

# Stellwagen Bank National Marine Sanctuary

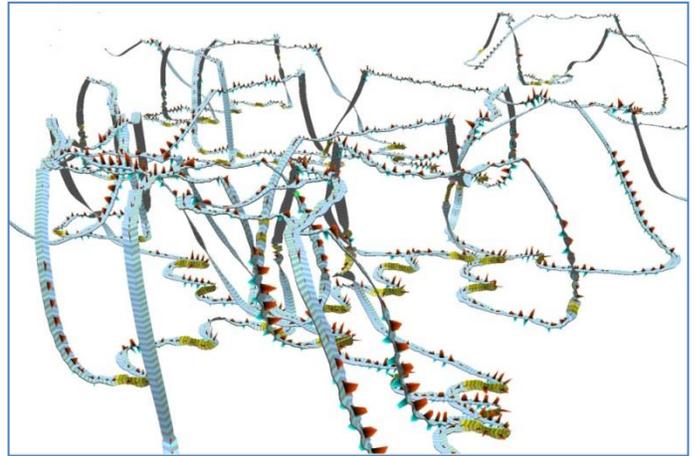
## Marine Mammal Mortality and Injury

### Management Issue

Mortality and serious injury to endangered whales occurs where ever whales co-occur with ships and commercial fishing. This includes the majority of national marine sanctuaries and is priority issue within the Stellwagen Bank National Marine Sanctuary (SBNMS or Sanctuary).

### Description

A multitude of research has demonstrated that ship strikes and entanglements harm individual whales and can negatively impact populations and species. However, information on how whales use the water column and behave relative to these ship movement and other water column use activities is extremely limited. These data and findings are important to the Sanctuary, which is a national “hot spot” for such interactions and where the development of mitigation strategies is a priority. Instrument deployment and data collection and analysis techniques developed at the Sanctuary can be used as a model for other national marine sanctuaries and marine protected areas.



3D track of tagged humpback whale showing bottom feeding events (yellow) demonstrating risk of entanglement. Map credit: SBNMS

### Questions and Information Needs

- 1) How do endangered whales (e.g., right, humpback, fin, and blue) use the water column and how can this information inform policies to mitigate entanglement risk?
- 2) How do endangered whales use the water column and how can this information inform policies to mitigate collisions between whales and shipping?
- 3) How do endangered whales react to the approach of vessels and how can this information inform policies to mitigate collisions between whales and shipping?
- 4) How much daily, annual and inter-annual variability exists in the underwater behavior of endangered whales and how can this information inform policies to mitigate the risk of ship strike and entanglement to whales?

### Scientific Approach and Actions

- Gather information on underwater behavior of endangered whales using benign, synchronous motion, acoustic recording tags
- Use and develop advanced visualization tools to view underwater behaviors
- Use and develop analytic techniques to combine temporally specific geospatial data sets (e.g., whale behavior, bottom topography, prey fields, vessel movements and fishing activity)

### Key Partners and Information Sources

National Marine Fisheries Service, Woods Hole Oceanographic Institution, University of New Hampshire, Oregon State University, University of Hawaii, Syracuse University, Boston University, Harvard University, Whale Center of New England, Provincetown Center for Coastal Studies

### Sanctuary Resources Available

- Research vessel
- Whale tracking equipment and expertise
- Data from other ongoing research projects (e.g., sand lance distribution and abundance monitoring) that can be combined with shearwater data to create a more complete understanding
- GIS analysis

Updated: 11/06/14

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

## Resource Needs

- Financial support

## Management Support Products

- Analyses and visualizations demonstrating underwater behavior of whales relative to shipping and fishing activities
- Identification of potential mitigation actions and the associated socioeconomic impacts

## Planned Use of Products and Actions

- Inform stakeholder communities how endangered whales use the water column relative to shipping and commercial fishing activities
- Solicit user input for management strategies to reduce risk of ship strike and entanglement to whales
- Work with appropriate partners to develop mitigation policies

## Program References

### SBNMS Management Plan.

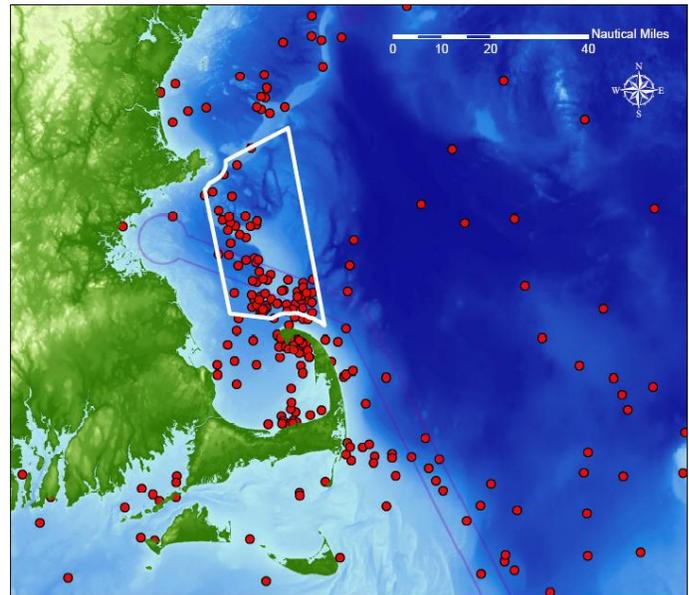
- (1.4) Develop a research program to better understand vessel interactions with whales.
- (3.3) Investigate research strategies to determine responses of whales to approaching vessels.
- (1.3) Undertake activities leading to improved understanding and prevention of entanglement events in SBNMS and improvements in disentanglement technology.

### SBNMS Condition Report

- What is the status of biodiversity and how is it changing?
- What is the condition or health of key species and how is it changing?

### ONMS Performance Measures

- Expand observing systems and monitoring efforts within and near national marine sanctuaries to fill important gaps in the knowledge and understanding of ocean and Great Lakes ecosystems
- Investigate and enhance the understanding of ecosystem processes through continued scientific research, monitoring, and characterization to support ecosystem-based management in sanctuaries and throughout U.S. waters.



*The Stellwagen Bank National Marine Sanctuary is a “hot spot” for whale entanglements. Red dots are locations of entangled whales. Map Credit: SBNMS*

*Updated: 11/06/14*

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