

Scientists discover new crocodilian, hippo-like species from Panama

March 5 2013, by Danielle Torrent

University of Florida paleontologists have discovered remarkably well-preserved fossils of two crocodilians and a mammal previously unknown to science during recent Panama Canal excavations that began in 2009.

The two new ancient [extinct alligator-like animals](#) and an extinct hippo-like [species](#) inhabited Central America during the Miocene about 20 million years ago. The research expands the range of ancient animals in the [subtropics](#)—some of the most diverse areas today about which little is known historically because lush vegetation prevents paleontological excavations—and may be used to better understand how climate change affects species dispersal today. The two studies appear online today in the same issue of the [Journal of Vertebrate Paleontology](#).

The fossils shed new light on scientists' understanding of [species distribution](#) because they represent a time before the formation of the Isthmus of Panama, when the continents of North and South America were separated by oceanic waters.

"In part we are trying to understand how ecosystems have responded to animals moving [long distances](#) and across geographic barriers in the past," said study co-author Jonathan Bloch, associate curator of vertebrate paleontology at the [Florida Museum of Natural History](#) on the UF campus. "It's a testing ground for things like invasive species – if you have things that migrated from one place into another in the past, then potentially you have the ability to look at what impact a new species might have on an ecosystem in the future."

The research was funded by the National Science Foundation [Panama Canal](#) Partnerships in International Research and Education project, which supports paleontological excavation of the canal during construction expected to continue through 2014.

"We're very fortunate we could get the funding for PIRE to take advantage of this opportunity—we're getting to sample these areas that are completely unsampled," said Alex Hastings, lead author of the crocodilian study and a visiting instructor at Georgia Southern University who conducted the research for the project as a UF graduate student.

Researchers analyzed all known crocodilian fossils from the Panama Canal, including the oldest records of Central American caimans, which are cousins of alligators. The more primitive species, named *Culebrasuchus mesoamericanus*, may represent an evolutionary transition between caimans and alligators, Hastings said.

"You mix an alligator and one of the more primitive caimans and you end up with this caiman that has a much flatter snout, making it more like an alligator," Hastings said. "Before this, there were no fossil crocodilian skulls known from Central America."

Christopher Brochu, an assistant professor of vertebrate paleontology in the department of geoscience at the University of Iowa, said "the caiman fossil record is tantalizing," and the new data shows there is still a long way to go before researchers understand the group.

"The fossils that are in this paper are from a later time period, but some of them appear to be earlier-branching groups, which could be very important," said Brochu, who was not involved with the study. "The problem is, because we know so little about early caiman history, it's very difficult to tell where these later forms actually go on the family tree."

The new mammal species researchers described is an anthracothere, *Arretotherium meridionale*, an even-toed hooved mammal previously thought to be related to living hippos and intensively studied on the basis of its hypothetical relationship with whales. About the size of a cow, the mammal would have lived in a semi-aquatic environment in Central America, said lead author and UF graduate student Aldo Rincon.

"With the evolution of new terrestrial corridors like this peninsula connecting North America with Central America, this is one of the most amazing examples of the different kind of paths land animals can take," Rincon said. "Somehow this anthracothere is similar to anthracotheres from other continents like northern Africa and northeastern Asia."

Researchers also name a second crocodilian species, *Centenariosuchus gilmorei*, after Charles Gilmore, who first reported evidence of crocodilian fossils collected during construction of the canal 100 years ago. The genus is named in honor of the canal's centennial in 2014.

Researchers will continue excavating deposits from the Panama Canal during construction to widen and straighten the channel and build new locks. 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.

Provided by University of Florida

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