

Reconstructing the soil food web of a 100 million-year-old forest: The case of the mid-Cretaceous fossils in the amber of Charentes (SW France)

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Abstract	<p>Over the past decade, the mid-Cretaceous amber deposits of Charentes (SW France) have been intensively studied. The fossils investigated were not only limited to arthropods preserved in amber, but also included microorganisms, plant debris and vertebrate remains. This plethora of analyses provided important data about the ecology of the overall system, including sources of litter input into the soil and of the above-ground ecology. More precisely, they showed that most of the microfossils were those of soil organisms or organisms that participated in the ecology of the forest soil. This new discovery provided the opportunity to study the ecology of the soil as preserved in the 100 million years old Charentes amber. Indeed, the trophic links of the fossil forest soil have been reconstructed on the basis of the fossil assemblage discovered in amber outcrops and overlaid on a model ecological forest soil food web. We relied on existing phylogenetic information to discuss the absence of certain taxonomic groups in the fossilized specimens. Our synthesis shows that although the organisms of this ancient forest of Charentes were different from those of modern soils, the soil food web was organized functionally the same as modern soils. It also demonstrated that trophic links of the soil community were already diverse, including various means of predation, parasitism and organic matter decomposition. The most obvious differences are the absence of evidence for symbiotic root nitrogen fixation and mycorrhizae. (C) 2010 Elsevier Ltd. All rights reserved.</p>
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