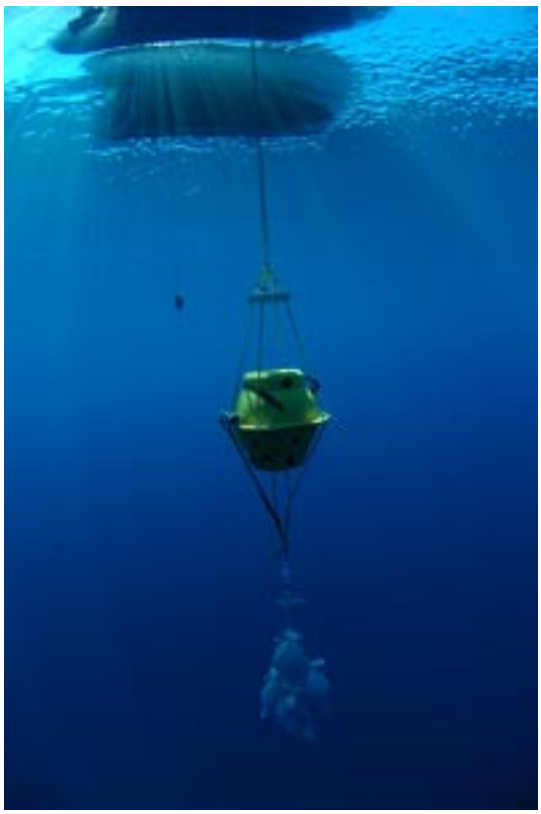
Cornell listens for whales amid undersea oil clouds

Cornell University
By Pat Leonard [1]

Out of sight, whales cruise the Gulf of Mexico depths -- their hidden world threatened by huge clots of drifting oil from the ruptured Deepwater Horizon well. At the same time, there is almost no data available to measure changes to the Gulf's ecosystem -- including whale populations -- caused by the massive leak.

"Night after night, on TV and on webcams, we see oil spewing from the bottom of the ocean," said Christopher Clark, head of the Bioacoustics Research Program at the Cornell Lab of Ornithology. "You wonder 'What can we do? What's the impact of this?' In the case of marine mammals, we don't know because we don't even know what's there."

But now, Clark and his team are collaborating with the National Oceanic and Atmospheric Administration (NOAA) in a multipronged effort to discover the numbers and locations of whales and assess the potential impact of oil clouds drifting below the surface -- a by-product of the oil spill and the dispersants used to break up the oil slick. The team will anchor 22 marine autonomous recording units (MARUs) to the sea floor in an arc stretching from Texas to western Florida, along the edge of the continental shelf. These units will record underwater sounds for three months before they receive a signal to let go of their tethers and pop to the surface for retrieval. After analyzing the data, the team will deliver a report to NOAA and other agencies involved in the oil leak response.



Danielle Cholewiak, BRP

Researchers deploy recording units.

The MARUs will listen for endangered sperm whales and a small population of Bryde's (BRU-des) whales. They will also pick up sounds of fish and ship traffic. Some devices will be placed in areas apparently unaffected by the oil to collect "control" site information; others will be close to the gushing well. The goal is to document the state of the sounds in the ecosystem over an extended period of time and compare them with known information of the oil spill.

"This will be the first large-scale, long-term, acoustic monitoring survey in the Gulf of Mexico," Clark said. "We can provide one more layer of understanding about this ecosystem, using sound to measure animal occurrences, distributions and communication, as well as background noise levels from shipping and weather, and perhaps visualize how these features are being influenced by the oil. The whales are like oversized canaries in the coal mine -- they reflect the health of the environment they live in."

Clark says sperm whales are ideal subjects to monitor. They are big, and they hunt for squid at great depths (about 1,000 meters down) using echolocation. Once they detect prey, they emit a very rapid sequence of clicks. By measuring the number of clicks in a given time period, scientists learn about the whales' hunting success and may estimate how many animals are nearby.

Clark is also seeking funding to use free-floating recording units to record the

ocean's electrical conductivity -- a measurement directly related to how much oil is in the water. Such a device could also continuously record ocean sounds and help researchers confirm how many animals inhabit oiled parts of the gulf. Clark feels strongly that even after the current set of recording devices is removed in early October, others should be deployed to continue monitoring throughout the year.

Pat Leonard is a staff writer at the Cornell Lab of Ornithology.

SOURCE [2]

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