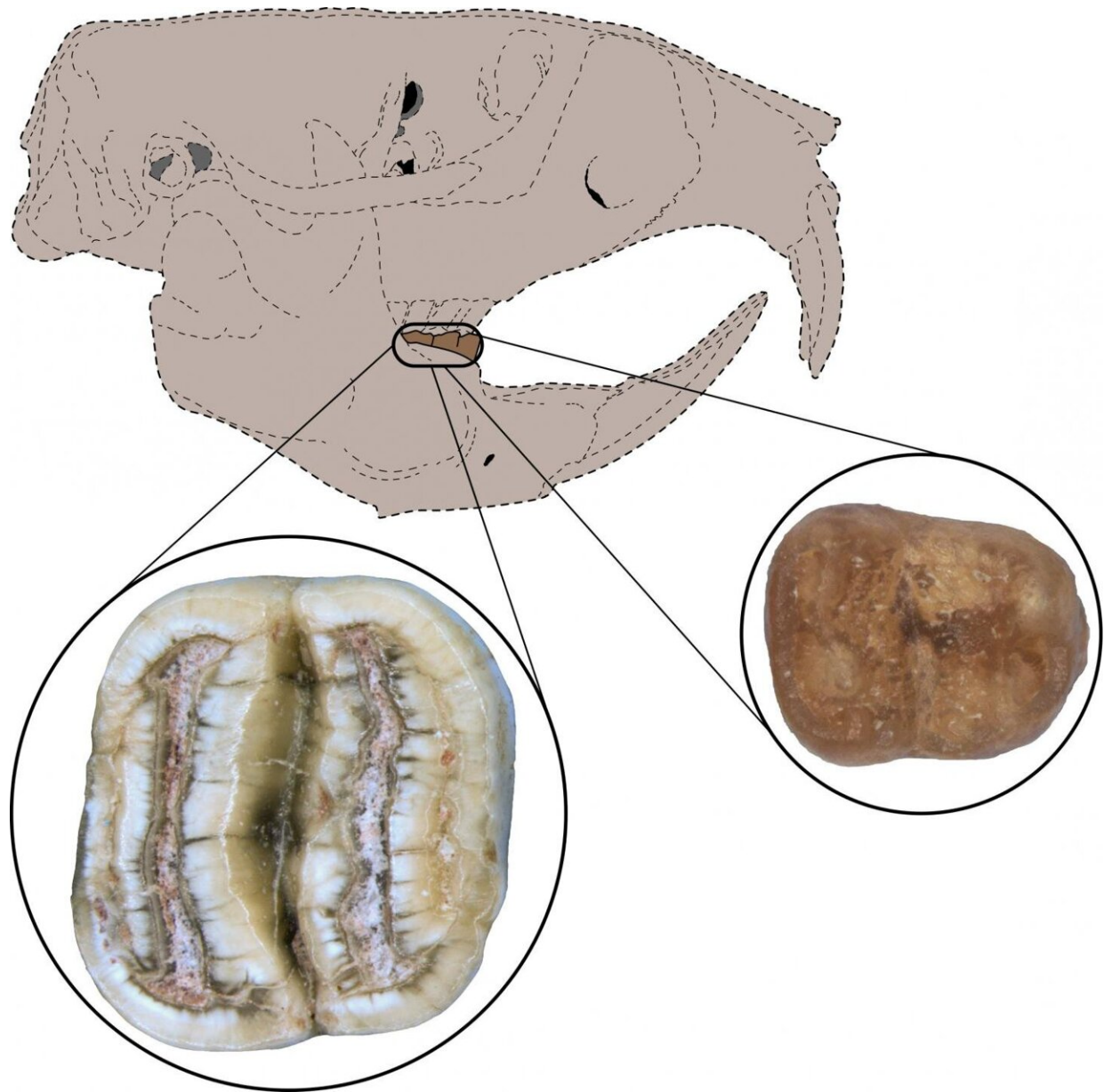


Fossil rodent teeth add North American twist to Caribbean mammals' origin story

July 15 2021, by Natalie Van Hoose



Two teeth discovered in Puerto Rico provide the first evidence of a Caribbean rodent with North American roots. Researchers named the new genus and species *Caribeomys merzeraudi*. This artist's reconstruction shows the likely position of the fossil molars in *C. merzeraudi*'s skull. Credit: Jorge Velez-Juarbe

Two fossil teeth from a distant relative of North American gophers have scientists rethinking how some mammals reached the Caribbean Islands.

The teeth, excavated in northwest Puerto Rico, belong to a previously unknown [rodent](#) genus and species, now named *Caribeomys merzeraudi*. About the size of a mouse, *C. merzeraudi* is the Caribbean's smallest known rodent and one of the region's oldest, dating back about 29 million years.

It also represents the first discovery of a Caribbean rodent from a North American lineage, a finding that complicates an idea that has persisted since Darwin—that land-dwelling mammals colonized the islands from South America. The presence of *C. merzeraudi* in Puerto Rico suggests a second possibility: Some species may have rafted from North America.

The tiny rodent joins two other types of animals, an extinct rhinoceros-like species and bizarre, venomous shrews known as Solenodons, as the only known examples of Caribbean land-dwelling mammals with North American roots.

"This discovery demonstrates that overwater dispersal from North America was also a potential pathway to the Caribbean," said study co-author Jorge Velez-Juarbe, associate curator of mammalogy at the Natural History Museum of Los Angeles County. "This challenges what we thought we knew about the origins of Antillean terrestrial mammals."



Jorge Velez-Juarbe discovered a fossil site in San Sebastian, Puerto Rico, with fellow undergraduate students in 2006. Excavations have produced fossils from sharks and rays, fish, turtles, a gharial, sea cows and the oldest known frog and rodents in the Caribbean. From top, the paleontologists pictured here are Lazaro Vinola Lopez, Jorge Velez-Juarbe, Francois Pujos and Laurent Marivaux. Credit: Pierre-Olivier Antoine

While Caribbean ecotourism brochures generally don't feature splashy images of rats, the islands were once home to a rich representation of rodents, including spiny rats, chinchillas, rice rats and hutias—all descendants of South and Central American forebears.

Fossil and molecular evidence suggest these rodents arrived in the islands in multiple waves over time, though how they got there—whether by scurrying over an ancient land bridge, island-hopping or rafting—has been hotly contested. The paucity of fossils from the early years of the Caribbean Islands further obscures the picture of the region's past biodiversity.

Caribeomys merzeraudi's teeth were so unusual that researchers initially struggled to discern what kind of animal they had come from, said study co-author Lazaro Vinola Lopez, a doctoral student in vertebrate paleontology at the Florida Museum of Natural History.

"We didn't know what it was for several months," he said. "We wondered whether this could be some other rodent from the Caribbean or even some kind of strange fish. It was so puzzling because they're not similar to anything else we had found in that region."

The team eventually pinpointed several tooth characteristics that are hallmarks of rodents known as geomorphs, a group that includes kangaroo rats, pocket mice and gophers. *Caribeomys merzeraudi* is the first geomorph found outside North America.



The advanced state of wear on this *Caribeomys merzeraudi* fossil molar, seen from above in this CT image, leads researchers to believe it came from an old adult. Credit: The Palaeontological Association

An exceptionally thick layer of tooth enamel, among other features, sets *C. merzeraudi* apart from its relatives and could indicate these rodents belonged to a distinct West Indian branch that evolved in isolation over several million years, Vinola Lopez said.

Scientists found the teeth while screen-washing sediment collected from a river outcrop in San Sebastian, a site that has yielded fossil sharks and rays, fish, turtles, a gharial, sea cows and the oldest known frog in the Caribbean, a coqui. In 2019, the team excavated fossil evidence of two large chinchillas, which likely grew up to 30 pounds. These South American rodents once shared Puerto Rico with the humble *C. merzeraudi*, which weighed less than a quarter pound.

Today, hutias, bats and Solenodons are the "last survivors of what was once a much more diverse group of Caribbean mammals" that included sloths and primates, Velez-Juarbe said.

Discovering *C. merzeraudi* opens up the tantalizing possibility that Caribbean mammals with North American origins may not be as exceptional as previously thought, Vinola Lopez said. But there's only one way to find out: "Go back to the locality and see what else we can find."

More information: Laurent Marivaux et al, An unpredicted ancient colonization of the West Indies by North American rodents: dental evidence of a geomorph from the early Oligocene of Puerto Rico, *Papers in Palaeontology* (2021). [DOI: 10.1002/spp2.1388](https://doi.org/10.1002/spp2.1388)

Provided by Florida Museum of Natural History

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