

Fossil find shows ancient beaked whale hunted fish in shallow waters

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Life reconstruction of three individuals of the extinct beaked whale *Messapicetus gregarius* preying upon a school of aged sardines *Sardinops* sp.

(average body length 38.8 cm) in the upper part of the water column along the coast of nowadays Peru. The front individual is an adult male, whereas the last in the background is a female. Illustration by A. Gennari. Credit: *Proceedings of the Royal Society B*, Published 9 September 2015. DOI: 10.1098/rspb.2015.1530

(Phys.org)—A team of researchers from several institutions in Europe and Peru has found evidence of an ancient ziphiid (toothed beaked whale) that unlike its modern ancestors, hunted near the surface of the sea. In their paper published in *Proceedings of the Royal Society B*, the group describes their study of the whale fossil found in a dolomite concretion beneath the sea bed off the coast of Peru last year.

Modern Ziphiidae dive down to great depths to find prey such as [fish](#) and squid—their dolphin-like snouts and teeth allow them to capture prey and eat it, a marked difference from other [whales](#) that suck in huge amounts of water and filter the small creatures in it as their means of sustenance. The fossil that was found, the group claims, is the first known example of a ziphiid eating fish near the surface.

The researchers believe the whale captured and consumed a large number of sardine-like fish, then a very short time later, died, possibly due to also ingesting a toxin of some sort, fell to the ocean floor and was entombed—but not before disgorging some of the contents of its belly. The fossil was found embedded in rock with multiple small fish inside of its body and in the immediate area surrounding it. Dating of material in the rock placed the age of the whale and surrounding fish to approximately nine to ten million years ago, placing them in the Late Miocene.

The fossils were all in remarkably good shape—the team could make out scales on the fish, which is why they believe that they had not had much

time to be digested before the whale that ate them died. More importantly, the fish were not deep sea dwellers, which indicated that the whale hunted near the surface at least part of the time. The number of fish, 40 to 60 of them, and their average size of 39 centimeters, the team notes, is in line with a bellyful of fish caught by the whales' modern cousins. They note also that dolphins moved into the area not much later, displacing the whales, forcing them to seek food in deeper waters.

More information: No deep diving: evidence of predation on epipelagic fish for a stem beaked whale from the Late Miocene of Peru, *Proceedings of the Royal Society B*, Published 9 September 2015. [DOI: 10.1098/rspb.2015.1530](https://doi.org/10.1098/rspb.2015.1530)

Abstract

Although modern beaked whales (Ziphiidae) are known to be highly specialized toothed whales that predominantly feed at great depths upon benthic and benthopelagic prey, only limited palaeontological data document this major ecological shift. We report on a ziphiid–fish assemblage from the Late Miocene of Peru that we interpret as the first direct evidence of a predator–prey relationship between a ziphiid and epipelagic fish. Preserved in a dolomite concretion, a skeleton of the stem ziphiid *Messapicetus gregarius* was discovered together with numerous skeletons of a clupeiform fish closely related to the epipelagic extant Pacific sardine (*Sardinops sagax*). Based on the position of fish individuals along the head and chest regions of the ziphiid, the lack of digestion marks on fish remains and the homogeneous size of individuals, we propose that this assemblage results from the death of the whale (possibly via toxin poisoning) shortly after the capture of prey from a single school. Together with morphological data and the frequent discovery of fossil crown ziphiids in deep-sea deposits, this exceptional record supports the hypothesis that only more derived ziphiids were regular deep divers and that the extinction of epipelagic forms may coincide with the radiation of true dolphins.

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