

Studying the otherworldly sounds in Antarctic waters

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In freezing Antarctic waters, amid bobbing chunks of floating ice, the hums, pitches and echoes of life in the deep are helping scientists understand the behavior and movements of marine mammals.

"There are species which make impressive sounds, literally like Star Wars, they sound like spaceships," said Colombian scientist Andrea Bonilla, who is carrying out research with underwater microphones off Antarctica's coast.

The biologist from Cornell University in New York submerges a hydrophone covered in titanium and attached to a buoy, into the frigid water. The device is like a camera trap in the wild, except it picks up aquatic sounds.

Her team, part of a Colombian scientific expedition to the Southern Ocean, also picks up devices they left a year prior for analysis.

The research also gives scientists data on how human activity and environmental pollution affect sea life in one of the best conserved parts of the planet.

Nearby, a colony of penguins waddle along a giant block of floating ice.

A humpback whale comes to the surface for some air during a stint in the region for the austral summer—a time for feeding and building up energy before their massive trek to warmer climes around the equator in the breeding season.



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'Sound is essential'

Bonilla describes the first time she heard whale song underwater as having "changed her life."

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"In a marine environment sound is essential," said Bonilla, adding that any interruption can affect some species ability to hunt.

Weddell seals and leopard seals also emit high-pitched songs in different tones and often harmonious compositions.

During their expedition the scientists install three underwater microphones, two in the Bransfield Strait and one in the Drake Passage.



Colombian researcher Andrea Bonilla checks one of the hydrophones used to listen to life in the deep.



Aside from placing new devices in the waters, the team which is part of a Colombian scientific expedition in Antarctica is retrieving those they left a year prior for analysis.

The team also follows a set of coordinates to find the buoy left by Bonilla a year ago. When they are within 300 meters (1,000 feet) of it, she can send remote signals to find its exact location.

Her delighted teammates pat her on the back as she successfully retrieves the hydrophone from 500 meters deep.

"I am so excited because it was the first time we did this maneuver in these waters. It all went super well," said Bonilla.

The scientist will use spectrograms—a visual representation of sound—to extract information not only about the movement of marine mammals, but also geophysics.

The hydrophones also capture low frequencies that can pick up the sounds of earthquakes or melting ice.

The research has another goal, supporting a proposal pushed by Chile and Argentina since 2012 to convert the Antarctic Peninsula into a protected marine area.

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