

Monitor National Marine Sanctuary

Biological Connectivity: Sand Tiger Sharks



Images of the same sand tiger shark on the same shipwreck. Left: 2007, Right 2008. Photo Credit: East Carolina University

Management Issue

Monitoring and assessment of sand tiger shark movement is needed to assess the dynamics and population structure of sand tiger sharks in and around the *Monitor* National Marine Sanctuary (MNMS or Sanctuary).

Description

Sand tiger sharks form large aggregations around shipwrecks and artificial reefs in the proposed sanctuary. These aggregations are unique along the east coast of the United States, and they, along with the shipwrecks around which they center, are the focus of an economically important recreational dive industry in North Carolina. Worldwide, populations of sand tiger sharks are considered “vulnerable” by the IUCN, and are listed as a “species of concern” by the National Marine Fisheries Service (NMFS). Sand tiger populations have been reduced by roughly 90% from the virgin condition by increased exploitation during the 1980’s and 1990’s. This species has been managed under the Highly Migratory Species Management Plan by the NMFS since 1997, however, the species continues to decline in abundance.

Questions and Information Needs

- 1) What are the seasonal movement patterns of sharks?
- 2) How are shark aggregations structured seasonally, are they partitioned by sex or age?
- 3) Do sand tigers display philopatry to particular shipwrecks?
- 4) Does the physical structure of shipwrecks influence shark aggregation patterns?
- 5) How many sharks aggregate around shipwrecks in North Carolina waters?

Scientific Approach and Actions

- Individual sharks possess unique spot patterns which make possible the use of photographic computer aided identification for non-invasive long term monitoring
- Develop a database of individually identified sharks
- Create an internet based interface where members of the recreational diving community can upload shark photographs and identify individuals.
- Use data in a GIS interface which will allow for the interpretation of shark movements
- Develop a tagging program to compare results to the photographic identification program.
- Establishment of interagency relationships for research purposes

Updated: 5/1/2010

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

Key Partners and Information Sources

East Carolina University, Duke Marine Lab, University of North Carolina Coastal Studies Institute, NOAA's National Center for Coastal and Ocean Science, National Marine Fisheries Service, State of North Carolina North Carolina Aquarium

Management Support Products

- Scientific papers and reports
- Web based identification program for data augmentation, public outreach, education and engagement.
- Maps and GIS distribution models

Planned Use of Products and Actions

- Interpretation of data will be used as a tool for management recommendations.
- Demonstrate importance of submerged structures to the life cycle of sand tiger sharks
- Will allow the public to take part in science goals and to identify individual animals on sites.
- Appropriate management actions based on findings

Program References

MNMS Management Plan

- The MNMS is currently going through Management Plan Review

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?

ONMS Performance Measures

- 3.3: Measuring Living Resources Protection Performance

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