

# UF scientists name new ancient camels from Panama Canal excavation

February 29 2012

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The discovery of two new extinct camel species by University of Florida scientists sheds new light on the history of the tropics, a region containing more than half the world's biodiversity and some of its most important ecosystems.

Appearing online this week in the [Journal of Vertebrate Paleontology](#), the study is the first published description of a fossil mammal discovered as part of an international project in Panama. Funded with a grant from the National Science Foundation, UF paleontologists and geologists are working with the Panama Canal Authority and scientists at the Smithsonian Tropical Research Institute to make the most of a five-year window of excavations during Panama Canal expansions that began in 2009.

The discovery by [Florida Museum of Natural History](#) researchers extends the distribution of mammals to their southernmost point in the ancient tropics of Central America. The tropics contain some of the world's most important ecosystems, including rain forests that regulate climate systems and serve as a vital source of food and medicine, yet little is known of their history because lush vegetation prevents paleontological excavations.

"We're discovering this fabulous new diversity of animals that lived in Central America that we didn't even know about before," said co-author Bruce MacFadden, vertebrate paleontology curator at the Florida Museum on the UF campus and co-principal investigator on the NSF

grant funding the project. "The family originated about 30 million years ago and they're found widespread throughout North America, but prior to this discovery, they were unknown south of Mexico."

Researchers described two species of ancient camels that are also the oldest mammals found in Panama: *Aguascalietia panamaensis* and *Aguascalientia minuta*. Distinguished from each other mainly by their size, the camels belong to an evolutionary branch of the [camel](#) family separate from the one that gave rise to modern camels based on different proportions of teeth and elongated jaws.

"Some descriptions say these are 'crocodile-like' camels because they have more elongated snouts than you would expect," said lead author Aldo Rincon, a UF geology doctoral student. "They were probably browsers in the forests of the ancient tropics. We can say that because the crowns are really short."

Rincon discovered the fossils in the Las Cascadas formation, unearthing pieces of a jaw belonging to the same animal over a span of two years, he said.

"When I came back to the museum, I started putting everything together and realized, 'Oh wow, I have a nearly complete jaw,'" Rincon said.

The study shows that despite Central America's close proximity to South America, there was no connection between continents because mammals in the area 20 million years ago all had North American origins. The Isthmus of Panama formed about 15 million years later and the fauna crossed to South America 2.5 to 3 million years ago, MacFadden said.

Barry Albright, a professor of earth science at the University of North Florida who studied the early Miocene fauna of the Gulf Coast Plain, said he was surprised by the similarity of the Central American fauna.

"To me, it's slightly unexpected," Albright said. "That's a large latitudinal gradient between the Gulf Coastal Plain and Panama, yet we're seeing the same mammals, so perhaps that tells us something about climate over that interval of time and dispersal patterns of some mammals over that interval of time."

Camels belong to a group of even-toed ungulates that includes cattle, goats, sheep, deer, buffalo and pigs. Other [fossil](#) mammals discovered in Panama from the early Miocene have been restricted to those also found in North America at the time. While researchers are sure the ancient camels were herbivores that likely browsed in forests, they are still analyzing seeds and pollen to better understand the environment of the ancient tropics.

"People think of camels as being in the Old World, but their distribution in the past is different than what we know today," MacFadden said. "The ancestors of llamas originated in North America and then when the land bridge formed about 4 to 5 million years ago, they dispersed into South America and evolved into the llama, alpaca, guanaco and vicuña."

Researchers will continue excavating deposits from the [Panama Canal](#) during construction to widen and straighten the channel and build new locks, expected to continue through 2014. The project is funded by a \$3.8 million NSF grant to develop partnerships between the U.S. and Panama and engage the next generation of scientists in paleontological and geological discoveries along the canal. Study co-authors include Jonathan Bloch of UF, and Catalina Suarez and Carlos Jaramillo of the Smithsonian Tropical Research Institute.

Provided by University of Florida

Citation: UF scientists name new ancient camels from Panama Canal excavation (2012, February

29) retrieved 19 April 2024 from <https://phys.org/news/2012-02-uf-scientists-ancient-camels-panama.html>

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