New data on fossil Fulgoromorpha (Hemiptera) and their phylogenetic significance

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The order Hemiptera Linnaeus, 1758, is divided in 6 suborders: Sternorrhyncha, Fulgoromorpha, Cicadomorpha, Coleorrhyncha, Heteroptera and extinct suborder: Palaeorrhyncha†. The latter comprises currently only one family, Archescytinidae†, which needs re-study and reconsideration. Fulgoromorpha comprises one of the most ancient lineages of the Hemiptera, and in the fossil record planthoppers are known since Lower Permian. The earliest Fulgoromorpha are placed in the Permian superfamily Coleoscytoidea, the second unit is the Permian-Triassic Surijokocixioidea and the Fulgoroidea are known since the Jurassic (Szwedo, Bourgoin & Lefebvre 2004).

New sources of fossils brought new and important data about representatives of Fulgoroidea. Among the inclusions from the Lower Cretaceous (Hauterivian to Aptian?) Jordanian amber, a planthopper with very particular set of characters was found. It bears some features (head structure, leg characters, male genital block features) common to Cixiidae and Achilidae, both families admittedly placed at base of the extant Fulgoroidea. On the other hand the tegmina venation is very particular; it resembles (artificially?) Jurassic Fulgoridiidae, and tegmina are covered with long bristles (anterior part of the body as well), but without any trace of tubercles. It seems that this fossil represents a new family of Fulgoroidea.

Other surprising planthoppers were found among inclusion in Lower Cretaceous Lebanese amber. These insects are characteristic of nymphal characters, nymphal sensory pits present in adult forms, particular tegmina venation, hind wings with distinct ambient vein and appendix, and particular pattern of hind leg chaetotaxy, as well as structure of the female external genitalia. These fossils without doubt represent another extinct family of Fulgoroidea.

New specimens from the Lower Cretaceous (Aptian) Santana Formation representing the family Lalacidae were found. Also a few specimens of particular interest were identified, representing probably the family Fulgoridae, new taxa preliminarily identified as Achilidae, and a form sharing some characters with Derbidae. Another specimen is very hard to place in any of recently recognized groups, but it is also a result of the state of its preservation.

Several planthopper nymphs were mentioned from the Lower Cretaceous French amber, as well as from the Alava amber of similar age. More detailed data on these specimens are not available yet.

Lower Cretaceous Myanmar (Burmese) amber is the rich source of fossils; representatives of the families Achilidae and Cixiidae were identified. It is remarkable that Achilidae from this source of fossils are characteristic of particular set of characters, with hind tarsomeres bearing additional setae and with simple tegmina venation (Szwedo, 2004).

Regarding these data, it seems that Lower Cretaceous period was still the age of morphological 'experiments' and differentiation of Fulgoroidea lineages.

Palaeogene strata are also rich in fossils. Several specimens representing Cixiidae, Dictyopharidae, Issidae, Ricaniidae and Flatidae were identified among Fur Formation (Uppermost Palaeocene) of Denmark. However, some specimens are hard to be easily placed in recognized units and need further research. Cixiidae and Ricaniidae were also identified among specimens from the Uppermost Palaeocene of Menat in France. Several planthoppers of particular interest were also found among the Uppermost Palaeocene/Lowermost Eocene Le Quesnoy amber of France: a few representatives of Cixiidae, single specimen of Issidae with particular tegmen venation and a few specimens with placement not resolved yet.

Cixiidae planthoppers representing extinct genera of Mnemosynini were found in relative high number in the Palaeocene/Eocene strata of Denmark and France (Szwedo, Lefebvre & Bourgoin, in prep.), another representative of this unit was also found among the Eocene Baltic amber inclusions. Baltic amber is long known as a rich source of data on fossil planthoppers. Recently, new taxa of Derbidae have been identified representing the tribes Otiocerini (Szwedo, in prep.) and Cedusini. Also records of Achilidae in this fossil resin are rich; representatives of most of the recently recognized tribes were identified, as well as new taxa of the extinct tribe Ptychoptilini.

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ABSTRACTS

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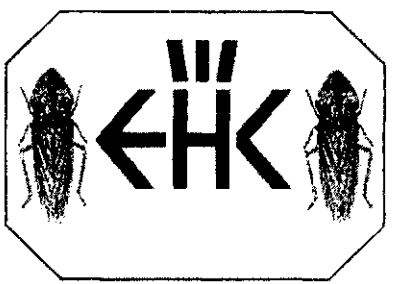
ABSTRACTS



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