

New Insects, Bacteria Uncovered in Dinosaur-Era Amber Deposit

April 5 2010



Rare Ethiopian amber deposit offers fresh insights into Cretaceous-period ecosystem. Courtesy PNAS/ Matthias Svojtka

A description of a 95-million-year-old amber deposit—the first major discovery of its kind from the African continent—is adding new fungus, insects, spiders, nematodes, and even bacteria to an ecosystem that had been shared by dinosaurs. In addition, the amber deposit may provide fresh insights into the rise and diversification of flowering plants during the Cretaceous. The new paper, published in the current issue of the *Proceedings of the National Academy of Sciences*, reconstructs an ancient tropical forest uncovered in present-day Ethiopia and is the work of an international team of 20 scientists.

"Until now, we had discovered virtually no Cretaceous [amber](#) sites from

the southern hemisphere's Gondwanan [supercontinent](#)," says author Paul Nascimbene of the Division of Invertebrate Zoology at the American Museum of Natural History. "Significant Cretaceous amber deposits had been found primarily in North America and Eurasia."

"The first angiosperms, or flowering plants, appeared and diversified in the Cretaceous," says first author Alexander Schmidt of the University of Göttingen in Germany. "Their rise to dominance drastically changed terrestrial ecosystems, and the Ethiopian amber deposit sheds light on this time of change."

While some of the authors worked on the geological setting and the fossils entombed within the amber, Nascimbene, along with Kenneth Anderson from Southern Illinois University, studied the amber itself. They found that the resin that seeped from these Cretaceous Gondwanan trees is similar chemically to more recent ambers from flowering plants in Miocene deposits found in Mexico and the Dominican Republic. The amber's chemical designation is Class Ic, and it is the only Ic fossil resin discovered thus far from the Cretaceous. All other documented Cretaceous ambers are definitively from non-flowering plants, or gymnosperms.

"The tree that produced the sap is still unknown, but the amber's chemistry is surprisingly very much like that of a group of more recent New World [angiosperms](#) called Hymenaea," says Nascimbene. "This amber could be from an early angiosperm or a previously-unknown conifer that is quite distinct from the other known [Cretaceous](#) amber-producing gymnosperms."

Other team members discovered 30 arthropods that had been trapped in the amber from thirteen families of insects and spiders. These fossils represent some of the earliest African fossil records for a variety of arthropods, including wasps, barklice, moths, beetles, a primitive ant, a

rare insect called a zorapteran, and a sheet-web weaving spider. Parasitic fungi that lived on the resin-bearing trees were also found, as well as filaments of bacteria and the remains of [flowering plants](#) and ferns.

Provided by American Museum of Natural History

Citation: New Insects, Bacteria Uncovered in Dinosaur-Era Amber Deposit (2010, April 5) retrieved 10 May 2024 from <https://phys.org/news/2010-04-insects-bacteria-uncovered-dinosaur-era-amber.html>

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