

Rainforest collapse drove reptile evolution

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Skull of Sphenacodon from New Mexico, one of the fossils used in the current study Image by Spencer Lucas, New Mexico Museum of Natural History

(PhysOrg.com) -- Global warming devastated tropical rainforests 300 million years ago. Now scientists report the unexpected discovery that this event triggered an evolutionary burst among reptiles -- and inadvertently paved the way for the rise of dinosaurs, 100 million years later.

This event happened during the [Carboniferous Period](#). At that time, Europe and North America lay on the equator and were covered by steamy tropical rainforests. But when the Earth's climate became hotter and drier, rainforests collapsed, triggering reptile evolution.

Dr Howard Falcon-Lang of Royal Holloway, University of London, UK explained: "[Climate change](#) caused rainforests to fragment into small 'islands' of forest. This isolated populations of [reptiles](#) and each community evolved in separate directions, leading to an increase in diversity."

Professor Mike Benton of the University of Bristol, UK added: "This is a classic ecological response to [habitat fragmentation](#). You see the same process happening today whenever a group of animals becomes isolated from its parent population. It's been studied on traffic islands between major road systems or, as Charles Darwin famously observed in the Galapagos, on oceanic islands."

Ms Sarda Sahney, also of the University of Bristol, UK said: "It is fascinating that even in the face of devastating ecosystem-collapse, animals may continue to diversify through the creation of endemic populations." However, she warned that: "Life may not be so lucky again in the future, should the [Amazon rainforest](#) collapse."

To reach their conclusions, the scientists studied the fossil record of reptiles before and after rainforest collapse. They showed that reptiles became more diverse and even changed their diet as they struggled to adapt to rapidly changing climate and environment.

More information: The new findings are published today in the journal, *Geology*. Paper: Rainforest collapse triggered Carboniferous tetrapod diversification in Euramerica by Sarda Sahney, Michael J. Benton, and Howard J. Falcon-Lang. geology.gsapubs.org/

Provided by University of Bristol

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