

Fossilized cashew nuts reveal Europe was important route between Africa and South America

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Cashew nut fossils have been identified in 47-million year old lake sediment in Germany, revealing that the cashew genus *Anacardium* was once distributed in Europe, remote from its modern “native” distribution in Central and South America. It was previously proposed that *Anacardium* and its African sister genus, *Fegimanra*, diverged from their common ancestor when the landmasses of Africa and South America separated.

However, groundbreaking new data in the October issue of the *International Journal of Plant Sciences* indicate that Europe may be an important biogeographic link between Africa and the New World.

“The occurrence of cashews in both Europe and tropical America suggests that they were distributed in both North America and Europe during the Tertiary and spread across the North Atlantic landbridge that linked North America and Europe by way of Greenland before the rifting and divergence of these landmasses,” explain Steven R. Manchester (University of Florida), Volker Wilde (Forschungsinstitut Senckenberg, Sektion Palaeobotanik, Frankfurt am Main, Germany), and Margaret E. Collinson (Royal Holloway University of London, UK). “They apparently became extinct in northern latitudes with climatic cooling near the end of the Tertiary and Quaternary but were able to survive at more southerly latitudes.”

The cashew family (Anacardiaceae) includes trees, shrubs, and climbers prominent in tropical, subtropical, and warm temperate climates around the world. A key feature is an enlarged hypocarp, or fleshy enlargement of the fruit stalk, which is a specialized structure known only in the cashew family.

The researchers examined possible fossil remains found in the Messel oil shales, near Darmstadt, Germany, which are dated to about 47 million years before the present and reveal the presence of a “conspicuously thickened” stalk. In four out of five specimens, this hypocarp was still firmly attached to the nut, indicating that the two were dispersed as a unit. According to the researchers, the size and shape of the hypocarp – like a teardrop and two or three times longer than it is wide – support its assignment to the *Anacardium* genus, common to South America, rather than the African *Fegimanra* genus, though the fossils have features common to both.

“The occurrence of *Anacardium* in the early Middle Eocene of Germany suggests . . . that the two genera [*Anacardium* and *Fegimanra*] diverged after dispersal between Europe and Africa,” the researchers write. “Presumably, *Anacardium* traversed the North American landbridge during the Early or Middle Eocene, at a time of maximal climatic warmth, when higher latitudes were habitable by frost-sensitive plants.”

The astoundingly close similarity between the fossil and modern day *Anacardium* also indicates little evolutionary change to the cashew since the mid-Eocene period: “Although cashews have been cultivated for human consumption for centuries, it is clear that they were in existence millions of years before humans. The cashew had already evolved more than 45 million years ago, apparently in association with biotic dispersers,” they write.

Source: University of Chicago

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