

Depression marks on seafloor suggest whales might be visiting prospective mining sites

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A trio of researchers with the National Oceanography Centre in the U.K. has found depression marks on the sea floor in a very deep part of the ocean—they suggest the marks may have been made by deep-diving

whales. In their paper published in the journal *Royal Society Open Science*, Leigh Marsh, Veerle Huvenne and Daniel Jones describe how they found the marks, and why they believe they might have been made by whales.

In recent years, scientists have discovered that the [seafloor](#) is home to many rocky nodules that harbor valuable materials such as rare-earth elements and metals such as copper. Eager to cash in, companies have begun the process of sending machinery down to the bottom of the sea to set up mining operations. The researchers with this new effort suspected that such mining operations might cause problems for creatures that make use of the seafloor. They have been sending remotely controlled vehicles down below to study the ocean floor to find out. Past evidence has shown some creatures, such as starfish, live at very great depths. In this latest effort, they report that they might have found evidence of a type of whale making use of the seabed to forage for food—also at very great depths.

The researchers have been focusing on an area known as the Clarion-Clipperton Fracture Zone, a large swath of seafloor located between Mexico and Hawaii—past research has shown it is a region with a lot of rocky nodules. The remote vehicles they sent to the bottom of the ocean were outfitted with side-scan sonar, which can scan the seafloor looking for geographic features of the underwater terrain. The researchers report that they have found what they describe as a series of depressions resembling tracks made by [beaked whales](#) in other parts of the world. But what is unusual is the depth—from 3,999 to 4,258 meters. That is far deeper than any other observed tracks.

The researchers believe the depressions were caused by deep-diving [whales](#) sifting seafloor debris looking for food. They acknowledge that more research will need to be done to prove that the marks were made by whales—but if their suspicions turn out to be correct, it could impact

licensing for mining in such areas.

More information: Leigh Marsh et al. Geomorphological evidence of large vertebrates interacting with the seafloor at abyssal depths in a region designated for deep-sea mining, *Royal Society Open Science* (2018). [DOI: 10.1098/rsos.180286](https://doi.org/10.1098/rsos.180286)

Abstract

Exploration licences for seafloor mineral deposits have been granted across large areas of the world's oceans, with the abyssal Pacific Ocean being the primary target for polymetallic nodules—a potentially valuable source of minerals. These nodule-bearing areas support a large diversity of deep-sea life and although studies have begun to characterize the benthic fauna within the region, the ecological interactions between large bathypelagic vertebrates of the open ocean and the abyssal seafloor remain largely unknown. Here we report seafloor geomorphological alterations observed by an autonomous underwater vehicle that suggest large vertebrates could have interacted with the seafloor to a maximum depth of 4258 m in the recent geological past. Patterns of disturbance on the seafloor are broadly comparable to those recorded in other regions of the world's oceans attributed to beaked whales. These observations have important implications for baseline ecological assessments and the environmental management of potential future mining activities within this region of the Pacific.

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