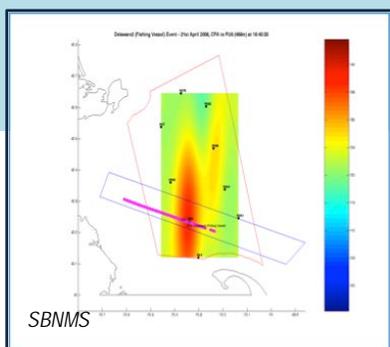


## HUMPBACK HAZARDS

Humpback whales are an endangered species and face many challenges throughout their migration range including ship collisions, entanglements in fishing gear, exposure to noise from human activity, polluted water, the effects of climate change, and other human and natural causes.

**Vessel Collisions:** Humpback whales are vulnerable to collisions with large ships within northern feeding grounds and southern breeding grounds, and from heavy ship traffic passing to and from major ports over their north-south migration path. They also face injury from smaller vessels (e.g. boat propellers) that may approach too close or cause serious injury or death from speeding boats.



**Noise Impacts:** Increasing levels of human activity in coastal waters are accompanied by increasing levels of underwater sound. Humpbacks use sound to communicate, navigate, and/or feed. The graphic (above) shows the large acoustic footprint produced by a cargo ship transiting Stellwagen Bank National Marine Sanctuary, with red denoting higher intensity noise, and the pink line showing the track of the ship.



Humpback showing rake-like tooth marks from orca attacks.



Humpbacks are vulnerable to collisions with vessels that approach too closely or travel too fast.

**Entanglement:** Sharing areas that have been heavily fished for hundreds of years, feeding or migrating humpbacks are vulnerable to entanglement with fixed gear such as nets and traps anchored on the sea floor. Hooks trailed behind tuna fishing boats can become embedded in a humpback. More than half of Gulf of Maine humpbacks show evidence of having been entangled at least once during their life (CCS research).



Humpbacks entangled in tuna hooks (left) and fishing nets (right).

**Natural Dangers:** During their annual migration from the tropics to colder waters, humpbacks encounter the natural hazard of shark and orca attacks, primarily on humpback calves. Not all attacks are lethal. Almost 15 percent of the humpback whales from the Stellwagen Bank National Marine Sanctuary have rake-like orca tooth marks on their tail flukes.

# WHAT CAN BE DONE TO PROTECT HUMPACK WHALES?

One of the most fundamental steps in protecting humpback whales is knowing where they are.

Locating whales throughout their migration range is primarily accomplished through visual surveys and photo identification. For example, because humpback whales have patterns of black and white pigmentation and scars on the underside of their tails that are unique to each whale, just as fingerprints are to humans, a catalog of more than 9,000 North Atlantic fluke photographs is maintained by Allied Whale at the College of the Atlantic in Bar Harbor, Maine. New photos are matched and added along with dates and locations. This allows researchers to identify and monitor individual animals, and gather valuable information about population sizes, migration, health, sexual maturity and behavior patterns.



Flukes of a female humpback named Liner. (CCS)

The data set for Gulf of Maine humpbacks, maintained since 1976, is the largest for baleen whales in the world. An ongoing internet-based citizen science project, CARIB Tails, was established in 2014 to collect additional Caribbean fluke photographs, especially from under-surveyed areas of the eastern Caribbean.

Spatial mapping of whale sightings in relation to ship traffic is also a useful tool. Protective measures can involve reducing spatial overlap where possible, and notifying vessels to reduce speed and increase visual detection in areas where whales are present.



Dominican Republic delegation visiting SBNMS.

Sharing information and experience is another important step.

Stellwagen Bank National Marine Sanctuary protects humpbacks while they are in the sanctuary. In 2006, the sanctuary created the Sister Sanctuary program to help protect them beyond U.S. borders. Currently collaborating with marine mammal sanctuaries in the Dominican Republic, Bermuda, the French Antilles and the Caribbean Netherlands, this pioneering program within the framework of the United Nations Caribbean Environment Programme is the first international partnership in the world protecting North Atlantic humpback whales throughout their migratory range. Within eight years, sister sanctuary nations have expanded protection for humpbacks from 842 square miles to more than 258,000 square miles, one of the largest coordinated marine conservation areas in the world.

Specific projects contribute to protection and also serve as models.

The Sister Sanctuary Program is a model for transboundary protection. Some of the benefits of nations working together to establish multi-national Marine Mammal Protected Areas include: sharing management and research plans, exchanging science-based information, funding acoustics monitoring and spatial mapping projects, supporting model guidelines for safe boating and whale watching, sponsoring technical and staff exchange programs, and increasing education, outreach and volunteer programs.

In addition to protection, marine mammal sanctuaries offer economic possibilities for ecotourism and whale watching. Sanctuaries may support guidelines for safe practices and business conduct, establish and enforce regulations controlling access and use, offer incentives for safer fishing gear and removal of abandoned gear, and also address other issues such as climate change, pollution, oil and gas exploitation, water quality and shipping.



Acoustic monitoring, debris removal, and whale watching guidelines are examples of projects to help protect humpbacks. (SBNMS)

For additional information: [caribtails.org](http://caribtails.org)

Photo credits: Center for Coastal Studies (CCS) and Stellwagen Bank National Marine Sanctuary (SBNMS)