

# Monterey Bay National Marine Sanctuary

## Bottom Trawling: Habitat and Species Recovery

### Management Issue

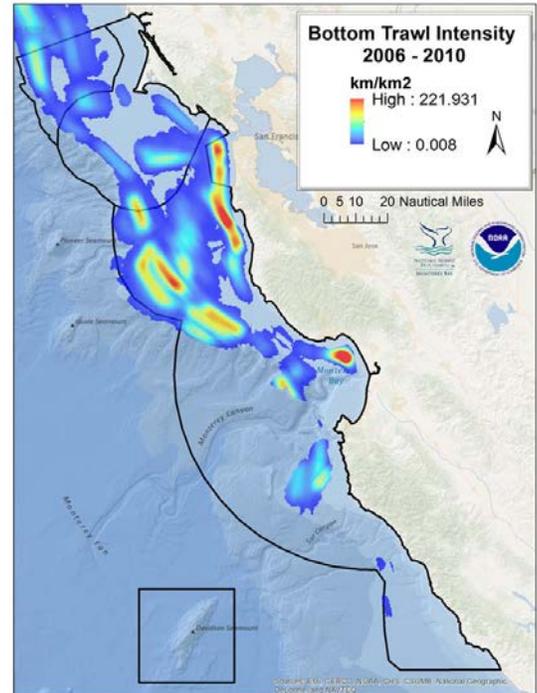
Protection of Monterey Bay National Marine Sanctuary (MBNMS or Sanctuary) resources requires improved understanding of the recovery rates of seafloor habitats and associated taxa following the cessation of trawling activity; as well as the incidental mortality of non-target species associated with trawling.

### Description

Scientific evidence for the direct and indirect effects of bottom trawling on seafloor habitats and organisms is well established, however the extent of these impacts and the need for local protective action in the Sanctuary is poorly understood. The inherent difficulty of studying offshore habitats, and the problems associated with determining causation under shifting environmental conditions (e.g., current, temperature variation, natural migration, storm activity) have left many questions unanswered. The use of trawl gear in the Sanctuary is of concern because it can modify the substrate, disturb benthic communities, and remove non-target species. Studies on the effects of benthic trawling on the different Sanctuary habitats should assess how habitats are affected by this type of fishing activity and the recovery rates and dynamics of community structure following trawling.

### Questions and Information Needs

- 1) Which habitats are sensitive to bottom trawling?
- 2) Where are the gaps in habitat maps, and how can gaps be filled?
- 3) What are the recovery rates and dynamics of community structure after trawling has occurred?



*Bottom trawl activity in the Sanctuary from 2006 to 2010. Map credit: MBNMS*

### Scientific Approach and Actions

- Identify the relative vulnerability of habitats within the Sanctuary
- Conduct research on recovery rates for habitats and associated taxa
- Develop a process to integrate trawling regulations and restrictions with research projects

### Potential Key Partners and Information Sources

California State University Monterey Bay, Alliance of Communities for Sustainable Fisheries, Pacific Coast Federation of Fisherman's Associations, UC Sea Grant, California Department of Fish and Game, National Marine Fisheries Service, local trawlers, Monterey Bay Aquarium, United States Geological Survey

### Management Support Products

- Maps of habitat distribution that depict vulnerable habitats and threat levels posed by trawling activity
- Maps that compile relevant trawling regulations and restrictions relative to habitat distribution
- Reports on habitat recovery following trawling disturbance

*Current as of 11/28/2012*

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

## Planned Use of Products and Actions

- Develop criteria for selecting and prioritizing habitats vulnerable to effects of bottom trawling
- Conduct, support, and coordinate additional collaborative trawling impacts projects in critically vulnerable habitats
- Identify and implement potential ecosystem protection measures for benthic habitats in need of protection

## Program References

### MBNMS Management Plan

- Bottom Trawling Effects on Benthic Habitats Action Plan, Strategy BH-2, BH-3, BH-5

### MBNMS Condition Report

- What is the abundance and distribution of major habitat types and how is it changing? (Offshore Environment – Question 5)
- What is the condition of biologically-structured habitats and how is it changing? (Offshore Environment – Question 6)
- What are the levels of human activities that may influence habitat quality and how are they changing? (Offshore Environment – Question 8)
- What is the status of environmentally sustainable fishing and how is it changing? (Offshore Environment – Question 10)
- What are the levels of human activities that may influence living resource quality and how are they changing? (Offshore Environment – Question 14)

### ONMS Performance Measures

- Spatial identification of vulnerable areas in the MBNMS and identification of protective measures under a range of potential authorities
- Number of sites in which habitat, based on long term monitoring data, is being maintained or improved



*Mounds and depressions create habitat heterogeneity on the soft seafloor that can be lost when an area is fished using bottom-contacting gear, such as otter trawls. Depressions are used by some fish species such as this greenstriped rockfish (*Sebastes elongatus*). Photo credit: James Lindholm (CSUMB).*

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