



## New and little-known families of Hemiptera Cicadomorpha from the Triassic of Central Asia—early analogs of treehoppers and planthoppers

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### Abstract

One family, 12 monotypic genera, and 12 species of Triassic Cicadomorpha are described as new and two families, three genera, and three species are redescribed. All new taxa are from the Madygen Formation (Ladinian–Carnian) of Kyrgyzstan. Saaloscytinidae **stat. nov.** (Scytinopteroidea) includes *Tingiopsis reticulata* Becker-Migdisova, 1953 from Madygen and *Saaloscytina* Brauckmann et Schlueter, 1993 (= *Chanarescyitina* Brauckmann, Martins-Neto et Gallego, 2006, **syn. nov.** = *Chanarelytrina* Martins-Neto et Gallego, 2006, **syn. nov.**) with one species from Germany and another from Argentina (*Saaloscytina carmonae* (Brauckmann, Martins-Neto et Gallego, 2006), **comb. nov.** = *Chanarelytrina nana* Martins-Neto et Gallego, 2006, **syn. nov.**). Maguviopseidae **fam. nov.** (Prosboloidea) comprises 2 subfamilies and 11 genera (all from Madygen): Sacvoyageinae **subfam. nov.** for *Sacvoyagea ventrosa* **gen. et sp. nov.** and Maguviopseinae **subfam. nov.** for *Nonescyta mala* **gen. et sp. nov.** and *Nevicia imitans* **gen. et sp. nov.** (Nonescytini **trib. nov.**), *Maguviopsis kotchnevi* Becker-Migdisova, 1953, *Sitechka perforata* **gen. et sp. nov.**, *Phyllotexta latens* **gen. et sp. nov.**, *Cuanoma protracta* **gen. et sp. nov.**, *Fasolinka beckermigdisovae* **gen. et sp. nov.**, *Krendelia ansata* **gen. et sp. nov.**, *Falcarta bella* **gen. et sp. nov.**, and *Asiocula lima* **gen. et sp. nov.** (Maguviopseini **trib. nov.**). Another family, Mesojabloniidae Storozhenko, 1992, is transferred from Grylloblattida to Hylcelloidea, and *Fulgobole evansi* **gen. et sp. nov.** and *Scytachile emeljanovi* **gen. et sp. nov.** are assigned to this family along with *Mesojablonia kukalovae* Storozhenko, 1992 (all three from Madygen). Homoplastic similarities of Saaloscytinidae and Maguviopseidae to Membracoidea and Mesojabloniidae to Fulgoroidea are discussed. The elaborate camouflage of these extinct hoppers and Dymorphoptilidae is presumably due to increase of visual predation by small arboreal reptiles in the Triassic.

**Key words:** Auchenorrhyncha, Scytinopteroidea, Prosboloidea, Hylcelloidea, Membracoidea, Fulgoroidea, cryptism, collective mimicry

### Introduction

The famous Lagerstätte near the village of Madygen, in the foothills of the Turkestan Range, Kyrgyzstan, discovered in 1933 by E.A. Kochnev, has yielded more than twenty thousand insect specimens, along with abundant plants, bivalves, crustaceans, fishes, and tetrapods, including the early reptile gliders. The fossil-bearing shales belong to the Madygen Formation, which covers ca. 10 km<sup>2</sup> and crops out in six adjacent areas. The formation is dated Ladinian–Carnian (Middle–Late Triassic), based mainly on its flora, which is rich in pteridosperms and contains conifers, ginkgophytes, ferns, horsetails, lycopsids (Dobruskina 1995), and liverworts. The fossil-bearing beds were presumably deposited in a mineralized oxbow lake of an intermontane river valley with seasonal arid paleoclimate (Sixel 1960).

Twenty insect orders and nearly one hundred families have been recorded and more than 500 species have been described from this fossil site. This is by far the richest Triassic insect fauna known (Shcherbakov 2008). The insect assemblages found in the different outcrop areas of the Madygen Formation are essentially similar in taxonomic composition and share many species in common. Numerically they are dominated by insects with sclerotized forewings (Coleoptera, Blattodea, and Hemiptera). Eleven families of Auchenorrhyncha have been reported: Suriokocixiidae (Fulgoroidea), and Cicadomorpha: Dymorphoptilidae, Curvicutitidae, Dunstaniidae, Mesogere-