

# Monitor National Marine Sanctuary

## Shipwreck Habitat and Biodiversity

### Management Issue

Limited baseline data inhibits the ability to track the biological health of the resources in the *Monitor* National Marine Sanctuary (MNMS or Sanctuary) or to understand the function of shipwrecks as habitat

### Description

The Sanctuary was established primarily due to its cultural resources, and the majority of the research that has been conducted has focused on those resources and their cultural significance. However, shipwrecks also provide habitat for a diverse biological community. While there have been numerous studies on the hard-bottom habitat off the coast of North Carolina, there have been very few studies looking at the biodiversity supported by shipwreck habitat, and the studies that have been conducted have been too infrequent to establish any biological parameters. There is a need to collect baseline biological data on shipwrecks in order to establish a long-term biological monitoring system for the Sanctuary and its surrounding waters. This information is imperative as it can be used in comparison between natural and artificial habitat structures, to identify change over time, drive research needs, and enhance management actions within the Sanctuary.



*The Monitor is also a habitat and attracts many animals and the structure to form an artificial reef. Photo Credit: Monitor NMS*

### Questions and Information Needs

- 1) What are the major habitat types found throughout the entire Sanctuary and the surrounding waters?
- 2) What biological communities can be found living on and around the USS *Monitor* and other North Carolina shipwrecks?
- 3) How are these biological communities changing?
- 4) What, where, and how much biodiversity exists?
- 5) Are there differences when comparing biodiversity within and outside of the Sanctuary?
- 6) Are there differences when comparing biodiversity found on natural hard-bottom habitat versus shipwrecks?
- 7) Are there differences in the communities supported by shipwrecks when looking at depth, age of vessel, substrate material, and geographic location?

### Scientific Approach and Actions

- Surveys using multi-beam, side-scan, and sub-bottom profiling
- Use of ROVs, AUVs, and other submersibles
- Analysis for habitat classification
- Analysis for biodiversity classification
- Establishment of interagency relationships for research purposes

*Updated: 6/18/2014*

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

## Key Partners and Information Sources

NOAA's National Center for Coastal Ocean Science, North Carolina Aquarium, East Carolina University, Duke Marine Lab, University of North Carolina Coastal Studies Institute, NOAA Fisheries Lab (Beaufort, NC), National Marine Fisheries Service Northeast Fisheries Science Center

## Sanctuary Resources Available

- Research vessel for research project use
- Personnel and NOAA divers for data collection and monitoring
- REEF fish and invertebrate identification guides and survey materials
- Access to REEF divers for citizen-science based survey projects

## Resource Needs

- Funding and financial support
- Partnerships for shared responsibility of grant writing, project design, data collection, analysis, reporting, and monitoring (NOAA PMEL, North Carolina Aquariums, non-profit organizations, academic institutions)

## Management Support Products

- Scientific papers and reports
- Maps of habitats
- Extensive list of flora and fauna located within the sanctuary
- Reports on distribution of habitats

## Planned Use of Products and Actions

- Baseline data will be used as a starting point with which to detect changes and compare future results
- Appropriate management within sensitive habitat areas

## Program References

### MNMS Management Plan

- Resource Monitoring Action Plan

### MNMS Condition Report

- What is the status of key species and how is it changing?
- What is the condition or health of key species and how is it changing?
- What is the status of non-indigenous species and how is it changing?
- 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 contaminant concentrations in sanctuary habitats and how are they changing?
- What is the status of biodiversity and how is it changing?

### ONMS Performance Measures

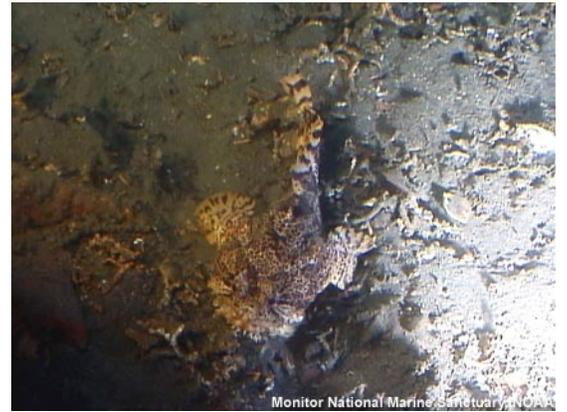
- 3.2: Habitat Protection Performance
- 3.3: Measuring Living Resources Protection Performance

### Other Documents

- National Marine Sanctuary State of the Sanctuary Report 2008



*A Manta (Manta birostris) flies over the Monitor while Navy divers take a break from their mission to look on in awe. Photo Credit: Monitor NMS*



*An oyster toadfish (Opsanus tau) rests on the side of the USS Monitor. Photo Credit: Monitor NMS*

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