

## More Than Half of Stranded Bottlenose Dolphins May Be Deaf

By Tanya Lewis, Staff Writer | July 31, 2013 09:25am ET



**Dolphin deafness can be caused by aging, underwater noise or other factors.**

**Credit: Vincent M. Janik, [University](#) of St Andrews**

In waters from Florida to the Caribbean, dolphins are showing up stranded or entangled in fishing gear with an unusual problem: They can't hear.

More than half of [stranded bottlenose dolphins](#) are deaf, one [study](#) suggests. The causes of hearing loss in dolphins aren't always clear, but aging, shipping noise and side effects from antibiotics could play roles.

"We're at a stage right now where we're determining the extent of hearing loss [in dolphins], and figuring out all the potential causes," said Judy St. Leger, director of pathology and research at SeaWorld in San Diego. "The better we understand that, the better we have a sense of what we should be doing [about it]."

Whether the hearing loss is causing the dolphin strandings — for instance, by steering the [marine mammals](#) in the wrong direction or preventing them from finding food — is also still an open question.

## Deaf strandings

Dolphins are a highly social species. They use echolocation to orient themselves by bouncing high-pitched sound waves off of objects in their [environment](#). They also "speak" to one another in a language of clicks and buzzing sounds. Because hearing is so fundamental to dolphins' survival, losing it can be detrimental. [[Deep Divers: A Gallery of Dolphins](#)]

A 2010 study found that more than half of stranded bottlenose dolphins and more than a third of stranded rough-toothed dolphins had severe hearing loss. The animals' hearing impairment may have been a critical factor in their strandings, and all rescued cetaceans should be tested, the researchers said in the study, detailed in the journal [PLOS ONE](#).

How exactly do scientists give dolphins a hearing test? In captivity, dolphins and whales can be trained to press a paddle or make a noise when they hear a test sound. But a different approach is needed for wild animals.

Above water, animals perceive sound via airwaves. But underwater, dolphins hear primarily via pressure changes in their jawbone, so researchers use a "jawphone," which consists of a suction cup placed on the dolphin's lower jaw to produce sound pulses. Electrodes embedded in the suction cups measure brain responses to the sounds.

## Causes of deafness

Dolphins can become deaf for a variety of reasons. The most common cause is age-related hearing loss, said Dorian Houser, a marine biologist at the National Marine Mammal Foundation in San Diego. Like humans, dolphins tend to lose their high-pitch hearing first, and males tend to go deaf more often than females, Houser told LiveScience.

Some dolphins are also born with impaired hearing; certain drugs used to treat the animals' other health problems can also cause hearing loss. Other causes are chronic exposure to noise (such as from shipping), or exposure to short-lived intense noise (such as explosions).

Many [studies](#) have investigated the effects of military sonar on dolphin hearing. "There's mounting evidence that midfrequency sonar may be impacting dolphins and whales," St. Leger said.

The animals may lose hearing for a short time and then recover — the so-called [rock-concert effect](#), Houser said. But they'd have to be pretty close to the source of the sonar and be exposed to it repeatedly, he added. Studies have shown temporary hearing loss from sonar, but less is known about its long-term effects. The bigger concern is how sonar could disrupt the dolphins' behavior. For example, the high-frequency pings can [mask the calls of dolphins and whales](#) and scare them away from their habitats.

As for deafness in dolphins, researchers are still trying to get a handle on the problem's prevalence, which may not be as pronounced as the PLOS ONE study suggested, Houser said. "But I think, in time, we're going to answer the question," he said.

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<http://www.livescience.com/37969-military-sonar-may-hurt-blue-whales.html>

# Military Sonar May Hurt Blue Whales

Megan Gannon, News Editor | July 03, 2013 06:09pm ET



A blue whale surfacing. Credit: Ari Friedlaender

The oceans are increasingly cluttered with human-made noise, which can disturb even the largest animals on Earth, blue whales, new research shows.

Whales depend on vocalizations to communicate with other individuals in their species over long distances. But sonar blips that the U.S. military uses in underwater navigation, object-detection and communication are feared to mask whale calls, deter the [marine mammals](#) from their habitats and damage the animals' hearing, researchers say.

Mid-frequency sonar signals (between 1 kHz and 10 kHz) have been blamed for mass strandings of deep-diving beaked whales before. There are fewer cases of sonar-linked strandings of baleen whales, those that have plates for filtering food rather than teeth, like blue whales. [[Infographic: The World's Deepest Ocean Divers](#)]

To test how [blue whales](#) feeding off the coast of Southern California might be affected by mid-frequency sonar, a team of scientists exposed a group of the creatures to sonar sounds between 3.5 and 4 kHz that were not as loud as the kind the military uses. The whales were tagged with suction cups that recorded acoustic data and movements as the animals were exposed to the controlled sounds.

Though not all of the whales responded in the same way, some of the mammals avoided their feeding grounds and fled from the source of the noise, the researchers found.

"Whales clearly respond in some conditions by modifying diving behavior and temporarily avoiding areas where sounds were produced," study author Jeremy Goldbogen, of the nonprofit Cascadia Research Collective, said in a statement from Duke. "But overall the responses are complex and depend on a number of interacting factors."

There are only 5,000-12,000 blue whales remaining today, according to the National Oceanic and Atmospheric Administration (NOAA). The new study suggests sonar may be a threat to the [endangered](#) species.

"Our results suggest that frequent exposures to mid-frequency anthropogenic sounds may pose significant risks to the recovery rates of endangered blue whale populations, which unlike other baleen whale populations (i.e. humpback, grey and fin whales), have not shown signs of recovery off the western coast of North America in the last 20 years," the researchers wrote.

The [study](#) was detailed in the journal Biology Letters on July 3.

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### Editor's Recommendations

- [Whale Album: Giants of the Deep](#)
- [Images: Sharks & Whales from Above](#)



# Why Are So Many Dolphins Beaching Themselves?

Jennifer Viegas, Discovery News | February 16, 2012 03:23pm ET

From New England to Peru, an unprecedented number of dolphins have been beaching themselves in recent weeks, and experts are grappling as to why.

On Cape Cod alone, 177 [short-beaked common dolphins](#) have stranded and 124 have died, according to an [Associated Press report](#). The report goes on to say that the total is nearly five times the average of 37 common dolphins that have stranded annually there during the last 12 years.

## [NEWS: Why Do Whales Beach Themselves?](#)

More than 200 dolphins have washed up dead on the beaches of Chiclayo, Peru, according to [The Blaze](#). In that case, dead anchovies were also found. Since these small fish are prey, the dolphins may have become ill as a result of eating them, but the deaths remain a mystery.

The [International Fund for Animal Welfare](#) has been handling rescue efforts in Massachusetts. Katie Moore of the IFAW in her blog recently described what it can be like at the scene:

Yesterday we had a young Atlantic white sided dolphin strand alive in Wellfleet. The female appeared to be a calf, probably over a year old. She must have come in on the high tide at about 2:00am - she was as high as she could get on the beach, wedged up against the bulkhead.

Our early morning crew must not have been able to see her from above. This young dolphin was emaciated - so thin it was obvious she has been deteriorating for quite a while. She appeared dehydrated, her skin was peeling and cracking.

We worked with our volunteers and colleagues from the Riverhead foundation in New York to extract her from the beach. We placed her on a soft foam mat to make her more comfortable while we did a quick exam.

Her poor condition was obvious - very low breathing rate, emaciated, unresponsive. She was dying. The most humane thing we could do was to humanely euthanize her. We put her to sleep the same way a vet would do for a beloved pet. She went very quietly. Although it is always hard to put an animal down, we knew it was the kindest thing we could do for this young dolphin.

Moore and other experts have offered the following as possible reasons for the dolphin strandings:

1. **This year's unusually warm winter.** As [Discovery News](#) recently reported, the unusually warm temperatures are affecting animal reproductive cycles, hibernation patterns and more. The change could also somehow be impacting dolphins.
2. **Geography.** Moore said the hooked shape of Cape Cod appears to be trapping the dolphins and confusing them. But the question still remains, why are the dolphins going in that direction in the first place?
3. **Movement of prey.** Climate cycles could be altering the course of fish and other dolphin prey, the [AP report suggests](#). Dolphins following the prey could then become stranded. That might help to explain why both sardines and dolphins washed up in Peru.
4. **Disease.** This is an obvious reason, but workers at the IFAW are tagging and taking blood samples of the stranded animals, [AP has reported](#). Researchers have also conducted necropsies on dead dolphins, and yet still there are no clear answers. A Congressional briefing was even held earlier this month in the push to resolve the problem.
5. **Decompression.** I would be curious to know if the dolphins have internal air bubbles that can cause decompression sickness, more commonly known as "the bends" in humans. That might seem far fetched, but scientists have determined that the blood and tissues of some deceased beaked whales stranded near naval sonar exercises are riddled with bubbles.

"Beaked whales are stranding atypically when exposed to sonar," Michael Moore, director of the Woods Hole Oceanographic Institution Marine Mammal Institute, was quoted as saying in a press release. "The beaked whale mortality events have led the current generation of marine mammal physiologists to revisit the question of how marine mammals manage the issue of lung gas being compressed as they dive deeper."

### [NEWS: Dolphins -- Second-Smartest Animals?](#)

He continued, "Above the depth of alveolar collapse, a depth at which the gas-exchange surface of the lung is no longer inflated, increasing pressure with depth can cause gases to dissolve in the body; the gases then come back out of solution as they resurface. If this decompression is uncontrolled, bubbles can form. In humans such bubbles can cause joint pain that is relieved by 'bending' limb joints - hence the popular name. It was thought that marine mammals were immune to such problems, but the beaked whale cases reopened this assumption to fresh scrutiny."

Unusual weather, however, is likely the main the driving force, even if it is fueling some other secondary problems, such as the emergence of pathogens. We will have to wait and see what additional studies reveal.

A video report showing some of the dolphins and their rescuers may be viewed [here](#).

*This article was provided by [Discovery News](#).*



On Cape Cod alone, 177 short-beaked common dolphins (*Delphinus delphis*) have stranded and 124 have died.  
Credit: [mikeledray](#) | [shutterstock](#)

#### Editor's Recommendations

- [Deep Divers: A Gallery of Dolphins](#)
- [Image Gallery: Remarkable Bionic Animals](#)
- [World's Cutest Baby Wild Animals](#)