

# Gray's Reef National Marine Sanctuary

## Habitat Change – Sand Movement

### Management Issue

Observations in Gray's Reef National Marine Sanctuary (GRNMS or Sanctuary) and at other live bottom areas in the South Atlantic Bight indicate that significant movement of sand occurs along the ocean bottom on a seasonal basis. Managers need to understand the movement of sand to understand how this impacts resources of the Sanctuary.

### Description

Comparisons between the first comprehensive habitat classification (completed in 2001) and previous side-scan surveys of the sanctuary in the 1980s suggest that areas of low relief in the southeastern quadrant of the Sanctuary have been buried by an influx of sand on these timescales. The four bottom types found in the Sanctuary have distinct physical and biological characteristics, therefore sand shifts could have significant impacts to communities within the sanctuary. The movement of sand alternately covers and exposes rock outcroppings that may in turn affect such parameters as community structure, ecological succession, biological productivity and erosion of the physical structure that supports the attached fauna. A better understanding of sediment dynamics will enable GRNMS to determine how natural processes affect the structure and function of biological systems.



*When rocky substrate becomes covered with sand, the attached organisms which have an upright growth form escape being buried. Photo credit: GRNMS*

### Questions and Information Needs

- 1) Are some areas of GRNMS more vulnerable to sand movement than others?
- 2) What are the sources of sand entering the Sanctuary?
- 3) Where does sand shifting out of the Sanctuary end up?
- 4) Are some species more/less vulnerable to changes in sand cover than others?

### Scientific Approach and Actions

- Determine aspects of potential sources and the transport, erosion and deposition rates of sedimentary materials
- Determine how these factors may impact biological structure and function (e.g., determine association between sediment depth and percent cover and species assemblages)
- Develop and implement a sediment monitoring program (e.g., sediment traps, measurement of sediment at index locations)

### Potential Key Partners and Information Sources

Skidaway Institute of Oceanography; NOAA's National Centers for Coastal Ocean Science; Coastal Carolina University; South Carolina Department of Natural Resources

*Updated: 5/1/2010*

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

## Management Support Products

- Draft scientific papers and reports
- Present at scientific meetings, workshops, symposia and conferences
- Develop education and outreach products to inform general public about shifting sands and how that impacts other resources in the sanctuary

## Planned Use of Products and Actions

- Incorporate information about the impacts of sand movement into other relevant research areas and zoning considerations
- Use information to help determine natural degradation of limestone substrates



*Many of the low-relief areas are subject to periodic burial and exposure as sands shift along the ocean floor.  
Photo credit: GRNMS*

## Program References

### GRNMS Management Plan

- Strategy RM-4: Maintain and Enhance Monitoring Programs  
Activity D: Develop and implement a sediment analysis and monitoring program.

### GRNMS Condition Report

- Questions 5

### ONMS Performance Measures

- By 2015, 100% of the sanctuary system is adequately characterized
- Number of sites in which habitat, based on long-term monitoring data, is being maintained or improved

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