

# A New Caddisfly of the Fossil Genus *Archaeotinodes* (Insecta: Trichoptera: Ecnomidae) from the Baltic Amber

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**Abstract**—A new caddisfly species of the fossil genus *Archaeotinodes*, *A. igneusaper* sp. nov., is described from the Upper Eocene Baltic amber. The new species is close to *A. pauper* Ulmer, 1912 and *A. lanceolata* Ulmer, 1912 from the Baltic amber, differing from these in the structure of the male genitalia.

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**Key words:** Caddisflies, *Archaeotinodes*, Ecnomidae, Trichoptera, Eocene, Baltic amber.

## INTRODUCTION

In terms of the number of species, the Baltic amber contains the richest fossil fauna of the Trichoptera (Wichard and Weitschat, 1996). So far, in the Early Miocene Saxonian and Late Eocene Baltic ambers approximately 200 species from 21 caddisfly families have been described. Approximately 70% of all caddisfly species from the Paleogene and Neogene ambers of Europe belong to the suborder Annulipalpia. Moreover, over 55% of that fauna are comprised by species belonging to families from the superfamily Psychomyioidea. Therefore, in terms of diversity, the European ambers are dominated by representatives of just one trichopteran lineage, which contains relatively few recent species.

During the study of the Baltic amber collection at Borissiak Paleontological Institute of the Russian Academy of Sciences, Moscow (PIN), a new species of the genus *Archaeotinodes* was recognized.

The family Ecnomidae is represented in the Recent fauna by eight genera and over 360 species. Fossil representatives of this family are only known from the European ambers and are represented by a single, fossil genus, *Archaeotinodes*. To date, 14 fossil species from the Baltic and Saxonian ambers have been described (Ulmer, 1912; Mey, 1988). The diagnosis of the genus proposed by Ulmer (1912) includes external morphological characters of adults and characters of the male genitalia. However, some species assigned to this genus display drastic differences in the structure of their genitalia. In particular, *Archaeotinodes angusta* Ulmer, 1912, *A. tenuis* Ulmer, 1912, *A. securifera* Ulmer,

1912, and *A. hageni* Ulmer, 1912 differ significantly from the rest of the congeners. In the structure of the genitalia, venation, setal warts, and some other structural characters, representatives of *Archaeotinodes* differ from living representatives of Ecnomidae. The genus has an isolated status within the classification of Ecnomidae and possibly deserves a higher taxonomic rank. Nevertheless, any taxonomic changes would not be wise until this entire group of fossil caddisflies is revised, which is not possible without reexamination of Ulmer's types.

## SYSTEMATIC PALEONTOLOGY

Suborder Annulipalpia

Superfamily Psychomyioidea Walker, 1852

Family Ecnomidae Ulmer, 1903

Genus *Archaeotinodes* Ulmer, 1912

*Archaeotinodes igneusaper* Melnitsky, sp. nov.

Plate 6, figs. 1 and 2

**Ety m o l o g y.** From the Latin *igneus* (fiery) and *aper* (wild boar).

**H o l o t y p e.** PIN, no. 364/ 557, male; Baltic amber; Upper Eocene.

**D e s c r i p t i o n** (Fig. 1). The abdomen and its appendages, thorax, and head are dark. The antennae and palpi are somewhat lighter. The wings are light brown, densely covered with minute hairs. The head and thorax are covered with light hairs. The third segment of the maxillary palpi is longer and thicker than the second and fourth, approximately as long as the fifth. The second segment of the labial palpi is expanded apically. The forewing venation includes all the five forks. The antennae are longer than the forew-

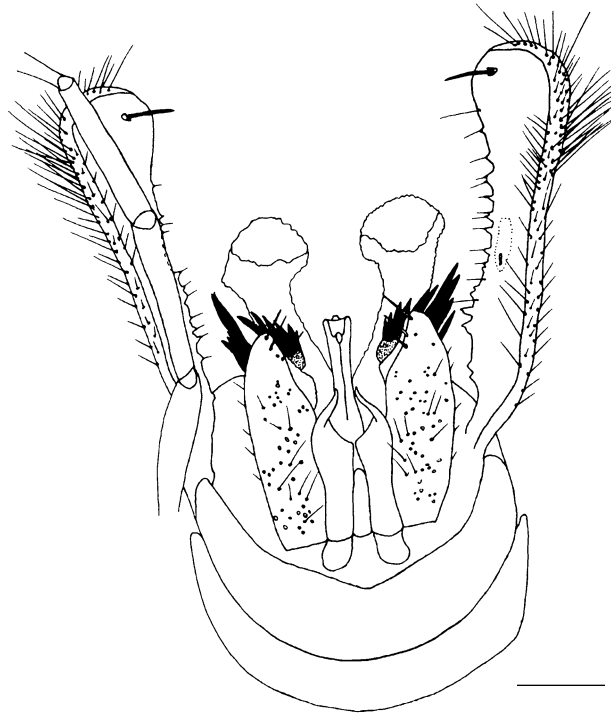


Fig. 1. *Archaeotinodes igneusaper* sp. nov., holotype PIN, 364/557, caudal region of the abdomen and genitalia. Scale bar, 0.1 mm.

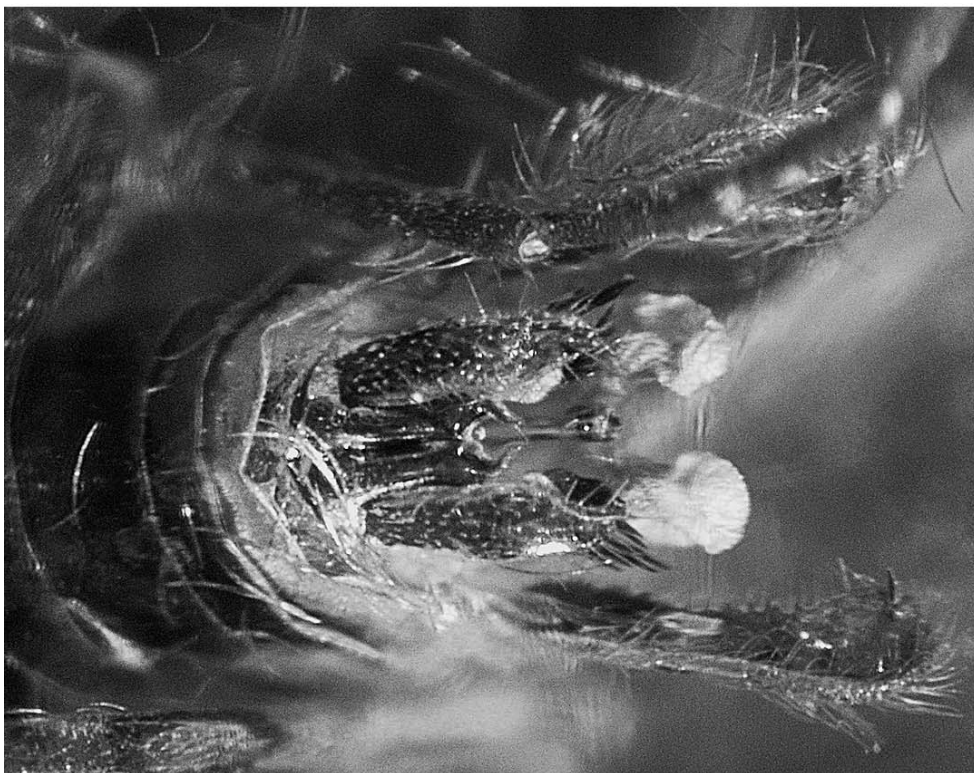
ing. Near the antecostal suture, the anterior margin of abdominal sternite V has a distinct, thick cuticular plate, apparently associated with the pheromone gland orifice. The integument of abdominal sternites V–VII is rough, forming finely reticulate sculpture. The spur formula is 3.4.4.

**Male genitalia.** The lower appendages (gonopods) are of complex shape, strongly sclerotized, subdivided into the dorsal and ventral lobes (branches). The ventral (inner) lobes of the lower appendages are narrow, their apical parts are curved and extended into an acute process. A cuticular plate is situated between the inner lobes of the lower appendages. The dorsal lobes of the lower appendages are broader and longer than the ventral lobes, their apical parts are narrower than the basal ones; the outer surface of these appendages is covered with numerous setae. The dorsoapical surface of the dorsal lobes of the lower appendages has many (more than ten) robust, short and long spines, directed posterad. The preanal appendages (cerci) are very long, twice as long as the dorsal lobes of the lower appendages; their outer surface is covered with many hairs. The apical part of each cercus is expanded, clavate; its inner surface has a black, dense spine, directed

inside. The segment X is poorly sclerotized, subdivided by a wide median emargination into two narrow, elongated lobes, each with an expanded apex, which curves downwards. The segment X is shorter than the cerci, but longer than the dorsal lobes of the lower appendages. The aedeagus is strongly sclerotized, long, and narrow (in ventral aspect), approximately as long as the dorsal lobes of the gonopods; its apex is expanded in lateral view; and its dorsoapical part is extended to form a thin process.

**Measurements,** mm: body length, 3.8; forewing length, 4.2.

**Comparison.** The new species is similar to *A. pauper* Ulmer, 1912 and *A. lanceolata* Ulmer, 1912. It differs from the first species in the dorsal lobes of the gonopods being wider and acute, the presence of many dense spines in the dorsoapical region of the dorsal lobes of the lower appendages, and in the less obtuse apical part of the aedeagus. It differs from the second species in the ventral lobes of the lower appendages being more curved and more extended apically, the presence of robust spines on the dorsal surface of the



Explanation of Plate 6

**Figs. 1 and 2.** *Archaeotinodes igneusaper* sp. nov., holotype PIN, 364/557: (1) ventral view,  $\times 14.5$  and (2) genitalia in ventral view,  $\times 91$ .

outer lobes of the lower appendages, and the deeper subdivision of the segment X.

**M a t e r i a l.** Holotype.

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