

Scientific expedition to Antarctica will search for dinosaurs and more

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Researchers disembark on Antarctica during an expedition in 2011. Credit: AP3

An international team of researchers supported by the National Science Foundation will journey to Antarctica this month to search for evidence that the now-frozen continent may have been the starting point for some important species that roam the Earth today.

Millions of years ago Antarctica was a warm and lush environment ruled by dinosaurs and inhabited by a great diversity of life. But today, the fossils that could reveal what prehistoric life was like are mostly buried under the ice of the harsh landscape, leaving the part that Antarctica played in the evolution of vertebrates (backboned animals) as one of the great unknowns in the history of life.

Leading the team are paleontologists from the Carnegie Museum of Natural History, The University of Texas at Austin, Ohio University and the American Museum of Natural History. Other collaborators include scientists from museums and universities across the U.S., Australia and South Africa.

The monthlong expedition will begin Feb. 2. Aided by helicopters, scientists will conduct research on James Ross Island and other nearby islands off the tip of the Antarctic Peninsula, one of the few spots on Antarctica where fossil-bearing rocks are accessible.

"Ninety-nine percent of Antarctica is covered with permanent ice," said Matthew Lamanna, paleontologist and assistant curator at the Carnegie Museum. "We're looking for fossils of backboned animals that were living in Antarctica at the very end of the Age of Dinosaurs, so we can learn more about how the devastating extinction that happened right afterward might have affected polar ecosystems."



A research camp buried in snow during 2011 expedition to Antarctica. Credit: AP3

The team is specifically searching for fossils from the Cretaceous through Paleogene, a period about 100 million to 40 million years ago that includes the end of the Age of Dinosaurs and the beginning of the Age of Mammals. Among the questions the team hopes to answer: Did Antarctica play a critical part in the origins of certain modern bird and mammal groups, or was the evolution of species

there more similar to what was happening in other parts of the world?

The expedition is part of the Antarctic Peninsula Paleontology Project, or AP3, a research initiative funded by the National Science Foundation.

During a previous expedition to the same area by Argentine investigators, a fossil of a new genus and species of bird was discovered that indicates Antarctica may have been an especially important place for bird evolution. The bird, a close relative of modern ducks and geese, is the only known example of a bird belonging to a modern group that lived alongside nonavian dinosaurs. Before the discovery, many scientists thought that most modern bird groups evolved after nonavian dinosaurs went extinct.

"It's impossible not to be excited to reach remote sites via helicopter and icebreaker to look for dinosaurs and other life forms from over 66 million years ago," said Julia Clarke, a professor and paleontologist at the UT Austin Jackson School of Geosciences. "The Earth has undergone remarkable changes, but through all of them, life and climate and geologic processes have been linked. A single new discovery from this time period in the high southern latitudes can change what we know in transformative ways."



Researchers in Antarctica look over horizon during 2011 AP3 expedition. Credit: AP3

Clarke, who led the research on the new bird

species, is one of the many veteran Antarctic scientists on the expedition. Ross MacPhee, a curator and professor at the American Museum of Natural History, will also be returning to the continent.

"What I hope to achieve this time is to discover the first evidence of mammals in the Cretaceous of Antarctica, species that lived at the end of the Age of Dinosaurs," MacPhee said. "If we can find them, they will have a lot to tell us about whether any evolutionary diversifications took place in Antarctica, and whether this was followed by species spreading from there to other portions of the ancient southern supercontinent Gondwana."

In addition to paleontologists, the research team includes geologists who will survey the fossil-bearing rocks to help decipher what the Antarctic environment was like at the end of the Cretaceous and the beginning of the Paleogene. During an expedition in 2011, Eric Roberts, a geologist from James Cook University in Australia, discovered evidence that the rocks on Vega Island may date to the Cretaceous-Paleogene boundary. If so, it would be one of the few Antarctic examples of rocks laid down during the time of the asteroid impact 66 million years ago that killed all nonavian dinosaurs.

The team will be using the U.S. research vessel R/V Nathaniel B. Palmer to reach the James Ross Island area.

"This trip is very exciting, as we have assembled a fantastic team of scientists and students," said Patrick O'Connor, a professor of anatomy and expert on birds and nonavian dinosaurs at the Ohio University Heritage College of Osteopathic Medicine. "Moreover, we have additional logistical support in the form of helicopters that can get us into places that have not been explored in the past. This exemplifies frontier paleontology."

The researchers will be available for interviews from Chile from Feb. 3 to Feb. 8 as they prepare to complete their journey to Antarctica. Researchers will be available for interviews from Antarctica on a limited basis.

The team will be sharing discoveries and daily life

from the Antarctic ice on the expedition website,
<http://antarcticdinos.org/> and on Twitter
@antarcticdinos.

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