

First species of *Ephistemus* (Coleoptera: Clavicornia: Cryptophagidae) from Baltic amber

Первый вид рода *Ephistemus* (Coleoptera: Clavicornia: Cryptophagidae) из балтийского янтаря

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КЛЮЧЕВЫЕ СЛОВА. Cryptophagidae, *Ephistemus*, поздний эоцен, балтийский янтарь.

ABSTRACT. *Ephistemus crassipes* Lyubarsky et Perkovsky **sp.n.**, a new cryptophagid species from Baltic amber is described. This species is the first fossil representative of the genus, and the fourth described species of Eocene Atomariinae. The new species differs from extant species by thickened legs.

РЕЗЮМЕ. Описан новый вид криптофагид из балтийского янтаря — *Ephistemus crassipes* Lyubarsky et Perkovsky **sp.n.** Это четвёртый описанный эоценовый представитель Атомариинэ и первый описанный ископаемый представитель рода. Новый вид отличается от современных *Ephistemus* утолщёнными ногами.

Introduction

A study of the collection of Christel and Hans Werner Hoffeins (ССНН) revealed a new species of Cryptophagidae. Cryptophagidae are mainly free-living and mycophagous. The family Cryptophagidae contains two subfamilies: Cryptophaginae and Atomariinae [Leschen, 1996]. The subfamily Atomariinae contains three tribes: Atomariini, Cryptafricini and Hypocoprini. The subfamily can be diagnosed by short body, frons without tubercle, and short prosternum in front of coxa.

The specimen has 11-jointed antenna with 3-jointed club; tarsal formula 5-5-5; epipleuron incomplete; punctuation of elytra confused, without elytral striae; 1st ventrite longer than others. This specimen is a

member of Cryptophagidae, belongs to the genus *Ephistemus* Stephens, 1829, and has the following characters: short rounded body, antennae embedded in the grooves on the prothorax, projection of the prothorax with parallel lines along the edges. This genus belongs to the tribe Atomariini. The tribe Atomariini contains 10 genera.

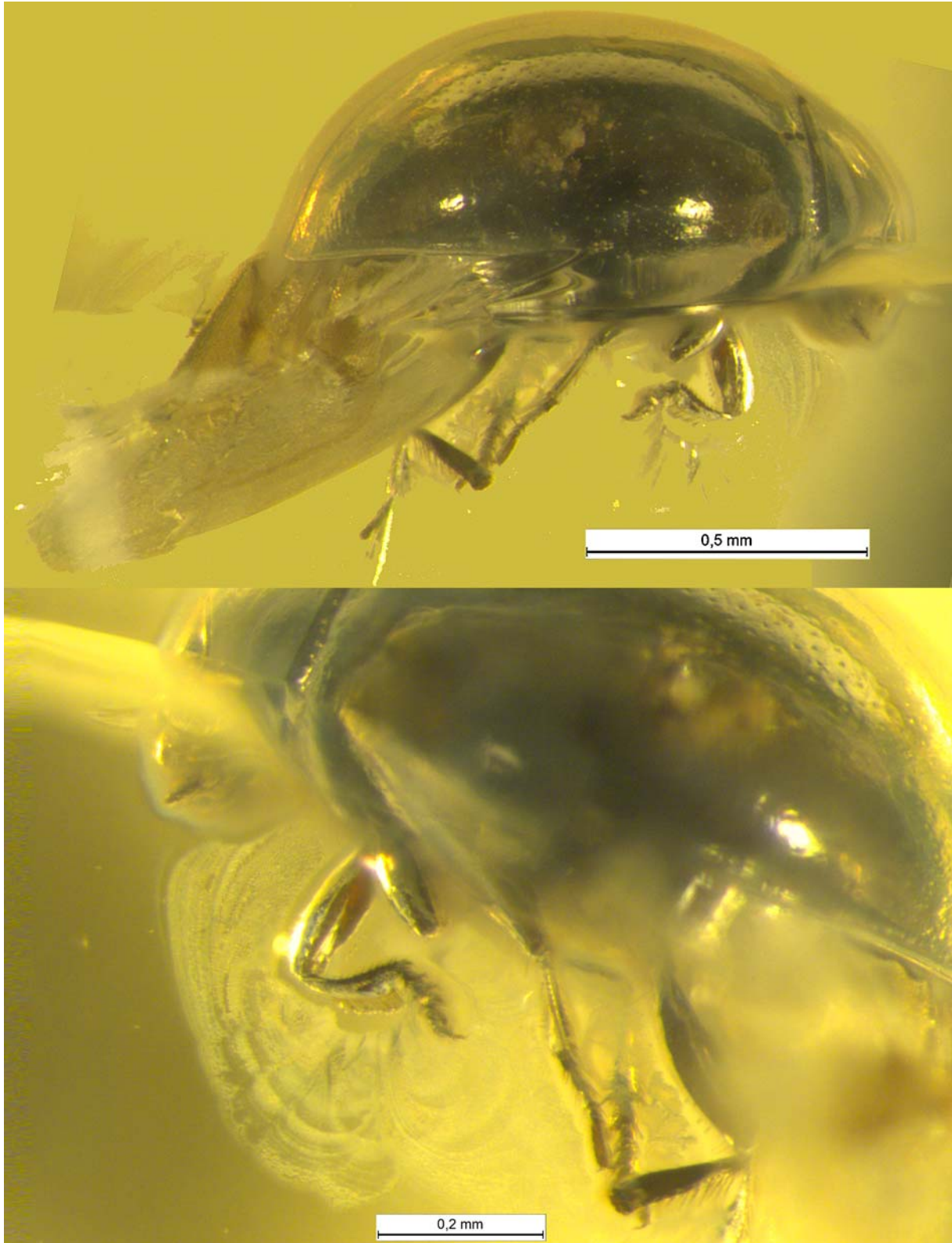
Publications about any species of *Ephistemus* and closely related genera are rather few. The group of genera including *Ephistemus*, the former tribe of Ephistemini, is poorly studied. The Palaeartic species of the closely related genus *Curelius* Casey, 1900 were keyed by Johnson [1971]. Information on the species list has not been updated for a long time. Recently, Esser [2017] published a work describing a new species of the related genus *Curelius* from the Afrotropical Region and new findings of *Ephistemus*. *E. globulus* (Paykull, 1798) has been found at damp moist points in the forest as well as on dead fungi and has been sieved from dry fern.

Six extant *Ephistemus* species are widely distributed [Leschen, 1996]. Of the three Palaeartic species [Johnson *et al.*, 2007] only *E. reitteri* Casey, 1900 is unknown from other realms: *E. globulus* is known from Palaeartic, Nearctic, and New Zealand and *E. splendens* Johnson, 1971 from Palaeartic and Oriental regions. Recent *Ephistemus* beetles feed on fungal spores and hyphae, living in rotting vegetation, mammal dung and nests.

The genus is rarely recorded in the Late Eocene ambers. The first Baltic amber species was indicated some years ago [Kubisz, 2000], but the species was not

described. In the present paper we describe a new species of *Ephistemus* from Baltic amber, the first named representative of the genus from Eocene amber. Earlier

we described three species of *Atomaria* from Eocene ambers [Lyubarsky, Perkovsky, 2013; Perkovsky, Lyubarsky, 2014; Lyubarsky, Perkovsky, 2018]. The spe-



Figs 1–2. *Ephistemus crassipes* sp.n.: 1 — lateral view; 2 — structure of tarsi.
Рис. 1–2. *Ephistemus crassipes* sp.n.: 1 — сбоку; 2 — строение лапок.

cies of the genus *Ephistemus* is the fourth species of subfamily Atomariinae from Eocene ambers.

Photographs were taken at the Schmalhausen Institute of Zoology (Kiev, SIZK) using the microscope Leica MZ 16.

Taxonomy

Family Cryptophagidae Kirby, 1826
Subfamily Atomariinae LeConte, 1861
Genus *Ephistemus* Stephens, 1829

Ephistemus crassipes Lyubarsky et Perkovsky, **sp.n.**
Figs 1–3.

MATERIAL. Holotype: 1223-2, in collection of Christel and Hans Werner Hoffeins (Hamburg), Yantarnyi, Baltic amber, Late Eocene. The type will be deposited at the amber collection of Senckenberg Deutsches Entomologisches Institut Müncheberg (SDEI), Germany. Collection code: CCHH.

DESCRIPTION. Length of body 1.2 mm, body round, convex (Fig.1), covered with very minute sparse punctures and bearing small and very fine decumbent hair. Body, legs and antennae entirely dark brown.

Head transverse, finely punctured, distance between punctures more than diameter of puncture; with hemispherical faceted eyes; length of eye 4 times less than width of head. Eye prominent, normally developed, one eye smaller than the distance between the eyes. Head not constricted behind eye. Antennae slender, with club reaching beyond base of pronotum, joints of flagellum elongate, about 1.5 times as long as broad, antennomere 1 elongated, slightly curved, a little longer than 2nd, antennomere 3 up to over 2.5 times the length of 4. Antennomeres 4–8th short, 1.5 times as long as broad, 9th slightly transverse, narrower than 10th, 10th transverse, 11th obliquely oval, joints 9–11 asymmetrical, equal in width, antennomere 11th longer than 10th, slightly compressed. Antennal insertions widely separated basally. Antennal grooves on head and prosternum present. Frontoclypeal suture present.

Pronotum strongly transverse, 4 times as broad as long, weakly and finely punctured, distance between punctures equal to 4 their diameters. Anterior edge not sinuate, anterior angles without thickening or callosity. Pronotal sides converging anteriorly, greatest width at base. Base of the pronotum without depression in the middle; basal pits absent, hind angles rectangular; pronotal disk convex. Basal margin slightly lobed. Prosternum without punctation. Prosternal process with parallel lines. Width of mesosternal process greater than mesocoxa. Metasternum rarely punctured. On all the legs, the femur and tibia are approximately equal in length to each other. The foretarsus approximately half the length of the foretibia (Fig. 2), the metatarsus approximately two-thirds the length of the metatibia. The anterior femora thickened, approximately equal to the width of the epimeron at the base, the foretibia thickened, only slightly narrower than the femur. The tibia at the apex about twice as thick as the base. The tarsi wide, their width about half the maximal width of the tibia. Tarsomeres with fairly large lobes. Tarsal formula 5-5-5. Tibia without spurs. Longitudinal metasternal line absent. Meta-intercoxal process wider than long. Femoral line absent. Ventrite 5 evenly arcuate; ventrite 5 without crenulations, surface unmodified.

Scutellum small, pentagonal, transverse. Elytra short-oval, moderately convex, humeral corners rounded, weakly

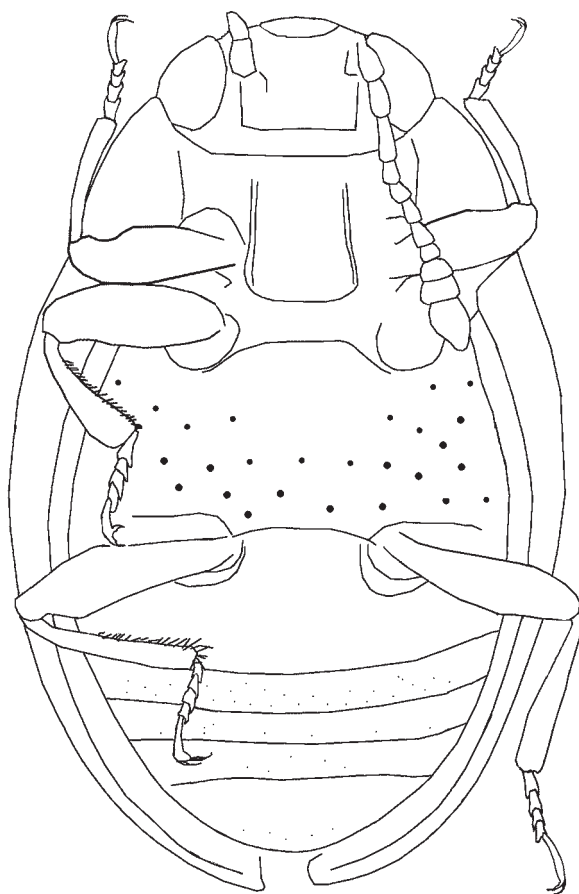


Fig. 3. Drawing of ventral view of *E. crassipes* **sp.n.**
Рис. 3. Вид снизу *E. crassipes* **sp.n.** (рисунок).

curved at sides, maximum breadth of elytra in first third of their length, 3 times as long as pronotum, 1.4 times as long as broad. Surface shining, densely punctured, punctures in basal part slightly stronger than on pronotal disk, and approximately 4 diameters apart their lateral neighbors on an average. Elytral impression absent. Epipleuron present to level of posterior margin of metasternum. Wings fully developed.

ETYMOLOGY. The species is named *crassipes*, because in contrast to other members of the genus, it has thick femora and tibia.

REMARKS. This species differs from other members of the genus *Ephistemus* by thickened femur and tibia.

The genus is known from Holarctic, Oriental region and Central America, circumtropical. *Ephistemus apicalis* LeConte, 1863 distributed in USA; *E. distans* Sharp, 1900, in Guatemala; *E. globulus* (Paykull, 1798), in Algeria, Italy, Germany, Norway, Russia, Georgia, Iran, China, USA, New Zealand; *E. perminutus* Casey, 1924, in USA; *E. reitteri* Casey, 1900, in United Kingdom, France, Spain, Portugal, Italy, Greece, Germany, Switzerland, Austria, Czechia, Hungary, Poland, Bulgaria, Russia, Azerbaijan, Iran, Turkey, Israel; *E. splendens* Johnson, 1971, in Pakistan, India, Nepal, China.

Other species of the genus are usually distinguished by the elytral punctation and the size of the body, color and shagreening of elytra, the relative width of the segments of antennal club. For example, *E. splendens* differs by very large and sparse punctation of pronotum and elytra. *E. exiguus*

differs from the new species by a much more transverse antennal club. The new species differs primarily in the structure of the legs. It has wider femur and tibia than other species of the genus. The tarsi are somewhat longer and thicker than those of recent species. The new species does not differ in the punctuation of elytra. For example, it does not differ from *E. globulus*, punctured rarely and weakly, much weaker than *E. splendens*. In *E. globulus*, the hind tarsi are slightly thickened, with small pubescent lobes. Unlike *E. reitteri*, the new species does not have shagreened elytra (and has thicker legs).

The climate of the southern coast of Subparatethys was much warmer than that of the Baltic amber forest [Wolfe et al., 2016; Mänd et al., 2018; Sokoloff et al., 2018; Perkovsky, Olmi, 2018; Perkovsky, 2018], which determined a much higher share of the tropical elements in the fauna [Perkovsky, 2013, 2016, 2017]. Some tropical elements from Bitterfeld and Rovno amber, e.g. Thallisellini (Erotylidae: Languriinae), the *Litochropus* genus group (Phalacridae) [Lyubarsky, Perkovsky, 2016, 2017a], Valenfriesiini (Anthribidae) [Legalov et al., 2018] are unknown from Baltic amber, others are represented by single specimen, e.g. Corethrellidae [Baranov et al., 2016]. In the same time Holarctic and cosmopolitan taxa strongly prevail in Baltic amber [Perkovsky, 2016, 2017]; interesting, that all Late Cretaceous atomariines are known from colder *Baeomorpha* realm [Lyubarsky, Perkovsky, 2014, 2015, 2017b; Gumovsky et al., 2018]. It will be important to study the connections between these and Late Eocene European atomariines.

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