Cordell

*Updated: 12/3/2014*

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

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Bank region that can be incorporated into analytical models

- Create a coupled bio-physical model to understand the dynamics of larval dispersal in the Cordell Bank region and assess variations due to changes in oceanographic conditions
- Analyze existing sport and commercial landings and fishing effort data from Cordell Bank / Bodega Bay region to determine historic trends in local fish population size and species composition
- Conduct annual surveys of fish and invertebrate distribution, size and abundance using remotely operated vehicles or drop cameras supplemented by hook-and-line sampling to characterize fish and invertebrate populations and track population responses to area closures
- Conduct genetic and microchemistry analyses of fish collected on Cordell Bank compared to fish collected throughout the California Current system to determine origins of fish relative to locations of juvenile and adult collections

### Potential Key Partners and Information Sources

NOAA Fisheries, California Department of Fish and Game, University of California-Santa Cruz, Moss Landing Marine Laboratories, University of California-Bodega Marine Laboratory

### Management Support Products

- Report that will synthesize all available information on the contribution of Cordell Bank fishes to regional populations and provide guidance on the appropriate use of closed fishing areas in the Sanctuary
- Data and analytical results that will be synthesized into technical documents and peer reviewed publications to inform a broad spectrum of marine resource managers about the ecology of Cordell Bank and the effects of closed fishing areas

### Planned Use of Products and Actions

- Understand changes in the Cordell Bank ecosystem associated with fishery closures
- Contribute data for input to regional fishery population models and work with NOAA Fisheries and Pacific Fisheries Management Council to understand the implications of Cordell Bank closures to regional fishery population dynamics
- Use results for the basis of educational material prepared for the general public that explains Cordell Bank's contribution to marine conservation



*Cordell Bank provides deep water refuges for depleted species such as Boccaccio (*Sebastes paucispinis*). Photo credit: Southwest Fisheries Science Center, NOAA Fisheries.*

### Program References

#### CBNMS Management Plan

- Conservation Science Action Plan, strategy CS-8, CS-10

#### CBNMS Condition Report

- Abundance and distribution of major habitat types (question 5)
- 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.

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