



# NOAA

NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION  
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## **Top Fish Predators Decline in Stellwagen Bank National Marine Sanctuary**

The numbers of top-level predators in Stellwagen Bank National Marine Sanctuary, such as halibut and swordfish, decreased significantly from population levels 100 years ago, according to a new NOAA report released today by the Office of National Marine Sanctuaries.

The National Marine Sanctuaries Conservation Series report, "Stellwagen Bank Marine Historical Ecology Final Report," describes fish populations in the sanctuary that are resilient, but have suffered declines in numbers and species diversity over time.

The report, produced by the Gulf of Maine Cod Project at the University of New Hampshire, presents results of a three-year survey and analysis of historical documents and manuscripts relevant to the historical ecology of the sanctuary. The authors, Stefan Claesson and Andrew Rosenberg, former director of NOAA Fisheries Northeast Regional Office, said the report's findings challenge currently established baselines "and should influence the direction of management actions needed to improve overall ecosystem integrity."

Key findings from the research include:

- Halibut, swordfish and other top predators in the sanctuary were overfished to near commercial extinction in the late 19<sup>th</sup> and 20<sup>th</sup> centuries;
- Declines in diversity of bottom-dwelling species in the western Gulf of Maine, including the sanctuary, from 1900 to 2000;
- Maximum annual catch levels of important commercial species declined by nearly 50 percent over a 100 year period; and
- Proportional catch ratios of haddock and cod in the sanctuary have reversed in the last 100 years from 3:1 to 1:7.

"These findings present a serious wake-up call to marine resource managers, the fishing community and environmentalists," said Craig MacDonald, superintendent, Stellwagen Bank National Marine Sanctuary. "Biodiversity conservation is one of the key management priorities for the sanctuary, and a major focus in our new management plan."

According to the report, the waters of Stellwagen Bank National Marine Sanctuary have been fished for nearly 400 years, since European mariners came to the New World even before the Pilgrims. Near-shore fish populations and micro-banks, such as Stellwagen, were already showing declining numbers by the early 1800s, the report notes.

Since the late 19<sup>th</sup> century, human interactions with the Stellwagen Bank ecosystem caused dramatic changes to animal populations, according to the report's authors. They attribute the relatively quick ecosystem shifts to the development of new fishing technologies, such as gill nets and trawl gear, which were invented and adopted to improve efficiency and catch levels in an environment of declining numbers of fish caught and increasing market demand.

The report recommends additional analysis that examines historical trends for fish populations and habitat conditions back to 1800, and identifies socio-economic and cultural drivers related to shifts in catch levels.

This Marine Sanctuaries Conservation Series Report (ONMS-10-04) is available on-line at the Office of National Marine Sanctuaries website: [http://sanctuaries.noaa.gov/science/conservation/stellwagen\\_history.html](http://sanctuaries.noaa.gov/science/conservation/stellwagen_history.html) or at the Stellwagen Bank sanctuary website at <http://stellwagen.noaa.gov>.

Designated in 1992, Stellwagen Bank National Marine Sanctuary encompasses 842 square miles of ocean, stretching between Cape Ann and Cape Cod. Renowned for its remarkable productivity, the sanctuary supports a rich diversity of marine life including 22 species of marine mammals, more than 53 species of seabirds, more than 80 species of fishes, and hundreds of marine invertebrates.

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**On the Web:**

Stellwagen Bank National Marine Sanctuary  
<http://stellwagen.noaa.gov/>

Captions for following pages:

- 1.) Drying Codfish, Provincetown, Mass. 1907  
inset: fishing fleet at T-Wharf, Boston
- 2.) Fishing fleet, Provincetown Harbor



*Harbor Scene, Provincetown, Mass.*

