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A new fossil subgenus and species of the genus *Ecdyonurus* EATON, 1868 from Eocene Baltic amber (Ephemeroptera: Heptageniidae)

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ABSTRACT. *Ecdyonurus leopoliensis* n. sp. from the Eocene Baltic amber is described and illustrated. The new species is placed in the new subgenus *Nestormeus* n. subgen.

Key words: entomology, taxonomy, Ephemeroptera, Heptageniidae, *Ecdyonurus*, new subgenus, new species, Eocene, Baltic amber.

INTRODUCTION

The fossil species of the family Heptageniidae were repeatedly described from inclusions in Baltic and New Jersey amber. Ten species are known from amber, belonging to five modern - *Cinygma* EATON, 1885, *Heptagenia* WALSH, 1863, *Kageronia* MATSUMURA, 1931, *Rhithrogena* EATON, 1881 and *Stenonema* TRAVER, 1933 - and two fossil - *Succinogenia* DEMOULIN, 1965 and *Amerogena* SINITSHENKOVA, 2000 - genera.

Up to date there is only one published record of the genus *Ecdyonurus* EATON, 1868 in fossil condition. ZHANG (1989) described and illustrated the larva of *Ecdyonurus* sp. with elongated projections of posterior lateral part of pronotum, found in Miocene deposits of Shanwang (China). The shape of pronotum and its projections in the figure (ZHANG 1989, Fig. 7) differ from those in modern *Ecdyonurus* s. str. (lateral margins of pronotum of depicted larva are strongly parallel). However, the picture made from the fossil impress is not exact (ZHANG

1989, Table 2, 2). In fact, posterior lateral projections of pronotum are lacking, and the shape of pronotum has probably changed on account of deformation during the larva depositing. As mouthparts and gills have not been preserved, it is impossible to ascertain more precise systematic position of that specimen.

In the present paper data on the first reliable finding of the genus *Ecdyonurus* in fossil condition are given. *E. leopoliensis* n. sp. belonging to *Nestormeus* n. subgen. is described and illustrated from Eocene Baltic amber.

TERMINOLOGY

The anatomical and morphological terminology is given according to KLUGE (1988, 1994, 2004).

Family Heptageniidae NEEDHAM, 1901

Genus *Ecdyonurus* EATON, 1868

Nestormeus n. subgen.

Type species: *Ecdyonurus* (*Nestormeus*) *leopoliensis* n. sp. (by monotypy).

ETYMOLOGY

The new subgenus is named in honour of my little son Nestor.

DIAGNOSIS

Of all known subgenera of *Ecdyonurus* s. l., only *Nestormeus* n. subgen. is characterized by the presence of short, slightly curved lateroparapsidal sutures in the posterior part of mesonotum, which are noncontiguous with medioparapsidal sutures.

Ecdyonurus (*Nestormeus*) *leopoliensis* n. sp.

ETYMOLOGY

The name of the species is derived from the Latin name of L'viv City, that is Leopolis, where the holotype is housed.

DIAGNOSISIS

The same as for the subgenus *Nestormeus* n. subgen.

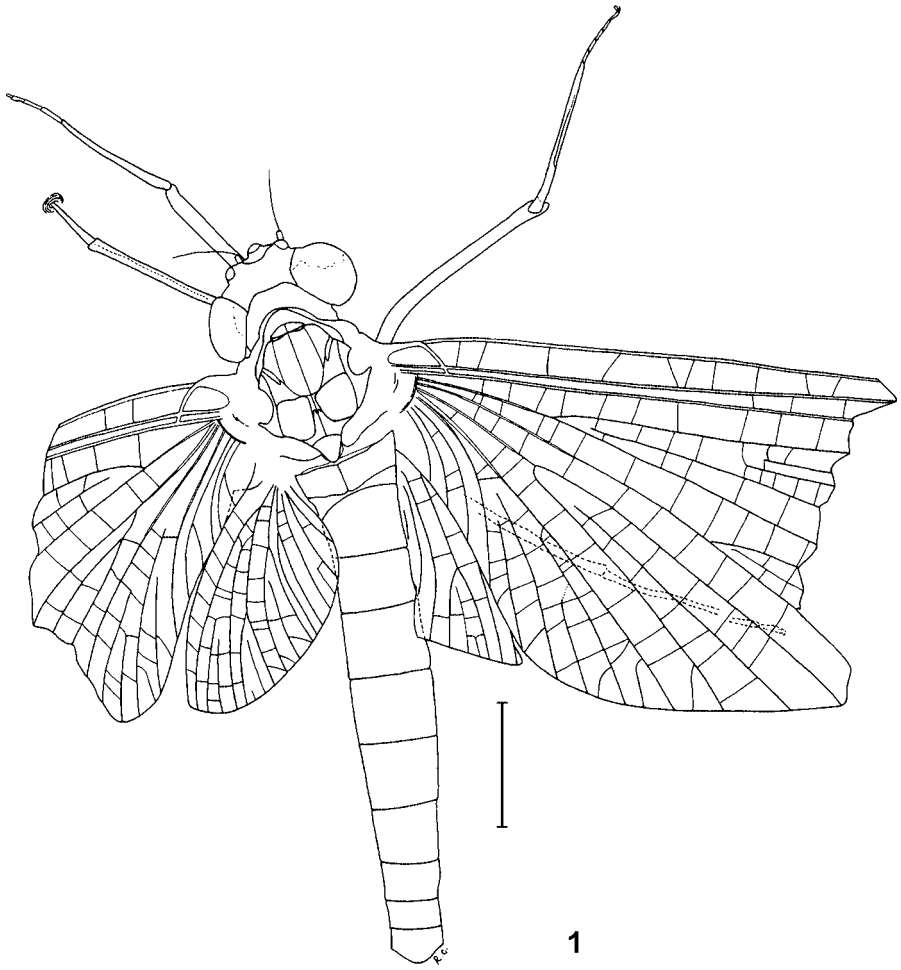
DESCRIPTION

Female imago (Figs 1-4). Measurements: body – 5.9 mm; hind left wing – 1.9 mm; cerci – 9.0 mm.

Head with not large eyes. Eyes partly blackish pigmented. Ocelli blackish apically.

Thorax: anterior part of mesonotum with distinct mesonotal suture; posterior part of mesonotum with short, slightly curved lateroparapsidal sutures, which are noncontiguous with medioparapsidal sutures (Figs 1, 3); median impression of furcasternum of mesothorax parallel-margined in posterior and central part, clearly divergent anteriorly (Fig. 2). Structure of furcasternum of prothorax is invisible.

Wings opaque. Fragments of fore wings with two pairs of cubital intercalaries (the shorter pair located anteriorly near *CuA*) typical of Heptageniidae (Fig. 1). Venation of wings well developed. Patella-tibial suture distinct on middle and hind legs. All legs with 5-segmented tarsi. Claws dissimilar with one pointed and one blunt claw.

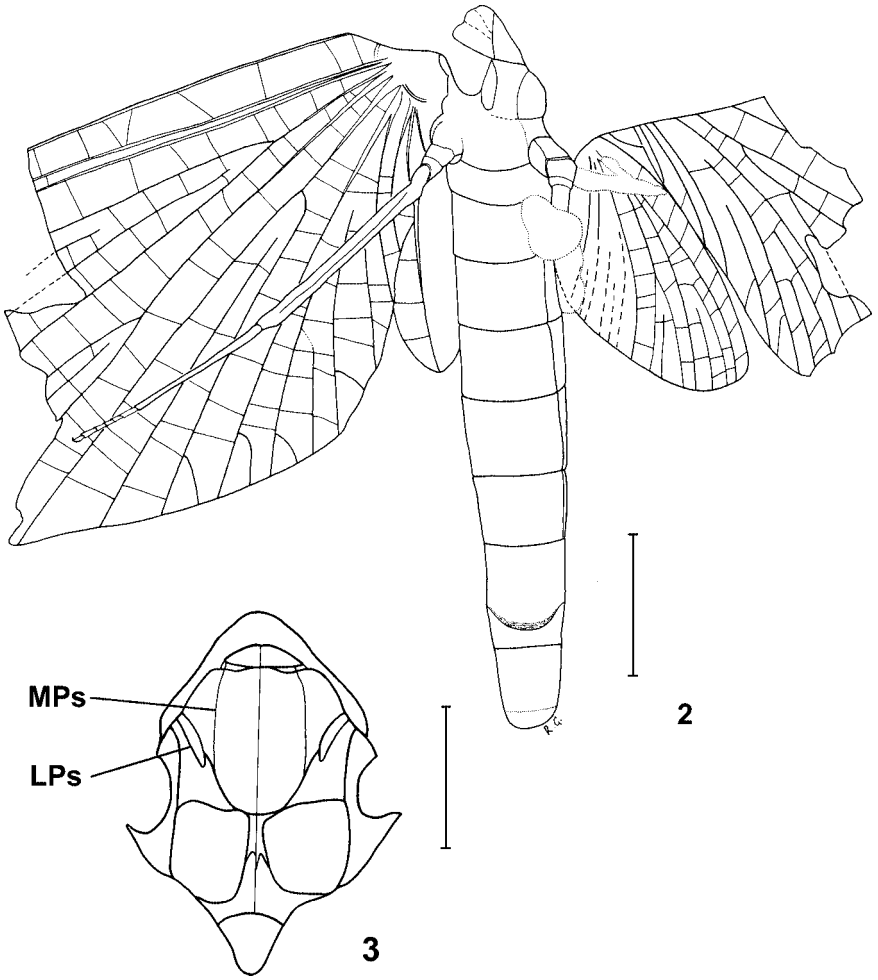


1. *Ecdyonurus leopoliensis* n. sp., holotype: body in dorsal view, scale bar = 1 mm

Abdominal segments well preserved. Subgenital and subanal plates rounded at the apex (Fig. 2).

TYPE

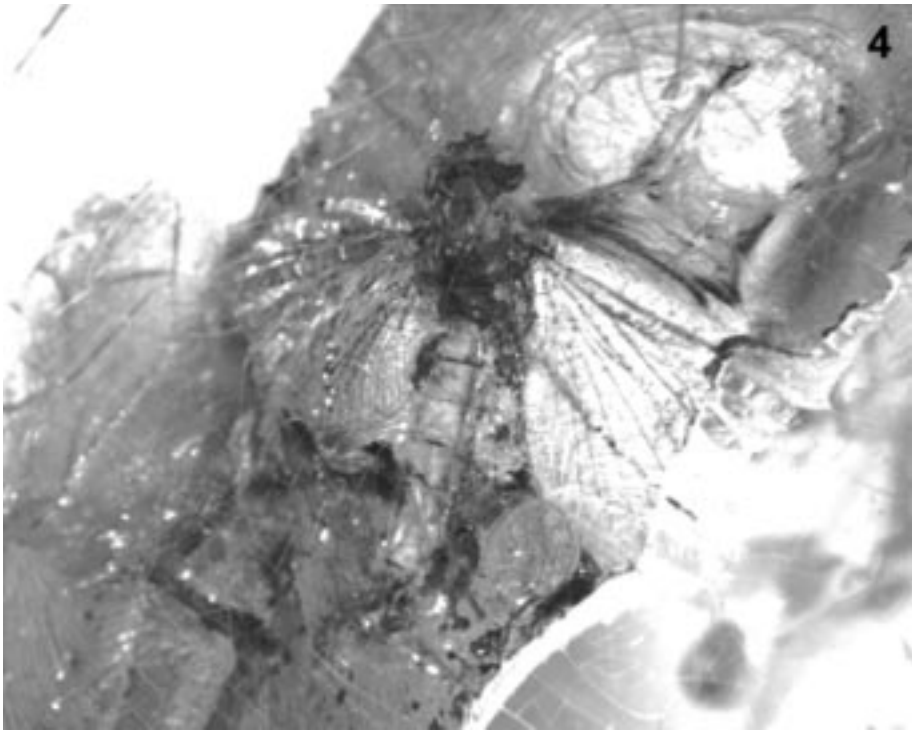
Holotype, female imago, Baltic amber collection of the State Museum of Natural History, National Academy of Sciences of Ukraine (L'viv), No 21, the specimen originally labeled "No 34 Ephemeria Leptophlebia (tres altéré)". The specimen in Eocene Baltic amber with well preserved body, partly preserved wings, legs and cerci.



2-3. *Ecdyonurus leopoliensis* n. sp., holotype: 2 - body in ventral view, scale bar = 1 mm; 3 - mesonotum in dorsal view, LPs – lateroparapsidal suture, MPs – medioparapsidal suture, scale bar = 0.5 mm

REMARKS

The presence of median impression on furcasternum of mesothorax with parallel margins in posterior and central part and divergent margins in anterior part (autapomorphy of *Ecdyonurus* s. l.) undoubtedly define the systematic position of *Nestormeus* n. subgen. within the genus *Ecdyonurus* (KLUGE 2004, p. 175, Figs 57A, 57B). The new subgenus can be easily distinguished from the other subgenera belonging to the genus *Ecdyonurus* by the presence of short, slightly curved lateroparapsidal sutures in posterior part of mesonotum, noncontiguous with medioparapsidal sutures. Besides *Nestormeus* n. subgen., lateroparapsidal sutures noncontiguous with medioparapsidal sutures are present in all Rhithrogeniini LESTAGE, 1917 (KLUGE 1988, 2004). However, lateroparapsidal sutures of the latter are considerably longer and in contrast to *Nestormeus* n. subgen. reach the place of dorsal attachment of posterior scuto-coxal muscle (KLUGE 1988, p. 304-305, Fig. 90; KLUGE 2004, p. 189, Fig. 63). The new subgenus also differs from all Rhithrogeniini by the shape of furcasternum of mesothorax (see KLUGE 1988, p. 305, Figs 74, 75; KLUGE 2004, p. 171, Figs 56C, 56D).



4. *Ecdyonurus leopoliensis* n. sp., holotype: body in dorsal view

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REFERENCES

KLUGE, N. J., 1988. Revision of genera of the family Heptageniidae (Ephemeroptera). I. Diagnoses of tribes, genera and subgenera of the subfamily Heptageniinae. Entomol. obozr., **67**: 291-313. (in Russian)

—, 1994. Pterothorax structure of mayflies (Ephemeroptera) and its use in systematics. Bull. Soc. Entomol. France, **99**: 41-61.

—, 2004. The Phylogenetic System of Ephemereoptera. Kluwer Academic Publishers, Dordrecht-Boston-London: 442 pp.

ZHANG, J., 1989. Fossil insects from Shanwang, China. Shandong Sci. Echnol. Publ. House, Jinan: 459 pp. (in Chinese)