

# World's oldest comma shrimp was way ahead of the curve

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*Eobodotria muisca*. Credit: Javier Luque

Scientists have discovered the world's oldest "comma" shrimp, a tiny crustacean shaped like its punctuation namesake.

The 90-million-year-old creature fills in a major evolutionary gap for a [family](#) of marine animals now found in abundance around the planet,

according to researchers from Yale and the University of Alaska. The discovery appears in the journal *Proceedings of the Royal Society B* on Nov. 27.

The fossilized shrimp, named *Eobodotria muisca*, comes from Mesozoic rocks in tropical South America. Researchers found exceptionally well-preserved fossils representing more than 500 individuals between 6 and 8 millimeters long, with features that are rarely preserved in fossil crustaceans: mouthparts, the gut, tiny hairs, and small compound eyes.

"We are amazed by how similar *Eobodotria muisca* is to today's species," said Yale paleontologist Javier Luque, lead author of the study. "There are eight families or main groups of living comma shrimp, and none of them have a confirmed fossil occurrence. This means we had no idea when modern comma shrimp evolved, until now."

The only previous record of a modern-looking comma shrimp is a 160-million-year-old fossil from Europe, Luque said. Although that shrimp fit within the range of comma shrimp body forms, it couldn't be linked to any of the main modern families of comma shrimp.

*Eobodotria muisca*, on the other hand, belongs to the Bodotriidae family of living comma shrimp, Luque said, extending the fossil record of that family of shrimp by nearly 100 million years.

The new species lived during the mid-Cretaceous period, when a long, narrow inland sea covered a large part of what is today the Eastern and Central Andes of Colombia. Luque found the fossils together with fossils of the crab *Callichimaera perplexa*. *Eobodotria muisca* is named after the Muisca native Americans who lived in the Colombian Andes.

Luque said that the similarity between *Eobodotria muisca* and its modern relatives suggests that the rates of external anatomical changes over

millions of years in this group was low compared to other crustacean groups found in the same location. He also noted that the new cache of fossils is the first of its kind in northern South America.

Sarah Gerken of the University of Alaska-Anchorage is co-author of the study.

Gerken and Luque said most of the *Eobodotria muisca* fossils they found were adult males. Large aggregations of males usually happen in the water column when they are searching for females by means of their large antennae for smelling and their flappy tail appendages for swimming—both features that females lack, the researchers explained.

One possible explanation for this unusual accumulation of [adult males](#) is that they could have died suddenly in the [water column](#) while swarming in search of females, and then sunk down to the soft bottom where they fossilized, Gerken and Luque said.

The researchers said the discovery not only helps paleontologists understand the origin of the comma [shrimp](#)'s curved body, it also can be used to help understand the origins of related crustaceans on the evolutionary family tree.

**More information:** Javier Luque et al. Exceptional preservation of comma shrimp from a mid-Cretaceous Lagerstätte of Colombia, and the origins of crown Cumacea, *Proceedings of the Royal Society B: Biological Sciences* (2019). [DOI: 10.1098/rspb.2019.1863](https://doi.org/10.1098/rspb.2019.1863)

Provided by Yale University

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