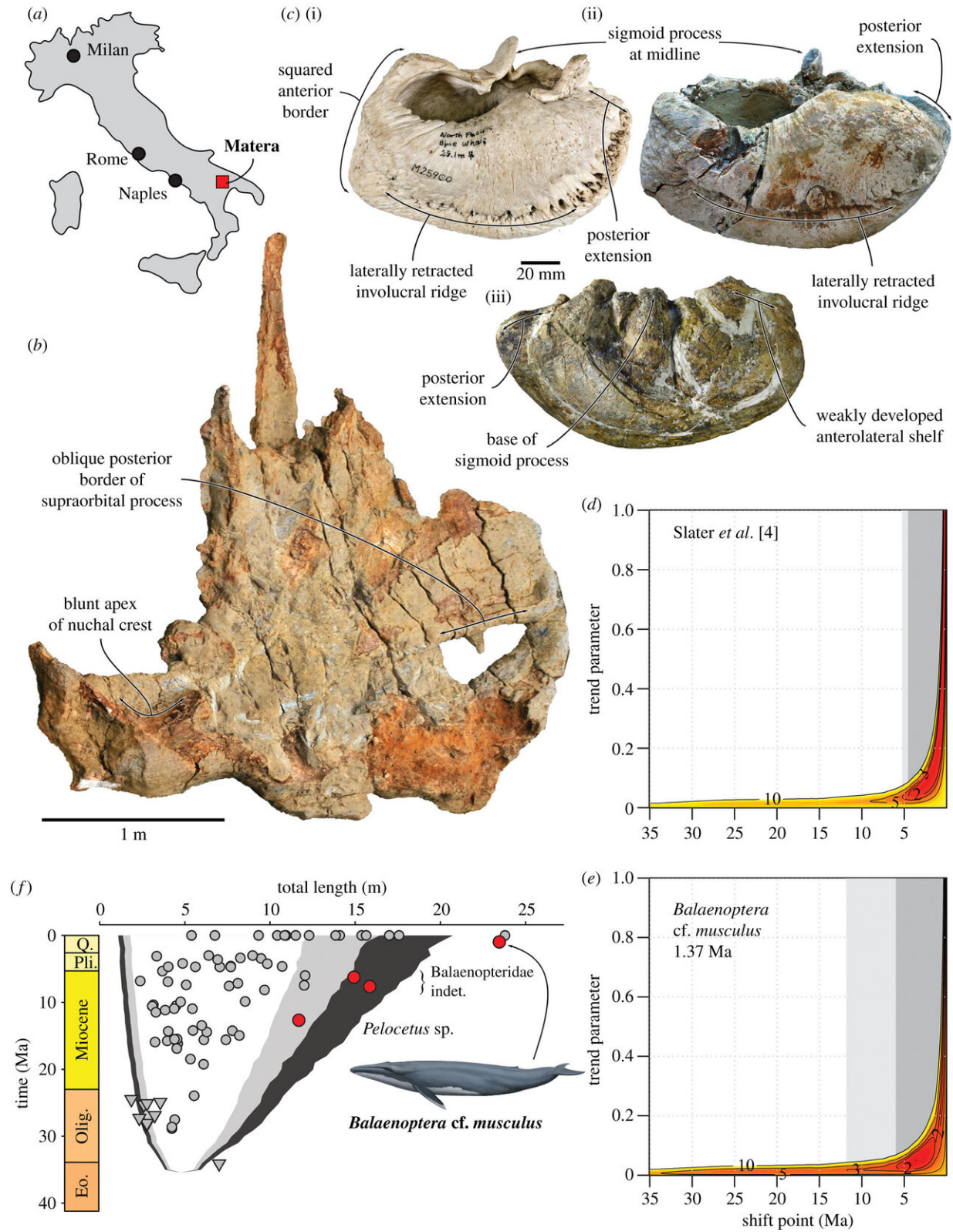


# **Blue whale fossil provides evidence that baleens grew large earlier than thought**

May 1 2019, by Bob Yirka

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New whale fossils from Italy and Peru imply an early origin of modern mysticete

gigantism. (a) Map of Italy showing the fossil locality of *Balaenoptera cf. musculus*. (b) Cranium of *Balaenoptera cf. musculus*, in dorsal view. (c) Right tympanic bulla of *B. musculus* (National Museum of Nature and Science specimen M25900), in dorsal view (i), and *B. cf. musculus* in dorsal (ii) and ventrolateral (iii) view. (d) Support surface for the mode shift model from Slater et al.; dark and light grey bars denote the range of the 2- and 3-unit support regions, respectively. (e) Support surface for the mode shift model with *B. musculus* truncated at 1.37 Ma, but with the Peruvian fossils excluded. (f) Mysticete body length plotted against time, and compared with the 80 (white), 90 (grey) and 95% (black) quantiles of 1000 BM simulations on the baleen whale phylogeny of [4]; grey circles are chaeomysticetes, triangles toothed mysticetes, and red circles the new fossils from Italy and Peru. Note that the BM simulations were carried out on a phylogeny that did not include the specimens described here; their placement relative to the quantiles is thus merely indicative. (d–f) Modified from Slater et al. Photo in (b) by Akhet s.r.l. (akhet.it). Drawing of *B. musculus* by Carl Buell. Credit: *Biology Letters* (2019). DOI: 10.1098/rsbl.2019.0175

A team of researchers with members from Italy, Australia, and Belgium has found evidence that suggests baleen whales grew large earlier than has been thought. In their paper published in the journal *Biology Letters*, the group describes their study of a whale fossil that was found in 2006 and how old it was.

Baleen whales are very large creatures—the biggest of them, the [blue whale](#), is not just the largest animal alive today—it is the largest animal in evolutionary history. Prior research has shown that [baleen](#) whales are able to grow so large because they live in the ocean, which allows whales to counter the impact of gravity with buoyancy—and because the evolution of the baleen allowed them to catch and consume a huge amount of food in short order.

For many years, there has been some debate among ocean scientists

regarding why the whales grew so big and when it happened. In recent years, a general consensus has maintained that they likely grew large rapidly approximately 300,000 years ago—though researchers have suggested that it could have been as far back as 4.5 million years ago. Researchers believe that at some point in time, the climate changed in a way that very strongly impacted krill, the main baleen food source. In order to survive, the [whales](#) would have had to eat huge amounts of the tiny sea creatures before swimming a very long way to find another meal. But now, this theory is being challenged by the team studying a blue [whale fossil](#) found in Italy.

The researchers report that the fossil is that of a blue whale approximately 26 meters in length. Dating shows that the fossil is approximately 1.5 million years old. When the researchers added data from the blue whale to data from other baleen fossils, they came up with a new time scale—they suggest that the large size of the [baleen whales](#) occurred about 3.6 million years ago, and maybe even as far back as 6 million years ago. They also suggest that the change in size likely developed gradually. But they also acknowledge that much more work is required to give their theory credence, which will involve finding more ancient whale fossils to study.

**More information:** Giovanni Bianucci et al. Rise of the titans: baleen whales became giants earlier than thought, *Biology Letters* (2019). [DOI: 10.1098/rsbl.2019.0175](https://doi.org/10.1098/rsbl.2019.0175)

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