

## UNDERSTANDING STRANDINGS

---

### What is a stranding?

The term **stranding** refers to an aquatic animal observed in an inappropriate location, for example, an offshore species found inshore. Most often, stranded animals are found on a beach or in shallow water. Animals may strand singly or in groups. When three or more animals strand together in time and place, it is called a **mass stranding**. Communal animals, such as small cetaceans like **pilot whales** are the most common species found stranded. Mass strandings may include one or several species.

In the U.S. alone, about 1,000 cetaceans and 2,500 **pinnipeds** strand annually. A stranding may be classified as an **unusual mortality event** (UME), which is defined under the Marine Mammal Protection Act as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." UMEs are declared and responded to under the Marine Mammal Health and Stranding Response Program, overseen by the NOAA Fisheries Service.

### Why do strandings occur?

There are many identified causes of strandings, including disease, parasite infestation, ship strike, pollution exposure, starvation, extreme weather events, and tidal changes. However, determining the exact cause of a stranding or death of a stranded animal is often difficult. Scientists must reconstruct what happened, but most often have little or no information about the animal's history or the circumstances that preceded the stranding. On average, a cause of death can be determined in only about half of all stranding cases.

The Marine Mammal Health and Stranding Response Program coordinates the National Marine Mammal Stranding Network, which consists of over 100 organizations that are designated as responders to marine mammal strandings. With increased efforts in examining both carcasses and live stranded animals, there is an increase in the knowledge of species population health, environmental contaminant levels, cases of human interaction, and incidence of disease. In some cases, the only existing information about a particular species has been learned from the study of a stranded animal.

### Is there a connection between anthropogenic sound and marine mammal strandings?

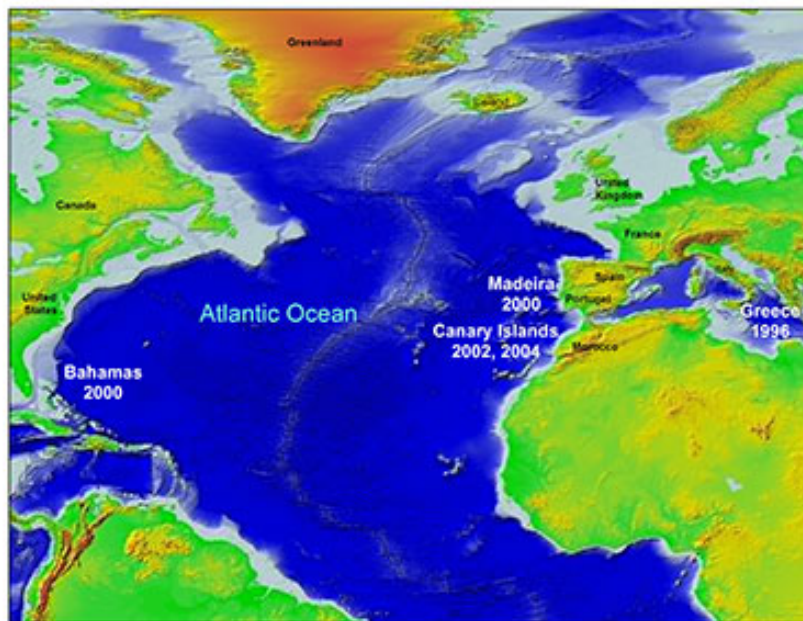
Much attention has recently been focused on **anthropogenic** sources of sound in the ocean and their potentially harmful effects on marine animals. To accurately assess whether or not sound has an effect on marine animals, it is necessary to understand the characteristics of sound and potential impacts that have been determined by scientific research.

Different sounds **vary in their characteristics**, such as **intensity** and **frequency**, which influence their potential for harmful effects. The potential impacts of anthropogenic sounds in the ocean include sounds that may cause marine animals to **alter their behavior**, prevent them from hearing other

important sounds (**masking**), cause **hearing loss** (temporary or permanent), or damage tissue. In a few events, a relationship in time and space between the use of naval sonar and the **stranding of cetaceans**, particularly **beaked whales** was identified; however, the mechanism by which the sonar might have caused the strandings is still not determined.

In five well-documented cases, there is sufficient information about the military exercises and the times and locations of the strandings to determine that multi-ship exercises with sonar contributed to the strandings. These events occurred in Greece (1996), Bahamas (2000), Madeira, Portugal (May 2000), and the Canary Islands (2002 and 2004). The **necropsies** that were performed found similar injuries, but none of the animals were found to have **acoustic trauma**. For a full discussion of these events and the potential effects of sonar that have been published in the scientific literature, please see the DOSITS section on marine mammal strandings:

<http://www.dosits.org/animals/effectsofsound/marinemammals/strandings/>.



Locations of the five best-documented beaked whale strandings that coincided with military activities involving the use of sonars.

Much more scientific research is needed to understand why a relationship in time and location may exist between cetacean mass strandings and the use of naval sonar. At present, no definitive answer has been provided by the available research.

It is important to put the potential of impacts to marine animals from naval sonar in perspective. In addition to anthropogenic sound, marine mammals face threats from many different human activities, including fishing, habitat destruction, ship strikes, and whaling. Of these threats, the most significant is fisheries **bycatch**, which causes more marine mammal deaths than any other human activity. Globally, it is estimated that more than 650,000 marine mammals are killed each year by being accidentally caught in fishing nets. This can be compared with the less than two dozen strandings considered to be related to naval sonar over the last two decades

#### DOSITS Links:

[What are the potential effects of sound on marine mammals?](#)

Potential Effects > Strandings

How do you determine if a sound affects a marine animal?

How do you measure a marine mammal's reaction to sound?

**NOAA Fisheries Links:**

<http://www.fisheries.noaa.gov/pr/health/faq.htm>

<http://www.fisheries.noaa.gov/strandings.htm>

<http://www.nmfs.noaa.gov/pr/health/networks.htm>