

Tropical turtle discovery in Wyoming provides climate-change clues

February 24 2015, by Stephenie Livingston

Tropical turtle fossils discovered in Wyoming by University of Florida scientists reveal that when the earth got warmer, prehistoric turtles headed north. But if today's turtles try the same technique to cope with warming habitats, they might run into trouble.

While the fossil turtle and its kin could move northward with higher temperatures, human pressures and habitat loss could prevent a modern-day migration, leading to the extinction of some modern species.

The newly discovered genus and species, *Gomphochelys* (pronounced gom-fo-keel-eez) nanus, provides a clue to how animals might respond to future climate change, said Jason Bourque, a paleontologist at the Florida Museum of Natural History at UF and the lead author of the study, which appears online this week in the *Journal of Vertebrate Paleontology*.

The wayfaring turtle was among the species that researchers believe migrated 500-600 miles north 56 million years ago, during a temperature peak known as the Paleocene-Eocene Thermal Maximum. Lasting about 200,000 years, the temperature peak resulted in significant movement and diversification of plants and animals.

"We knew that some plants and lizards migrated north when the climate warmed, but this is the first evidence that turtles did the same," Bourque said. "If [global warming](#) continues on its current track, some turtles could once again migrate northward, while others would need to adapt to

warmer temperatures or go extinct."

The new turtle is an ancestor of the endangered Central American river turtle and other warm-adapted turtles in Belize, Guatemala and southern Mexico. These modern turtles, however, could face significant roadblocks on a journey north, since much of the natural habitat of these species is in jeopardy, said co-author Jonathan Bloch, a Florida Museum curator of [vertebrate paleontology](#).

"If you look at the waterways that turtles would have to use to get from one place to another, it might not be as easy as it once was," Bloch said. "Even if the natural response of turtles is to disperse northward, they have fewer places to go and fewer routes available."

To put the new turtle in evolutionary context, the researchers examined hundreds of specimens from museum collections around the country, including turtles collected during the 1800s housed at the Smithsonian Institution. Co-author Patricia Holroyd, a vertebrate paleontologist at the University of California, Berkeley, said the fossil history of the modern relatives of the new species shows they could be much more wide-ranging, if it were not for their restricted habitats.

The Central American river turtle is one of the most endangered [turtles](#) in the world, threatened by habitat loss and its exploitation as a human food source, Holroyd said.

"This is an example of a turtle that could expand its range and probably would with additional warming, but—and that's a big but—that's only going to happen if there are still habitats for it," she said.

Provided by University of Florida

Citation: Tropical turtle discovery in Wyoming provides climate-change clues (2015, February 24) retrieved 2 May 2024 from <https://phys.org/news/2015-02-tropical-turtle-discovery-wyoming-climate-change.html>

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