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The first Aleyrodidae from the Lowermost Eocene Oise amber (Hemiptera: Sternorrhyncha)

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Abstract

The first records are provided of the family Aleyrodidae in the Lowermost Eocene amber of Oise, France. The following new taxa in the subfamily Aleurodicinae are described, figured and discussed, together with an identification key: *Oisedicus maginus* **gen. et sp. n.**, *Clodionus fizoli* **gen. et sp. n.**, *Lukotekia menae* **gen. et sp. n.** and *Isaraselis cladiva* **gen. et sp. n.** Unplaced species of *Lukotekia* are briefly described, and the diversity of the whiteflies from Oise amber is discussed. The importance of fossils for palaeoecological and palaeoclimatological reconstruction is briefly considered.

Key words: Palaeobiodiversity, Aleurodicinae, *Oisedicus maginus* **gen. et sp. n.**, *Clodionus fizoli* **gen. et sp. n.**, *Lukotekia menae* **gen. et sp. n.**, *Isaraselis cladiva* **gen. et sp. n.**

Introduction

The hemipteran suborder Sternorrhyncha comprises a number of highly differentiated evolutionary lineages. The monophyly of this suborder, as well as the status of its particular units is still a subject of discussion (Schlee 1969c; Hennig 1981; Shcherbakov 1990, 2000, 2005, 2007; Shcherbakov & Popov 2002; Gullan & Martin 2003; Grimaldi & Engel 2005; Forero 2008). It has been interpreted (Shcherbakov 2000, 2005, Shcherbakov & Popov 2002) as being a diphyletic group consisting of two main groups: the Psylliformes (*sensu* Schlee 1969a) which includes the infraorders Psyllomorpha + Aleyrodomorpha, and the Aphidiformes (*sensu* Schlee 1969b), which includes the infraorders Pincombeomorpha and their descendants, Coccidomorpha and Aphidomorpha (Drohojowska & Szwedo 2011a). Whiteflies, similar to aphids, psyllids, and scale insects (Coccoidea), are insects that use plant sap as their diet and most of them are closely associated with particular host-plants (Grimaldi & Engel 2005).

The Aleyrodomorpha consists of one family, Aleyrodidae, commonly known as whiteflies. The fossil record of the family extends back to the Late Jurassic period (Shcherbakov 2000). Other fossils (but only a few formally described) were reported from the sedimentary deposits and fossil resins of the Lower Cretaceous, Upper Cretaceous, Palaeogene and Neogene periods (Schlee 1970; Rietschel 1983; Poinar 1992; Shcherbakov 2000; Antoine *et al.* 2006; Schmidt *et al.* 2010; Drohojowska & Szwedo 2011a, b). A review of the fossil record of Aleyrodidae was presented recently by Drohojowska & Szwedo (2011a), and updated by new fossils from Baltic amber (Drohojowska & Szwedo 2011b).

The extinct subfamily Bernaeinae was reported in deposits from the Late Jurassic to the Cretaceous/Palaeogene boundary in Asia (Shcherbakov 2000). The oldest fossil representatives of the subfamily Aleyrodinae were recorded from Early Cretaceous fossil resins (Schlee 1970; Shcherbakov 2000; Drohojowska & Szwedo 2011a). The only supposed fossil species of the subfamily Aleurodicinae, '*Aleurodicus*' *burmiticus* Cockerell, 1919, was reported from the Early Cretaceous, Aptian Burmese amber (Cockerell 1919). Placement of '*Aleurodicus*' *burmiticus* in Aleurodicinae was suggested by Shcherbakov (2000), challenging Schlee's (1970) opinion, in which Schlee put in doubts its placement in this subfamily. Shcherbakov (2000) mentioned an undescribed species of the subfamily Udamoselinae from the Early Cretaceous Lebanese amber; however the taxonomic status of this subfamily is vague (Martin 2007).