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New finding of *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016 (Hemiptera: Fulgoroidea: Issidae) in Baltic amber, with description of a female and fifth instar nymph

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ABSTRACT

New material on the planthopper species, *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016 (Issidae, Issinae, Parahiraciini), originally described more than 100 years ago based on an adult of unknown sex from the Baltic amber, is redescribed and illustrated based on a female and fifth instar nymph recently discovered in the collection of the Natural History Museum of Denmark (Copenhagen).

Key words: Baltic amber, Issinae, morphology, nymph, Parahiraciini

Новая находка *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016 (Hemiptera: Fulgoroidea: Issidae) в Балтийском янтаре, с описанием самки и личинки пятого возраста

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РЕЗЮМЕ

Новый материал по *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016 из семейства Issidae (Issinae, Parahiraciini), описанного более ста лет назад из Балтийского янтаря по имаго (пол не определен), обнаружен в коллекции Датского музея естественной истории (Копенгаген). *Bolbossus bervoetsi* переописан по самке и личинке пятого возраста.

Ключевые слова: Балтийский янтарь, Issinae, морфология, личинка, Parahiraciini

INTRODUCTION

The genus *Bolbossus* Gnezdilov et Bourgoin, 2016 was erected in the tribe Parahiraciini Cheng et Yang of the subfamily Issinae Spinola sensu Gnezdilov et al. (2020, 2022) for *Issus bervoetsi* Gnezdilov et Bourgoin, 2016 proposed to replace *Issus reticulatus* Bervoets, 1910 (primary homonym of *Issus reticulatus* Herrich-Schäffer, 1835) described from the Baltic amber of Kaliningrad Province in Russia (Bervoets 1910; Gnezdilov and Bourgoin 2016). Since Bervoets's (1910) original description of this species which included a drawing of the dorsal view of the type specimen (sex unknown) no other information

on this species was available and the location of the type specimen is still unknown (Gnezdilov and Bourgoin 2016). Below I redescribe *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016 based on a female and 5th instar nymph discovered in the Amber collection of the Natural History Museum of Denmark in Copenhagen. I attribute this material to *B. bervoetsi* based on external morphological characters including distinctly convex metope and transverse coryphe, with straight anterior margin. It is first documented case of preservation of adult and nymph of the same species in amber for Issidae although it is quiet typical for the modern fauna when adults and nymphs are collected together.

MATERIAL AND METHODS

Morphological terminology follows Anufriev and Emeljanov (1988) and Gnezdilov et al. (2014).

Photographs were taken using the Axio Zoom V16 microscope with Zeiss Axiocam 712 colour camera. Label information is quoted, with '/' indicating new line and '//' indicating next label.

The material studied is deposited in the Natural History Museum of Denmark, Zoological Museum (Copenhagen).

TAXONOMY

Family Issidae Spinola, 1839
Subfamily Issinae Spinola, 1839
Tribe Parahiraciini Cheng et Yang, 1991
Subtribe Parahiraciina Cheng et Yang, 1991
Genus *Bolbossus* Gnezdilov et Bourgoin, 2016

Type species: *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016, by original designation.

***Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016**
(Figs 1–10)

Material examined. 1 female, 1 nymph "Homoptera (cikada) 2129 / Preussen, Min. Mus. 1965" [hand written] // "SNM Amber Collection / ZMUC–902129 / Class: Insecta Order: Hemiptera Family: Issidae / Loc.: D, Preussen Leg.: – Date: – Dep: ZMUC" [printed].

Description. *Female* (Figs 1–2, 5–8). Coryphe transverse, four times as wide as long at midline; anterior and posterior margins nearly straight; lateral margins slightly diverging posteriorly (Figs 1, 6). Metope wide between the eyes smoothly narrowing to clypeus, bulbose medially, with weak sublateral carinae joined below its upper margin (Figs 1, 2, 6). Metopoclypeal suture convex. Postclypeus not large, without carinae. Rostrum nearly reaching hind coxae; 2nd and 3rd segments are nearly equal in length; 3rd segment not narrowing apically. Pedicel globose. Eyes large, diameter of each eye larger than half of coryphe width (Fig. 6). Pronotum, without carinae, twice as long as coryphe medially, with widely truncate medially anterior margin; posterior margin concave. Paranotal lobes of pronotum wide, without carinae. Paradiscal fields of pronotum wide behind the eyes. Mesonotum large, longer than pronotum, without carinae (or invisible). Tegulae large. Forewings wide, slightly narrowing apically, without hypocostal plate, with setae along the costal margin and with knee bulge (bulla). Basal cell large, oval. Clavus long, 2/3 of wing length, open (Pcu + A_1 running to its apex); caudo-dorsal angle not cuspidal. Forewing vein branching sequence: R 3, furcating before knee bulge; M 3, firstly furcating shortly after R, M_1 furcating also apically; CuA 2, furcating at wing middle (Fig. 7). R and M running from the basal cell by short common stem. Hind wings well developed, nearly as long as forewings. Hind tibiae and tarsi are missing. Arolium of pretarsus reaching claw apices (in dorsal view).

Coloration. Generally dark brown.

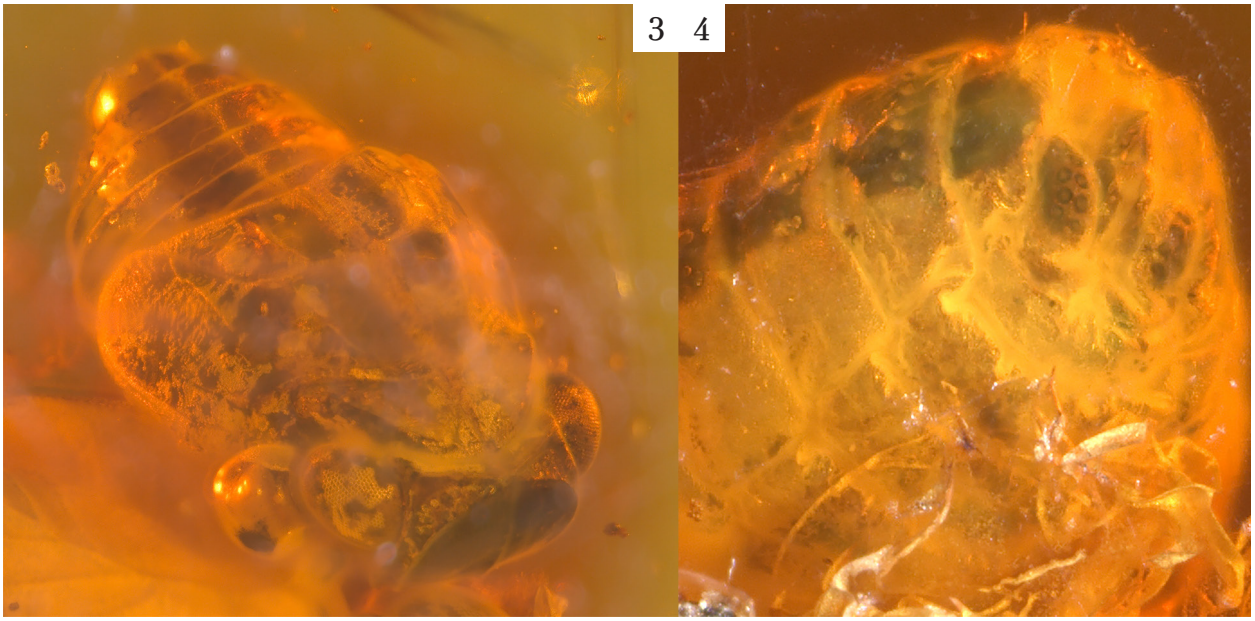
Female terminalia (Figs 5, 8). Sternite VII with hind margin slightly concave medially (Figs 5, 8). Anal tube wide. Gonoplacs large, rounded, without carinae (Fig. 8). Gonocoxa VIII with weakly protruding hind margin.

Total length. Female – 6.6 mm.

5th instar nymph (Figs 1–4, 9–10). Coryphe transverse, seven times as wide as long medially, without carina (not visible), with obtusely angulate anterior margin and concave posterior margin (Figs 1, 9). Metope wide, with median and sublateral carinae joined at its upper margin, with sensory pits between sublateral carinae and lateral margins carinae (Fig. 3). Pronotum four times as long as coryphe, with median carina and the carinae behind the eyes. Paradiscal fields of pronotum wide behind the eyes. Mesonotum 1.7 times as long as pronotum, with median and lateral carinae. Forewing pads reaching hind margin of abdominal tergite II. Abdominal tergites III–VII (tergite VIII not visible) with sensory pits on each side (Fig. 2). Abdominal segment VIII with two wax-pore



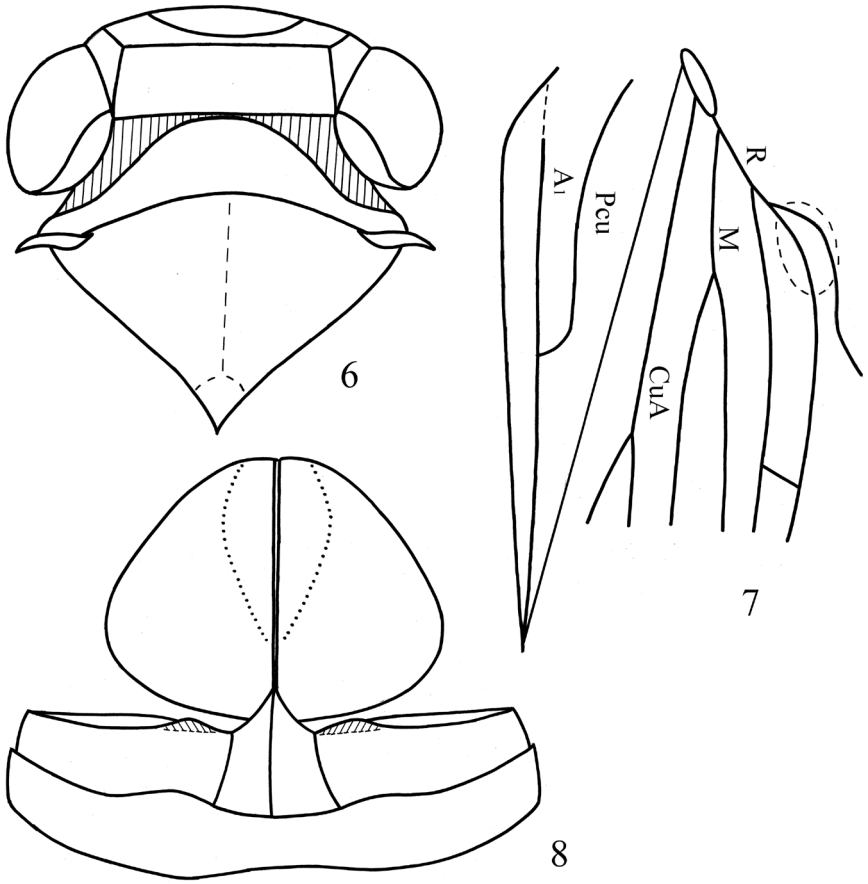
Figs 1–2. *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016, female and 5th instar nymph. 1 – dorsal view; 2 – ventral view. Scale bar – 1 mm.



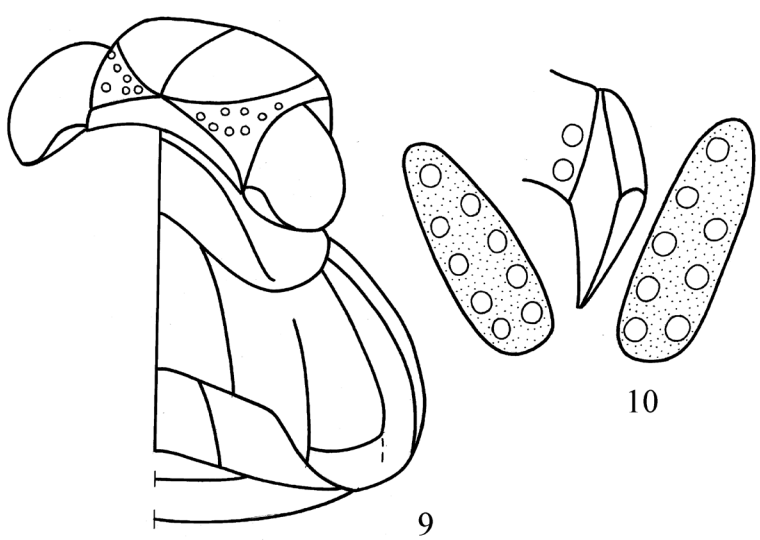
Figs 3–4. *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016, 5th instar nymph. 1 – dorsal view; 2 – abdomen, ventro-caudal view. Not to scale.



Fig. 5. *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016, female, ovipositor, ventral view. Not to scale.



Figs 6–8. *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016, female. 6 – head, pro- and mesonotum, dorsal view; 7 – basal half of forewing (knee bulge marked with a dotted line); 8 – sternite VII, gonocoxae VIII, and gonoplacs, ventral view. Not to scale.



Figs 9–10. *Bolbossus bervoetsi* Gnezdilov et Bourgoin, 2016, 5th instar nymph. 9 – head, pro- and mesonotum (right side), dorsal view; 10 – wax plates of abdominal segment VIII and tergite IX. Not to scale.

plates (Figs 2, 4, 10). Abdominal tergite IX with two sensory pits on each side (Fig. 10).

Coloration**.** Brown to dark brown above and light yellow below.

Total length. Nymph – 2.7 mm.

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REFERENCES

Anufriev G.A. and Emeljanov A.F. 1988. Suborder Cicadinea (Auchenorrhyncha). In: P.A. Ler (Ed.). Key to the insects of the Far East of the USSR, Vol. 2. Leningrad: Nauka: 12–495.

Bervoets R. 1910. Diagnoses de quelques nouvelles espèces de cicadines de l'ambre de la Baltique. *Annales Musei Nationalis Hungarici*, **8**: 125–128.

Gnezdilov V.M. and Bourgoin T. 2016. On the taxonomic position of *Issus reticulatus* Bervoets, 1910 (Hemiptera: Fulgoroidea: Issidae) from Baltic amber. *Entomological Review*, **96**(5): 631–633. https://doi.org/10.1134/S0013873816050092

Gnezdilov V.M., Holzinger W.E. and Wilson M.R. 2014. The Western Palaearctic Issidae (Hemiptera, Fulgoroidea): an illustrated checklist and key to genera and subgenera. *Proceedings of the Zoological Institute RAS*, **318**, Supplement 1, 124 p. http://www.zin.ru/journals/trudyzin/doc/vol_318_s1/TZ_318_1_Supplement_Gnezdilov.pdf

Gnezdilov V.M., Konstantinov F.V. and Bodrov S.Y. 2020. New insights into the molecular phylogeny and taxonomy of the family Issidae (Hemiptera: Auchenorrhyncha: Fulgoroidea). *Proceedings of the Zoological Institute RAS*, **324**(1): 146–161. https://doi.org/10.31610/trudyzin/2020.324.1.146

Gnezdilov V.M., Konstantinov F.V. and Namyatova A.A. 2022. From modern to classic: classification of the planthopper family Issidae (Hemiptera, Auchenorrhyncha, Fulgoroidea) derived from a total-evidence phylogeny. *Systematic Entomology*, **47**(4): 551–568. https://doi.org/10.1111/syen.12546