

Stellwagen Bank National Marine Sanctuary

Marine Zoning: Research Area

Management Issue

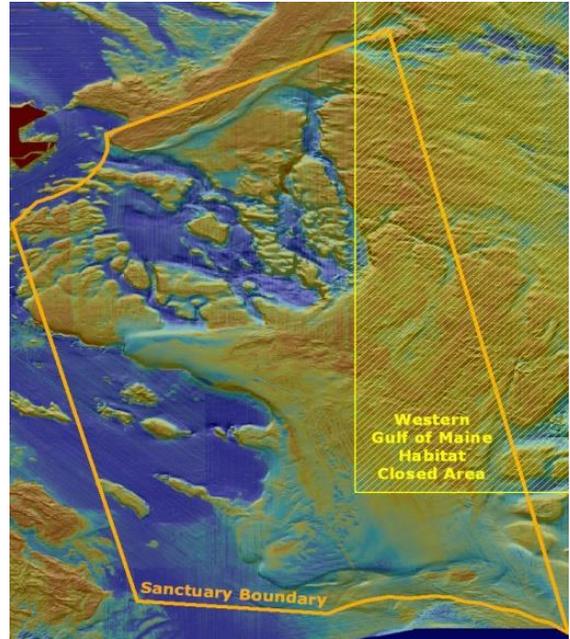
Without a designated reference area, managers and the public have no idea what the integrity is of a natural, biological community in the Stellwagen Bank National Marine Sanctuary (Sanctuary), as specified by the National Marine Sanctuaries Act, or what the restoration targets for the Sanctuary should be.

Description

Reference areas are a prerequisite for implementing ecosystem-based management and determining compatible use practices. A reference area is essential for understanding the relative impacts of human versus natural disturbance and how anthropogenic activities may be altering the Sanctuary. There is no formally designated, undisturbed reference or control area in the Sanctuary. Therefore, our ability to characterize the undisturbed ecosystem, compare that area to other, disturbed portions of the Sanctuary, and understand and implement ecosystem based management is compromised.

Questions and Information Needs

- 1) What does an undisturbed, “natural” system look and behave like, i.e., ecological integrity?
- 2) What are fish movement rates relative to seafloor habitat types in reference and disturbed areas of the Sanctuary?
- 3) Do predator-prey interactions differ in fished versus unfished areas?
- 4) What is the natural mortality rate of different fish species in reference and disturbed areas of the Sanctuary?
- 5) What is the recovery rate of different seafloor habitat types post fishing pressure in reference and disturbed areas of the Sanctuary?
- 6) What are species-area relationships of multiple taxa in an undisturbed area?



The “Sliver” was closed in 1998 to all bottom tending gear and serves as defacto reference area for the SBNMS. Map Credit: SBNMS

Scientific Approach and Actions

- Determine research objectives and hypotheses for reference area
- Choose an area of sufficient size and with representative habitat types to achieve objectives
- Monitor for trends and changes in disturbed versus reference area sites

Key Partners and Information Sources

National Marine Fisheries Service, New England Fishery Management Council, Boston University, University of Connecticut, National Undersea Research Center, Massachusetts Fishermen’s Partnership

Sanctuary Resources Available

- Research vessel
- Biological sampling equipment
- Data from other ongoing research projects (e.g., sand lance distribution and abundance monitoring) that can be combined with new field 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

- Acoustic fish tagging
- Maps of fish foraging ranges
- Maps of habitat types and trends in recovery
- Baseline data on undisturbed system

Planned Use of Products and Actions

- Inform stakeholder communities what a natural, reference system looks and behaves like
- Establish a baseline for a “natural” system from which to determine acceptable impacts, e.g. compatibility
- Determine appropriate size and configuration of reference areas to adequately protect ecological integrity



High diversity of habitats and organisms can be found in the Sanctuary. Photo Credit: SBNMS

Program References

SBNMS Management Plan

- (3.1) Define and operationalize the term ecological integrity.
- (3.2) Develop programs to monitor and evaluate ecological integrity within the Sanctuary.
- (3.3) Establish research programs directed at informing Ecosystem-based Sanctuary Management (EBSM).
- (3.4) Develop models that afford a predictive capability to better understand Sanctuary dynamics and to guide Ecosystem-based Sanctuary Management.
- (4.1) Continue to convene the zoning working group of the advisory council to: (1) evaluate the adequacy of existing zoning schemes in the Sanctuary; (2) address the scientific requirements to meet the goals of EBSM, and if needed (3) develop a modified zoning scheme including consideration of fully protected reserves.
- (5.1) Evaluate the need and feasibility for modifying the sanctuary boundary.

SBNMS Condition Report

- What are the abundance and distribution of major habitat types and how are they changing?
- What is the condition of biologically-structured habitats and how is it changing?
- What are the levels of human activities that may influence habitat quality and how are they 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.

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