

Ocean Noise Pollution

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For millions of years, the oceans have been filled with sounds from natural sources such as the squeaks, moans and clicks of whales and dolphins, the snapping of shrimp, the sound caused by wind upon the surface and even the occasional rumble from earthquakes. Over millions of years, the ocean's marine species have developed into what they are today, with their own specialized acute hearing abilities, communication skills and echo location abilities at natural sound levels. Hearing is generally as important to many marine creatures as sight is for humans. (Image below from: NASA, Jet Propulsion Laboratory)

The oceans, once referred to as the "The Silent World" by Jacques Cousteau, has now become an increasingly noisy place since the industrial age. It is estimated that the ambient ocean noise has increased ten decibels (ten times increase in sound) between 1950 and 1975 (Ross, D. 1993).

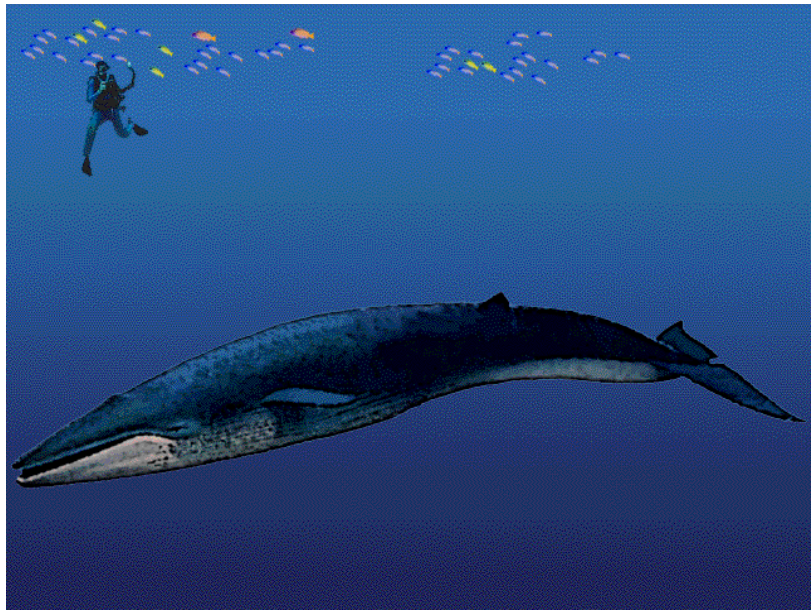
Many underwater realms have become very noisy. An increase in motorboats, primarily commercial shipping traffic, exploration and extraction of oil and other minerals, sonar and even coastal jet ski traffic are contributing to the increased

level of underwater noise. "If you could lay down under the shipping lanes at Great South Channel (off Cape Cod) and spend the day there, you would get the impression of being on the tarmac at Logan Airport," said Christopher W. Clark, who runs the Bioacoustics Research Program at Cornell University.

Sound travels four times faster in water (1,230 meters/sec.) than in air (340 meters/sec.) because water molecules are packed tighter together. This results in sound that will also travel farther under water. High intensity sound in the oceans can travel for thousands of miles. In this regard it is important to remember that since water has a much greater density than does air that sound waves travel through water at much higher energy levels and are hence louder.

The effects of noise pollution are not as easy to notice as are the other more obvious and visible pollutants like oil spills and marine debris. To what extent these manmade sounds are negatively impacting the oceans is not fully known. The current high noise pollution levels are so recent that many individual marine mammals and fish alive today were born before the problem even arose. The long term impact is simply not yet known.

We know that whales and dolphins use sound to communicate with each other over vast distances. Other marine species use sound to find food and choose mates as well as warn others of potential dangers. Whales communicate at very low frequencies, below 1000 Hertz. This is the



same frequency that resonates from many human-caused activities. Man-made sounds are drowning out the calls of mates, calves and other pods that these mammals depend on. High sound levels cause grey whales to deviate from their migration paths, the deviation being greater as sound intensity increases (Tyack P. L., Clark C.W., 1998).

More recently, new sources of marine sound pollution have been added to the mix. The one source having the most immediate and obvious negative effect has been the development and subsequent testing of "Low-frequency Active (LFA) Sonar" with a potential worldwide deployment by the U.S. Navy and NATO. There have been several tests that have directly resulted in large losses in marine life.

During March of 2000, at least 17 whales stranded themselves in the Bahamas and the population of beaked whales in this region disappeared. A federal investigation identified testing of a U.S. Navy active sonar system as the cause. According to an article posted by the Natural Resources Defense Council, "More than a dozen harbor porpoises were found dead on the beach near the San Juan Islands soon after the Navy tested active sonar in the Haro Strait in May. Videotape shows a pod of orca whales in the foreground behaving erratically as the Shoup, a U.S. Navy vessel, emits loud sonar blasts. Recent tests on one of the harbor porpoises revealed injuries consistent with acoustic trauma." ([Juan Islander press release, 2003](#)) ([Stranded Whale image from U.S. Marine Mammal Commission](#))



Scientists are now working on the big question of which frequencies and at what levels noise negatively effects marine life. Some sounds are used with the intent to have a positive effect on the marine environment. Some fishing companies are using a pinging noise to keep the bycatch of marine mammals to a minimum. The sound of a motor boat helps warn some marine life that there is a potential danger. These sounds do, however, add to the noise pollution and their full effects are not known. According to the Navy's own studies, LFA generates sounds up to 140 decibels -- even more than 300 miles away from the sonar source. Despite public statements acknowledging the link between these and other negative effects, the U.S. Navy/NATO only stopped using LFA as ordered by a Federal Court ruling on August 26, 2003 in San Francisco, California. United States Magistrate Judge Elizabeth Laporte barred the planned global deployment as it was found to violate the Marine Mammal Protection Act, the Endangered Species Act as well as the National Environmental Policy Act. She also ordered the Navy to reduce the system's potential harm to marine mammals and fish by negotiating limits on the use with the conservation groups who brought the suit (Natural Resources Defense Council press release, 2003). The plaintiffs included NRDC, the Humane Society, the League for Coastal Protection, the Cetacean Society International, and the Ocean Futures Society and its president, Jean-Michel Cousteau.

Dr. Sylvia Earle, oceanographer, marine botanist, ecologist, writer, and former Chief Scientist at the United States National Oceanic & Atmospheric Administration (NOAA), summarizes the problem of noise pollution. "Undersea noise pollution is like the death of a thousand cuts. Each sound in itself may not be a matter of critical concern, but taken all together, the noise from shipping, seismic surveys, and military activity is creating a totally different environment than existed even 50 years ago. That high level of noise is bound to have a hard, sweeping impact on life in the sea."

(Natural Resources Defense Council, 1999)

Regulating these sound sources can be difficult but one has to start somewhere. Unless we really understand how that vast system works and take better care, it isn't just the ocean that's in jeopardy.

What can you do about it?

- ***Buy local***

Try to consume those products grown or manufactured close to where you live so as to reduce the amount of goods that need to be shipped. International commerce and goods shipping is very important and has become a vital part of the global economy, however, until the full effects of this commercial traffic is known or alternate methods of transportation which produce less noise pollution are used we must reduce this hazard.

- ***If you are a boat owner, keep your boat clean and in proper working order.***

Be sure to regularly clean your propeller as this has a great effect on the amount of underwater sound emitted. Boat owners should also keep their engines well tuned and insulated from the hull to reduce noise pollution.

- ***Pick your recreation areas with care.***

If you have a jet ski or other motor craft, avoid sensitive marine areas.

FK note:

This is a poor quality list of how to address the problems listed above!