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Diversity out of the blue – fossil Aleyrodomorpha (Hemiptera: Sternorrhyncha)

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The earliest fossil record of Aleyrodomorpha comes from the Middle Jurassic of China. They appear out of the blue, and these fossils are surprisingly not very different from the more recent representatives of the group and can be placed in Aleyrodidae. Other fossils are reported from the Lower Cretaceous, Upper Cretaceous, Palaeogene and Neogene. Most of extinct whiteflies are known from fossil resins.

Aleyrodidae are currently subdivided in four subfamilies: the extinct Bernaeinae, and the extant taxa Udamoselinae, Aleurodicinae and Aleyrodinae. The Bernaeinae are reported from the Middle Jurassic to the Cretaceous/Palaeogene boundary of Asia (*Bernaea*, *Burmoselis*, *Heidea*, *Juleyrodes*). The fossil representatives of the Aleyrodinae were recorded first from the Lower Cretaceous Lebanese amber (*Baetylus*) and Eocene Baltic amber (a new genus under description). A single fossil of the extant genus *Aleurochiton* is reported from the Pliocene deposits of Germany. Aleurodicinae present much richer fossil record, comprising several genera from the Lower Cretaceous Lebanese amber: *Aretsaya*, *Gapenus*, *Milqartis*, *Shapashe* and *Yamis*. Also the earliest Eocene Oise amber entombed a number of Aleurodicinae genera, i.e. *Clodionus*, *Isaraselis*, *Lukotekia* and *Oisedicus*. Surprisingly, mid-Eocene Baltic amber inclusions revealed only a single genus of Aleurodicinae, i.e. *Paernis*. The other supposed member of the subfamily – ‘*Aleurodicus*’ *burmiticus* Cockerell, 1919 from the mid-Cretaceous Burmese amber needs to be reexamined. The status of ‘*Aleyrodes*’ *aculeatus* Menge, 1856 from Baltic amber is not clear. New materials from the Palaeogene are under examination revealing a high diversity of Aleyrodinae and Aleurodicinae. Fossil Udamoselinae were mentioned (alas not found by us yet!) from the Lower Cretaceous Lebanese amber, however, the status of group has been challenged.

Findings of fossil Aleyrodidae, very ancient ones, as well as younger fossils, have brought a couple of answers, but also raised new questions on evolutionary history, morphological disparity, taxonomic diversity, ecology and biogeography of whiteflies in the past.