

Marine Debris

Management Issue

Marine debris, specifically derelict fishing gear, is a systemic problem with chronic impacts in the Stellwagen Bank National Marine Sanctuary (Sanctuary) and the Gulf of Maine. The problem impacts NOAA and the public by degrading marine resources in the sanctuary including the possible entanglement of endangered and protected marine mammals. A better understanding of the extent of the threat of marine debris, especially derelict fishing gear, and the impacts it has on the natural and historical resources of the Sanctuary is needed for effective management.

Description

Marine debris accumulation, especially derelict fishing nets and gear, is a chronic threat to marine ecosystems, the animals that live in those ecosystems, and maritime artifacts, as well as divers and fishers. It adversely impacts endangered sea turtles, commercially and recreationally important fish, crustaceans, and invertebrates, and other animals, such as birds, that live and feed in the Sanctuary. It also entangles archaeological sites and can damage or destroy artifacts. It has the potential to entangle endangered large whales and other small whales. Marine debris degrades the aesthetics of the marine environment and can be a hazard to SCUBA divers and remotely operated vehicles conducting research.

Derelict fishing gear is costly to fishers because they inadvertently catch it in their nets while fishing and then have to spend valuable fishing time disentangling the derelict gear from their nets. Over the course of five years, one fisher surveyed lost over 30 hours of fishing time to dealing with derelict fishing gear in his nets.

One study using a high resolution habitat mapping camera (HabCam) revealed that marine debris and derelict fishing gear was relatively abundant and widely distributed in the Sanctuary (York et al. 2011).

Questions and Information Needs

- 1) What are the sources, types and accumulation rates of marine debris within the Sanctuary?
- 2) How can we reduce the sources of debris which ends up in the Sanctuary?
- 3) What are the impacts to resources (i.e. seafloor habitats or archaeological sites) of removal activities?
- 4) What tools are available to detect marine debris within the Sanctuary?
- 5) Should certain critical habitats for endangered or threatened species be prioritized for marine debris removal efforts?
- 6) What is the spatial extent of marine debris in the Sanctuary?
- 7) Are certain areas more or less susceptible to marine debris accumulation and/or impacts?



Derelict fishing gear entangling a cod in SBNMS. Credit: SBNMS

Scientific Approach and Actions

- Employ innovative tools to detect marine debris on the seafloor and quantify its spatial extent.
- Use the Sanctuary as a sentinel site for studying the extent and impacts of marine debris.
- Work with the fishery management council to address marine debris prevention with U.S. fishing fleets.
- Investigate the sources, types and accumulation rates of marine debris.
- Work with partners to continue to develop and implement an outreach strategy for marine debris.
- Conduct marine debris removal impact studies to examine the effects of removal efforts on resources.
- Develop outreach materials regarding marine debris to educate people about this issue.

Potential Key Partners and Information Sources

NOAA/NMFS/Northeast Fisheries Science Center; NOAA Office of Response and Restoration's Marine Debris Program; US Fish and Wildlife Service; US Coast Guard; University of Rhode Island; US Navy; Massachusetts Board of Underwater Archaeological Resources; University of Connecticut.

Updated: 10/29/14

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

Sanctuary Resources Available

- Research vessel
- Seabird capture and biological sampling equipment
- 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

Resource Needs

- Financial support

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 marine debris issues

Planned Use of Products and Actions

- Refine and target marine debris efforts to vulnerable habitat areas or areas frequented by endangered animals.
- Define sensitive areas (e.g. fragile archaeological sites or critical habitats for endangered species) and conduct regular cleanup efforts in those locations

Program References

SBNMS Management Plan

- IV. Resource States – Water Column as Habitat
- IV. Resource States – Sea Turtles
- IV. Resource States – Marine Mammals
- IV. Resource States – Maritime Heritage Resources
- VII. Action Plans - Ecosystem Alteration
- VIII. Environmental Assessment – Purpose and Need

SBNMS Condition Report

- The issue of marine debris is referenced in response to seven of the seventeen questions: Question 6, 7, 8, 11, 12, 14 and 17 all have reference to marine debris in their response.

Other References

York, AD, B. Cowie-Haskell, K. Bolles, and S. Gallager. 2011. Detecting derelict fishing gear in the Stellwagen Bank National Marine Sanctuary using the HabCam habitat mapping camera system. Abstract in Proceedings of the 5th International Marine Debris Conference, March 2011, Honolulu, Hawaii.

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