

# New Species of Sap Beetles (Coleoptera: Nitidulidae: Epuraeinae, Cybocephalinae) from the Baltic Amber

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**Abstract**—A new genus, *Baltoraea* gen. nov., two new species of this genus, *B. insignis* sp. nov. and *B. simillima* sp. nov., and three other new species, *Cybocephalus (Cybocephalus) balticus* sp. nov., *C. (C.) electricus* sp. nov. and *C. (C.) kerneggeri* sp. nov. are described from the Late Eocene Baltic amber. The systematic position of the genus *Baltoraea* and presumable bionomics of the new sap beetles are discussed.

**Key words:** Nitidulidae, new taxa, Baltic amber.

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## INTRODUCTION

Sap beetles are a relatively diverse family in the Recent fauna, which is relatively well represented in the fossil record, in particular, in fossil resin (Schau-fuss, 1892; Spahr, 1981; Hieke and Pietrzeniuk, 1984; Kirejtshuk and Poinar, 2007; Kirejtshuk and Nel, 2008; Ponomarenko and Kirejtshuk, 2009; Kirejtshuk and Kurochkin, 2010). The specimens studied are from the private collections of F. Kernegger and C. Gröhn, bequeathed to the Zoological Institute of the Russian Academy of Sciences (ZIN) and to the Institute and Museum of Geology and Paleontology of Hamburg University (GPIH), respectively. The interpretation of the family system used in this paper follows Kirejtshuk (2008).

## SYSTEMATIC PALEONTOLOGY

### Subfamily Epuraeinae Kirejtshuk, 1986

#### Tribe Epuraeini Kirejtshuk, 1986

#### Genus *Baltoraea* Kurochkin et Kirejtshuk, gen. nov.

**E t y m o l o g y.** From the Baltic Sea and the ending *raea*, commonly used in generic names of the subfamily Epuraeinae.

**T y p e s p e c i e s.** *B. insignis* sp. nov.

**D i a g n o s i s.** Body medium-sized, flattened dorsally and slightly convex ventrally. Puncturation of dorsum distinct and relatively dense, forming longitudinal rows on elytra; puncturation on underside larger than on dorsum. Pubescence of dorsum and underside undeveloped (except on apex of abdomen and on appendages). Head with long and weakly curved mandibles, large mentum, transverse unilobed labrum (not

divided into lobes), and parocular lines. Antennae of moderate length, with three-segmented loose and narrow club. Pronotum with sides slightly arcuate, angles of pronotum not protruding, widely and evenly rounded at apex, basal border distinct. Elytra somewhat shortened, with transverse apices, leaving one or two distal abdominal tergites uncovered. Prosternal process narrow and moderately dilated in front of transverse apex. Space between metacoxae moderately wide; posterior margin of metaventrite between them angulately notched. Tibiae of all legs with small sparse thickened spines along external margin. Traits of secondary sexual dimorphism manifested in more strongly developed appendages of head, longitudinal medial impression on metaventrite, transverse apex of pygidium, and well-developed anal sclerites in males.

**S p e c i e s c o m p o s i t i o n.** *B. insignis* sp. nov. and *B. simillima* sp. nov.

**C o m p a r i s o n.** In contrast to other species of the subfamily, species of the new genus have distinct rows of punctures on elytra, unilobed labrum (not divided into lobes), and pronounced basal border of the pronotum. The new genus is similar to *Eumystrops* Grouvelle, 1906 in many characters, especially in the elongate and loose antennal club, shape of mandibles, large mentum, relatively large eyes, somewhat dilated tibiae, and shape of prosternal process, elytra, and apex of abdomen. However, it is clearly distinguished from *Eumystrops* not only by the above-listed characters that define the new genus within the entire subfamily, but also in the relatively short labrum, small thickened spines along the external margin of the tibiae, presence of parocular lines, and the absence of pubescence on the dorsum. In addition, species of

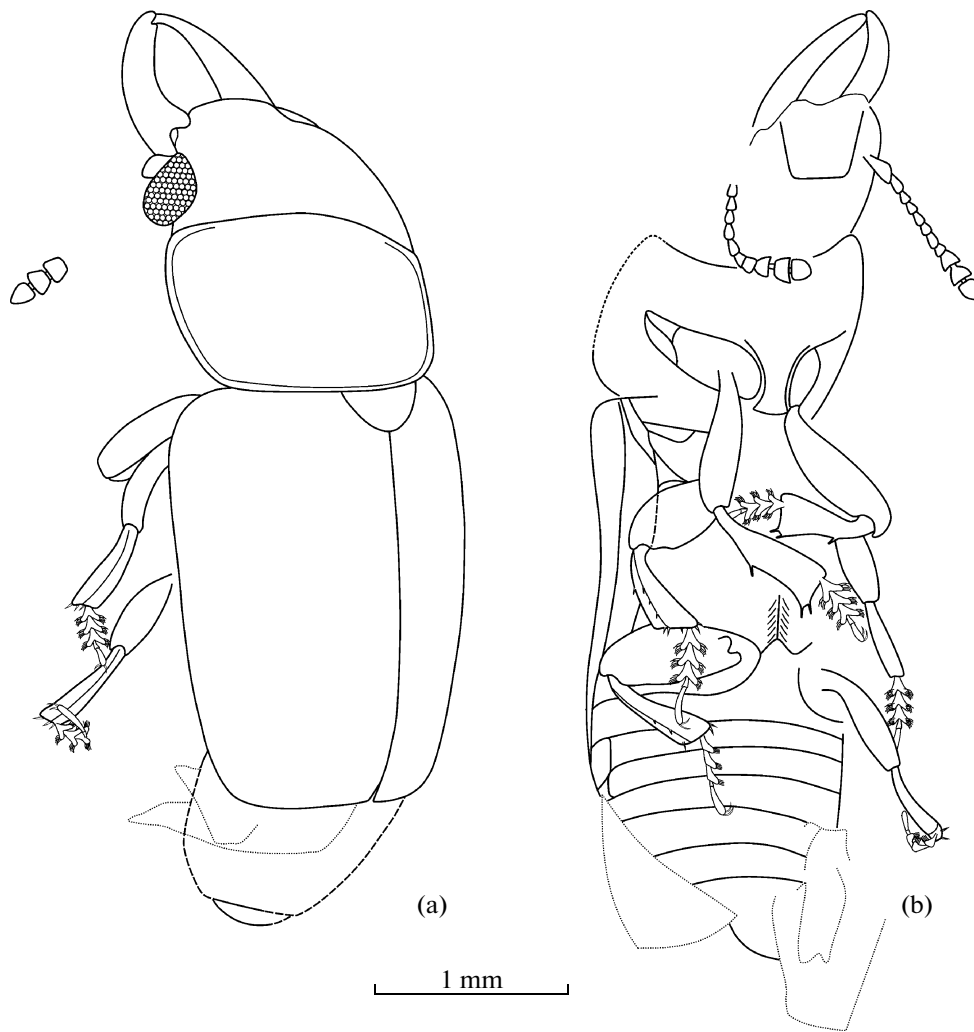


Fig. 1. *Baltoraea insignis* gen. et sp. nov., holotype: (a) body in dorsal view, (b) body in ventral view.

*Eumystrops* oftener have flattened body and very long lobes of the labrum, strongly protruding from below the frons, some of them also have traceable weakly developed basal border of the pronotum, and the male mentum in species of the subgenus *Mandipetes* Kirejtshuk, 1997 has proportions relative to other parts of the body comparable to those in species of the new genus.

**Remarks.** Species of the genus *Baltoraea* gen. nov., which show structural similarities to *Eumystrops* and some other anthophilous groups of the subfamilies Epuraeinae (the genera *Apria* Grouvelle, 1919 and *Grouvellia* Kirejtshuk, 1984), Meligethinae (many genera close to the genera *Pria* Stephens, 1829, *Microporum* C. Waterhouse, 1876, and *Cryptarchopria* Jelínek, 1975), and Nitidulinae (the tribe *Mystropini* Murray, 1864), were probably anthophilous. The extent to which these adaptations are developed suggests that species of *Baltoraea* gen. nov. were probably completely anthophagous and had larvae developing in inflorescences and adults also feeding on flowers.

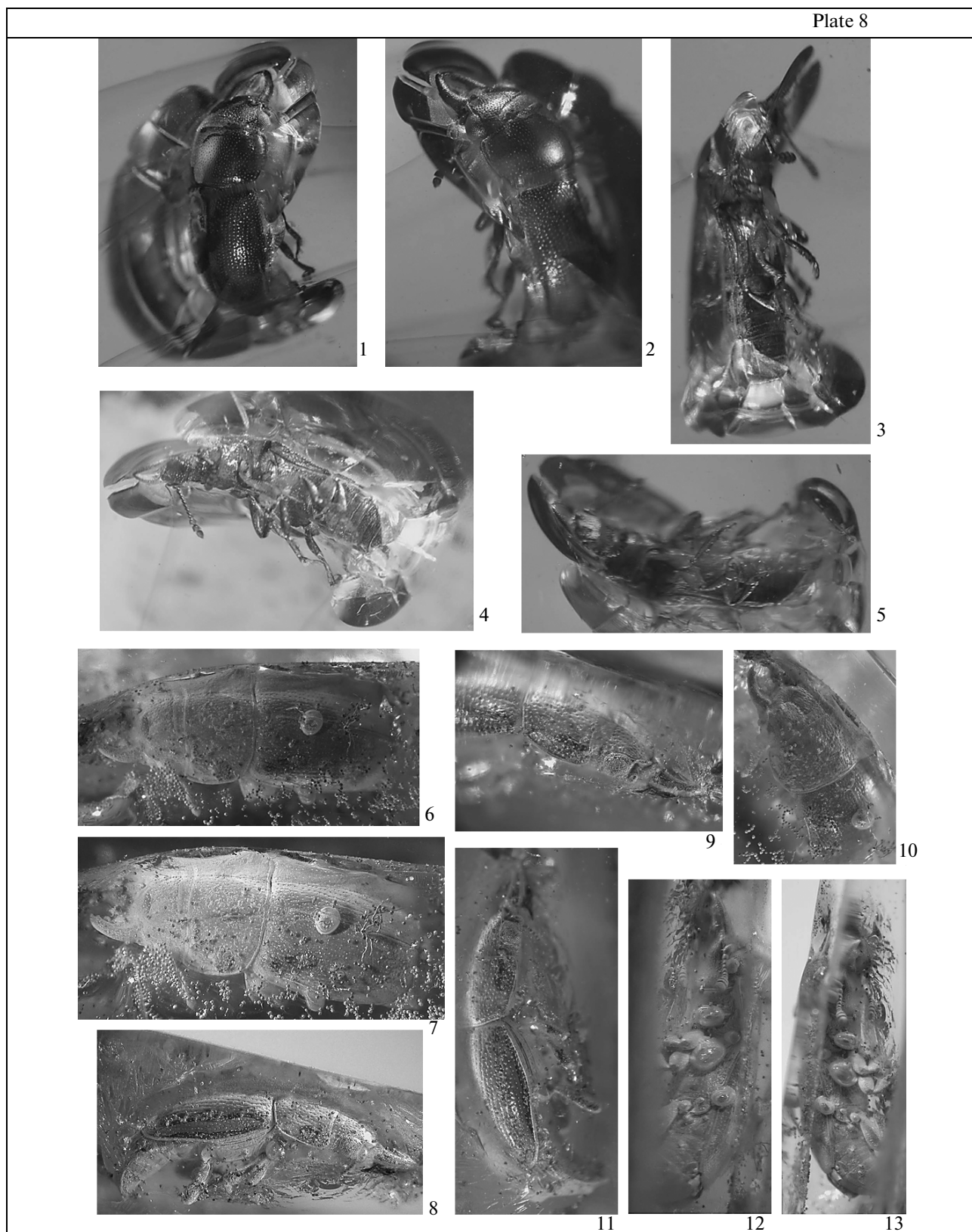
*Baltoraea insignis* Kurochkin et Kirejtshuk, sp. nov.

Plate 8, figs. 1–5

**Etymology.** From the Latin *insignis* (prominent, remarkable).

**Holotype.** Coll. of C. Gröhn, no. 995C, well preserved male, enclosed in a relatively large ovate piece of amber  $37 \times 18 \times 7.5$  mm, the wings almost entirely expanded from under elytra, but crumpled, the upper part of the right elytron partly covered with “milky coating,” sculpture of the pygidium surface not clearly visible; wide cracks radiating from the beetle’s body, another large and wide crack runs longitudinally through half of the amber piece, along with two smaller cracks near the surface; small and very scarce air vesicles are present in the amber; syninclusions: a small Acarina and a nematoceran fly; Baltic amber; Late Eocene.

**Description** (Fig. 1). The body is oblong-oval, with a flattened dorsum and moderately weakly flattened underside; chestnut-brown, with more reddish



## Explanation of Plate 8

**Figs. 1–5.** *Baltoraea insignis* gen. et sp. nov., holotype, body: (1, 2) dorsal, (3) ventrolateral, and (4, 5) ventral views.

**Figs. 6–13.** *Baltoraea simillima* gen. et sp. nov., holotype, body: (6, 7) dorsal, (8, 11) lateral, and (12, 13) ventral views; (9, 10) anterior part of body, dorsal view.

underside and reddish brown antennae and tarsi; strongly shining dorsally and moderately shining ventrally; the dorsum and the underside are without pubescence, although the antennae and legs have short setae, and tarsomeres 1–3 have brushes of long hairs.

The surface of the mandibles is covered with distinct dense punctures separated by approximately two puncture diameters; the interspaces between these punctures are with pronounced rugose sculpture. The head is similarly punctured, but the punctures are larger and deeper, the spaces between them have very well developed rugose sculpture. The pronotum is covered with punctures shallower and sparser than those on the head; the interspaces between them are 3–4 puncture diameters, and the rugose sculpture is more smoothed-out than on the head. The surface of elytra is covered with coarser, deeper, and more distinct punctures than those on the pronotum, forming more or less regular longitudinal series; the interspaces between these punctures are somewhat smaller than two puncture diameters, and the distance between rows is 2–3 puncture diameters (the punctures are getting larger laterally); the spaces between punctures are smooth and shining. The punctation and sculpture of the mentum is similar to that of the head. The underside of the head is covered with distinct, rather dense punctures, separated by approximately two puncture diameters. The puncturation of the prosternum and the mesoventrite is similar to that of the head underside, but the punctures are coarser and shallower. The metaventrite (except the smooth median part) and the epipleura are covered with distinct punctures separated by 1.5–2 puncture diameters. The metepisterna are covered with dense and rather coarse punctures, the distance between which is about the puncture diameter. The surface of abdominal ventrite 1 and the posterior part of ventrites 2 and 3 has very weakly developed rugosity; the puncturation of the other abdominal ventrites is similar to that of the metaventrite.

The head is slightly convex, with a moderately anteriorly protruding frons having a transverse margin; the head is about 1.25 times as wide as long, with a slightly developed occipital line; the frons has an arcuate impression between the antennal insertions. The parocular lines are weakly developed. The eyes are well developed and consist of medium-sized facets. The labrum protrudes from under the frons in the shape of a transverse strip lacking a median notch. The mandibles are large, somewhat shorter than the pronotum, evenly arcuately curved, with a relatively small, somewhat blunt preapical tubercle on the internal margin. The antennal length is somewhat smaller than the head width, the length of the club is approximately one-third of the total antennal length; the club is moderately elongate; antennomere 10 is somewhat longer than antennomere 9; the apical antennomere is approximately 1.5 times longer and distinctly narrower than antennomere 10, widely rounded at the apex.

The pronotum is moderately convex, sloping gently laterally towards the moderately narrowly explanate lateral margins, widest in the anterior third; its anterior margin is very weakly arcuately notched; its posterior margin is weakly arcuately curved; the front angles of pronotum are not protruding, with blunt apices; the posterior angles are widely and evenly rounded apically; the basal border is distinct and relatively wide. The scutellum is semicircular, widely and evenly rounded at the apex, less than twice longer than wide. The elytra are steeply sloping towards the extremely narrowly bordered, subparallel-sided, rounded towards the wide and transverse apices; the sutural angle is not deep; the elytra are about twice as long as wide combined. The apex of the pygidium is widely transverse, with a rounded apex of the anal sclerite protruding from below.

The mentum expands anteriorly, almost regularly trapeziform. The prosternal process moderately extends beyond the closely positioned procoxae, is curved along the coxal cavities, and distinctly dilated before the transversely truncated apex. The distance between the mesocoxae is approximately 2.5 times greater, and the distance between the mesocoxae is almost 3 times greater than the distance between the procoxae. The metaventrite has a shallow longitudinal median impression; its posterior margin is relatively narrowly and moderately deeply angularly notched between the relatively widely spread metacoxae. The submetacoxal line is not expressed. The epipleura are widest at the base, slightly wider than the antennal club, gently narrowing towards the elytral apices. The mesepimera are relatively long and narrow; the metepisterna are about as wide as the elytral epipleura basally. Abdominal ventrite 1 is approximately twice as long as ventrite 2 and slightly longer than ventrites 3 and 4 taken together; the hypopygidium is approximately as long as ventrite 2 and widely rounded apically.

The profemur is slightly wider than the antennal club, with a weakly arcuate anterior and posterior margins; the mesofemur is distinctly wider than the profemur, with a weakly arcuate anterior margin and a moderately arcuate posterior margin; the metafemur is considerably wider than the mesofemur, subequal in width to the length of the antennal club, with a strongly arcuate anterior margin and a moderately arcuate posterior margin. All tibiae are somewhat curved, strongly dilated towards the apex (almost triangular in shape); the protibiae are somewhat wider than the other tibiae (somewhat wider than the elytral epipleura basally), the meso- and metatibia are approximately as wide as the elytral epipleura basally. The external margin of all tibiae has well developed sparse spines. The tarsi are relatively long and equally narrowly lobed, with well-developed pads formed by long and dense golden hairs; the claws are simple and relatively long.

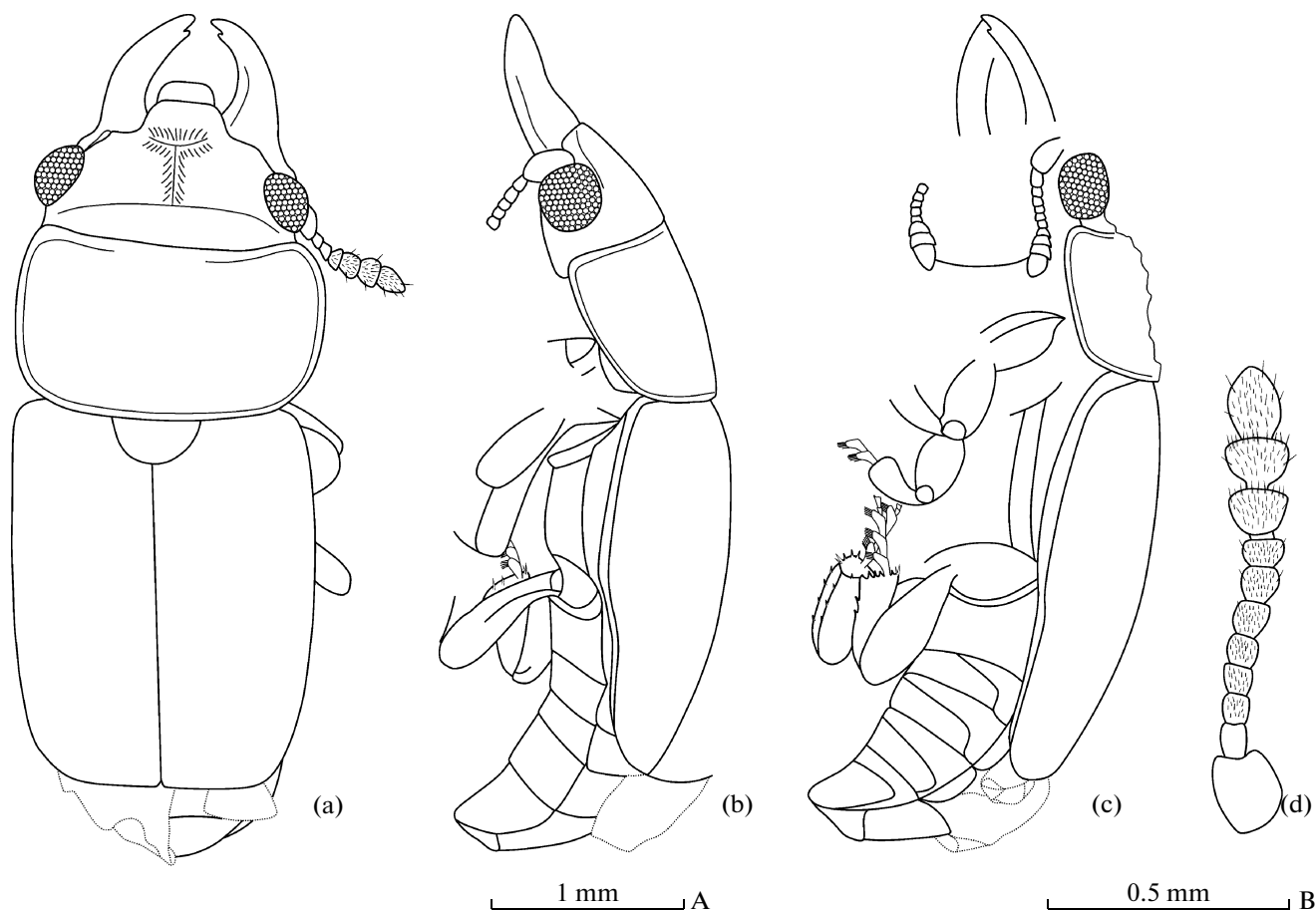


Fig. 2. *Baltoraea simillima* gen. et sp. nov., holotype: (a) body in dorsal view, (b) body in lateral view, (c) body in ventral view, (d) antenna. Scale bars: (A) Figs. 2a–2c; (B) Fig. 2d.

**Measurements, mm.** Body length, about 4.35; body width, 1.35; height, 0.9.

**Comparison.** The new species differs from the congener (see below) in the reddish brown and lighter coloration of the body, the shape of impression on the head, the weakly developed parocular lines, the more distinct lateral and basal borders of the pronotum, the punctuation and sculpture of the surface, and in the narrower tibiae.

**Material.** Holotype.

*Baltoraea simillima* Kurochkin et Kirejtshuk, sp. nov.

Plate 8, figs. 6–13

**Etymology.** From the Latin *similis* (similar).

**Holotype.** Coll. of C. Gröhn, no. 4243C, well-preserved male, completely covered with very thin milk-white air layer, masking the true coloration of the insect, with the posterior wings slightly extending from under the elytra; enclosed in an elongate polished piece of amber with the maximum dimensions of  $24 \times 8 \times 4.5$  mm; a medium-sized air vesicle is at the disc of elytra, several vesicles of different size are along the underside of the body and small air vesicles and coprolites are accu-

mulated mostly above and below the beetle in the same plane with it; small “stellate hairs” of oak are also present in the amber; the amber is permeated with several wide longitudinal and smaller, but numerous cracks; there is an inclusion of a small nematoceran fly without head behind the beetle, at the surface of the amber piece; Baltic amber; Late Eocene.

**Description** (Fig. 2). Some characters similar to those in the previous species are omitted. The body is almost unicolored black, shining dorsally. Very short semirecumbent pubescence is visible on abdominal ventrite 5, antennae, and legs. The dorsum is covered with relatively coarse and sparse punctures; the interspaces between these punctures are strongly sculptured. The head is covered with small and distinct punctures, the interspaces between which are equal to 4–5 puncture diameters and have very contrasting cellular sculpture. The punctuation of the pronotum is somewhat sparser than that of the head; the interspaces between punctures have more pronounced sculpture. The surface of the elytra is covered with deeper and more distinct punctures than that of the pronotum, forming more or less regular longitudinal rows; the distance between punctures and the distance

between the rows is equal to 4–6 puncture diameters. The pygidium surface is covered with very fine, rather shallow, and very sparse punctures. The head has a rather shallow V-shaped impression between the antennal bases, which extends posteriorly as a long median impression, reaching the occipital fold. The parocular lines are well developed. The mandibles are strongly developed, narrow, and weakly curved. The pronotum has a very narrow, but distinct basal border. The tibiae are wider than the epipleura basally, with sparse and relatively small thickened spines on the external margin.

**Measurements**, mm. Body length, ca. 4.7; body width, 1.35; height, 0.83.

**Comparison.** The new species differs from *B. insignis* sp. nov. in the almost black body color, the weak and barely distinct impression on the head, the well-developed parocular lines, the narrower lateral and basal borders of the pronotum, the puncturation and sculpture of the surface, and in the wider tibiae.

**Material.** Holotype.

#### Subfamily Cybocephalinae Jacquelin du Val, 1858

#### Tribe Cybocephalini Jacquelin du Val, 1858

#### Genus *Cybocephalus* Erichson, 1844

**Diagnosis.** Body usually very small (0.8–1.0 mm), less often medium-sized (2.0–3.0 mm), dark, shining, often with metallic sheen, usually strongly convex dorsally and slightly convex ventrally, oval or, less often, oblong-oval. Head and pronotum capable of strong downward bending, allowing beetle rolling body into ball. Dorsum without pubescence or finely, sparsely, and evenly pubescent, never with longitudinal rows of setae on elytra. Punctuation of dorsum always even. Head large, somewhat flattened and very wide, with very large eyes. Antennae 10–11-segmented, with three-segmented oblong or relatively compact club. Elytra usually slightly shortened. Epipleura inclined ventrolaterally. Prosternum strongly shortened. Mesoventrite strongly impressed. Submetacoxal lines usually distinct, reaching posterior margin of ventrite 1. Sclerites of legs relatively narrow. Tarsi 4–4–4, with lobed tarsomeres 1–3; less often, all tarsomeres without lobes. Males usually with well-developed anal sclerite, visible from outside.

**Composition.** Subgenera *Cybocephalus* sensu stricto and *Theiticephalus* Kirejtshuk, 1988 (Kirejtshuk, 1988).

**Remarks.** Recent members of the genus are obligatory parasitoids of both life cycle phases of scale insects and whiteflies, living mostly in trees and shrubs. The group reaches its highest diversity in the tropics and subtropics of the Eastern Hemisphere, but some species have also been recorded in the Nearctic, Neotropical, and Patagonian regions. The fossil species described below and Early Eocene species of the genus *Pastillocenicus* Kirejtshuk et Nel, 2008 probably had a

mode of life similar to that of the living members of the genus.

#### Subgenus *Cybocephalus* Erichson, 1844

The Recent fauna includes over 250 species. In fossil state, the subgenus was recorded in the Baltic amber (Hieke and Pietrzeniuk, 1984), in deposits of the Middle Miocene (Palmer et al., 1957) and Holocene (Koponen and Nuorteva, 1973); however, fossil species have not yet been described.

*Cybocephalus (Cybocephalus) balticus* Kurochkin et Kirejtshuk, sp. nov.

Plate 9, figs. 1–3

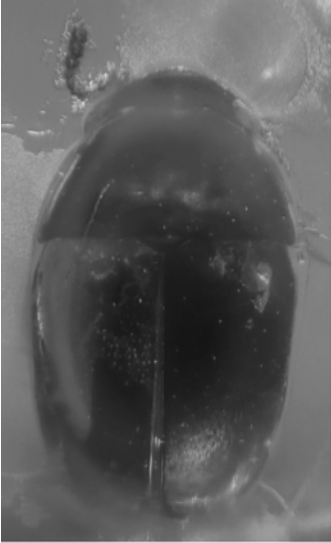
**Etymology.** From Baltic amber.

**Holotype.** Coll. of C. Gröhn, no. C4557, complete female with bent head and incompletely discernible integument, enclosed in an elongate piece of amber with irregular and rounded surfaces, with the maximum dimensions of 20 × 7 × 3 mm; the amber is permeated with many cracks, mostly below the beetle; a few “stellate hairs” of oak are to the right of the beetle; coprolites and some other organic particles are present in the entire volume of the amber piece; the beetle is located in an oval crack, surrounding it in projection; it is partly covered with “milky” coating, also partly thinly covering the dorsum (mostly head and pronotum) and underside (mostly head, pronotum, and spaces between meso- and metacoxae); Baltic amber; Late Eocene.

**Description** (Fig. 3). The body is almost ovoid, with a dark chestnut dorsum and a reddish brown underside and appendages; relatively strongly convex dorsally and slightly convex ventrally; the surface is from weakly shining to almost mat; the dorsum has short, conspicuous, semirecumbent, sparse hairs, approximately two-thirds as long as the distance between their insertions; the underside has less conspicuous, but much denser and even pubescence.

The pronotum has very sparse and small punctures bearing the hair bases; the interspaces between these punctures are very finely rugose. The puncturation of elytra is similar to that of the pronotum; interspaces between the punctures are very finely rugose, becoming more distinct near the apices. The pygidial surface is probably not smoothed. The underside is probably covered with fine and scattered punctures, finely and densely sculptured (partly smoothed). The sides of the metaventrite have smoothed and slightly impressed lateral areas on each side in front of the coxae, allowing the movement of the femora; each area is delimited by a straight line, which is more than three-fourths as long as the metaventrite.

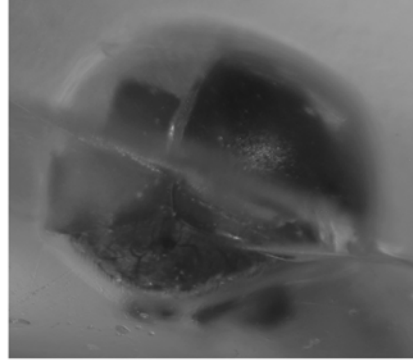
The head is slightly convex; the frons protrudes moderately anteriorly, somewhat shorter than the distance between the very large eyes (formed by moderately coarse facets); the eye come onto the ventral surface of the head in the shape of a triangle; a relatively



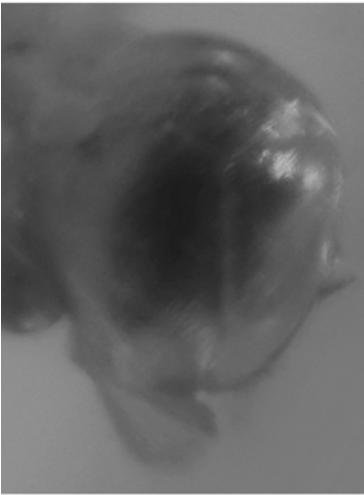
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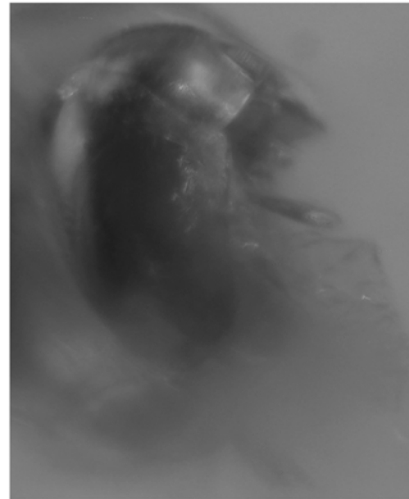
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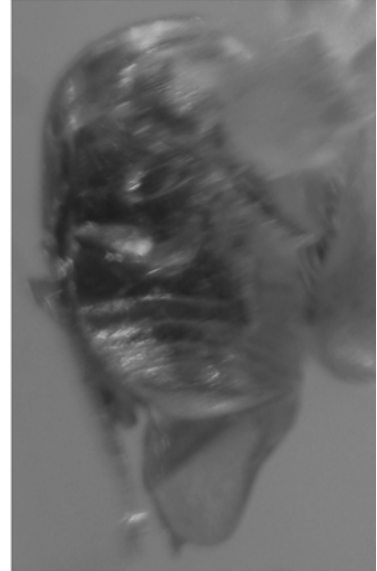
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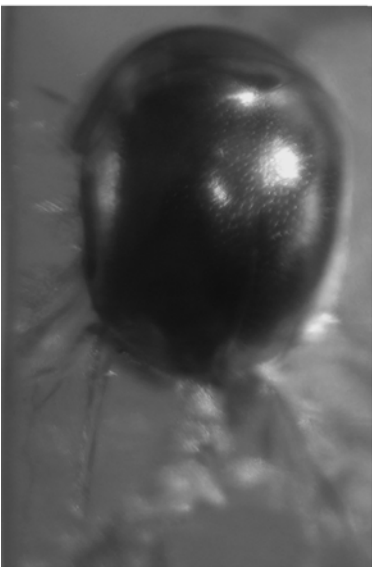
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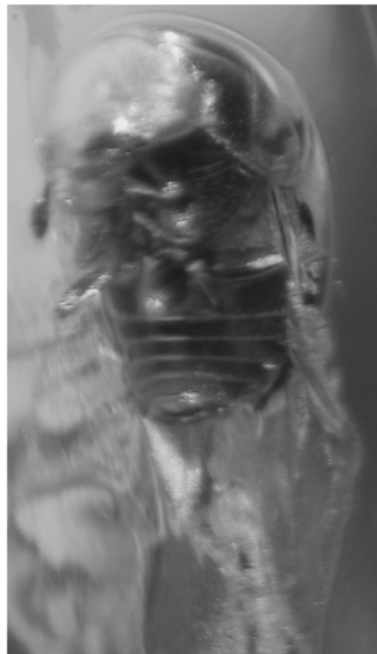
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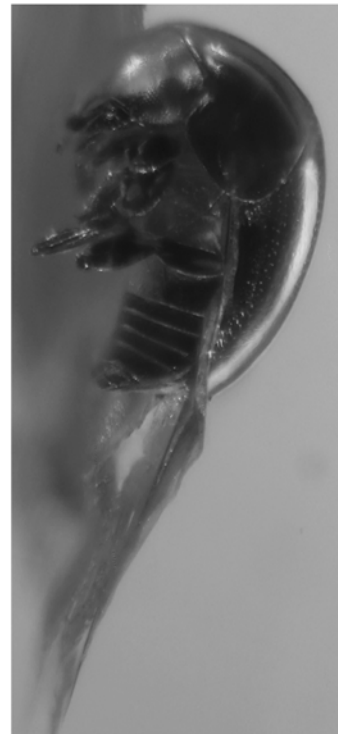
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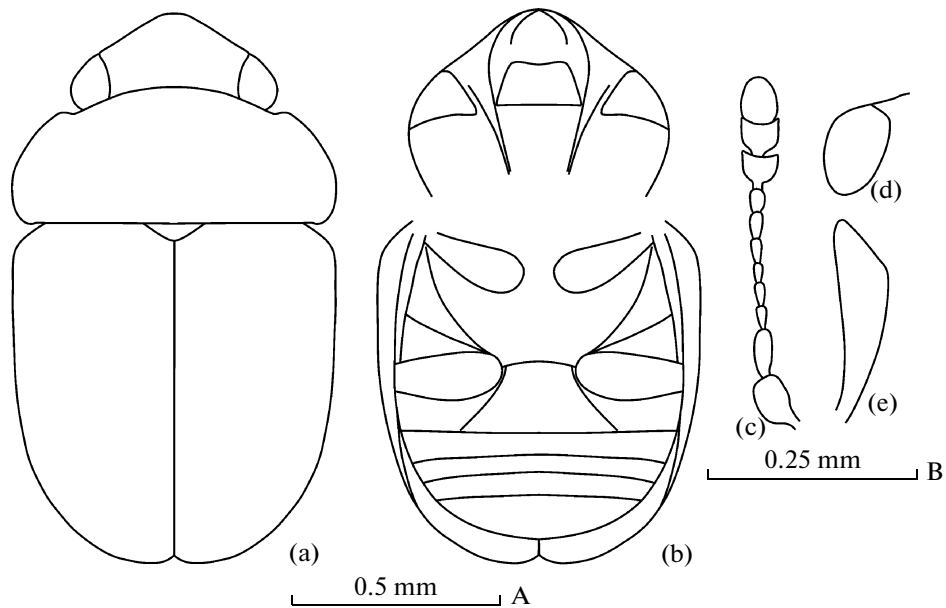
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**Fig. 3.** *Cybocephalus (Cybocephalus) balticus* sp. nov., holotype: (a) body in dorsal view, (b) body in ventral view, (c) antenna, (d) eye, (e) protibia in dorsal view. Scale bars: (A) Figs. 3a and 3b; (B) Figs. 3c–3e.

short and narrow fold runs along the anterior margin of the eye. The mandibles are moderately developed, slightly protruding from under the frons. The antennae are 11-segmented, approximately two-thirds as long as the head width; the elongate three-segmented antennal club is about one-fourth of the total antennal length; the scape is about half of the total antennal length; antennomere 2 is oval, slightly narrower than the scape, about two-thirds as long as the scape; antennomeres 3–8 are subconical and somewhat shorter than antennomere 2; antennomere 9 is the shortest in the club; antennomere 10 is slightly longer than antennomere 9 and distinctly shorter than antennomere 11. The pronotum is approximately 0.4 times as long as the elytra, relatively strongly and evenly convex, with strongly sloping sides; its anterior margin is bisinuate; its sides are moderately rounded, without visible borders; its posterior margin is almost straight; the anterior and posterior angles are rounded widely apically. The scutellum is subtriangular, approximately 2.5 times as wide as long, with a widely rounded apex. The elytra are slightly longer than their width combined, rather convex at the disc, evenly and smoothly sloping towards the sides, which are slightly arcuate; the apices of both elytra are rounded together, without forming a distinct sutural angle. The pygidium has a widely rounded apex. The distance between the meso-

coxae is probably considerably greater than the distance between the procoxae and probably 2.5 times greater than the distance between the metacoxae (the distance between the metacoxae is approximately twice as great as the metafemur width). The metaventricle is approximately 1.5 times as long as ventrite 1; its posterior margin between the coxae is probably very shallowly excised. The submetacoxal line reaches the posterior margin of abdominal ventrite 1. Ventrite 1 is almost twice as long as the hypopygidium and slightly shorter than ventrites 2–4 combined. The hypopygidium has a widely rounded apex. The epipleura are moderately narrow and steeply sloping towards the sides.

The legs are well developed. The tibiae are subequal in width apically (although the protibiae are seemingly slightly wider than the other tibiae), slightly wider than the antennal club (the meso- and metatibiae have long setae along their external margins; the protibiae lack setae). The pro- and mesofemora are approximately twice as wide as the tibiae, and the metafemur is approximately 2.5 times as wide as the metatibia and slightly longer than the metacoxa, with slightly convex anterior and posterior margins (the metafemur is slightly dilated in the distal part). The tarsi are moderately long (the metatarsus is slightly shorter than the metatibia), moderately narrow; tarsomeres 1–3 are

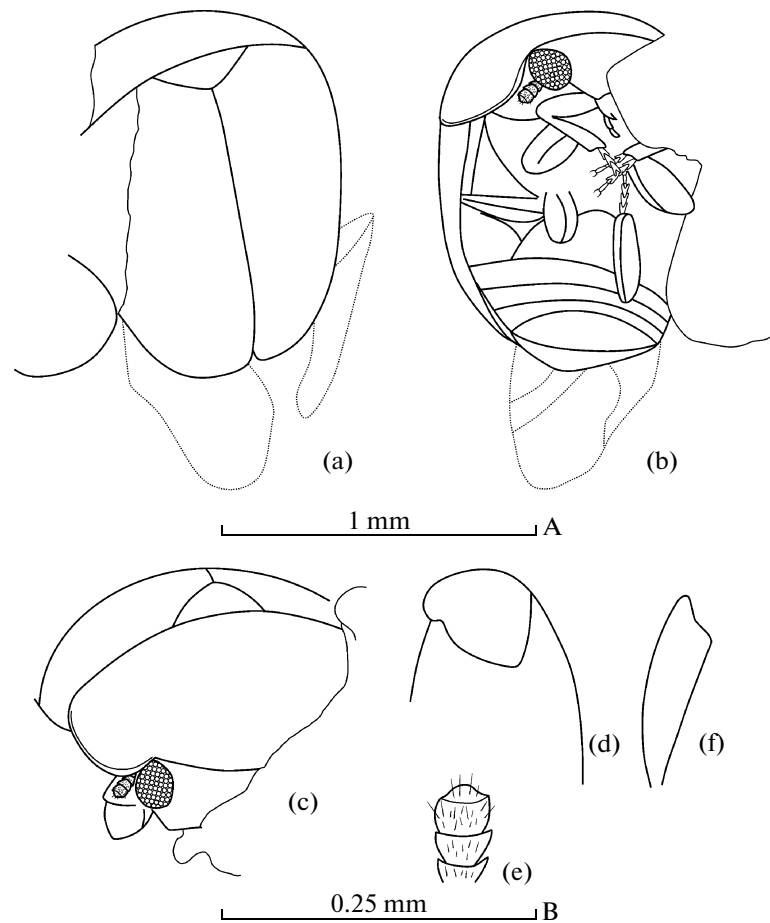
#### Explanation of Plate 9

**Figs. 1–3.** *Cybocephalus (Cybocephalus) balticus* sp. nov., holotype, body: (1) dorsal and (2) ventral views; (3) apex of abdomen, dorsal view.

**Figs. 4–6.** *Cybocephalus (Cybocephalus) electricus* sp. nov., holotype, body: (4) dorsal, (5) lateral, and (6) ventral views.

**Figs. 7–9.** *Cybocephalus (Cybocephalus) kerneggeri* sp. nov., holotype, body: (7) dorsal, (8) ventral, and (9) lateral views.





**Fig. 4.** *Cybocephalus (Cybocephalus) electricus* sp. nov., holotype: (a) body in dorsal view, (b) body in ventral view, (c) body in anterior view, (d) eye, (e) antennal club, (f) protibia in dorsal view. Scale bars: (A) Figs. 4a–4c; (B) Figs. 4d–4f.

narrowly lobed, but lobes of tarsomere 3 are very long; the claws are simple and thin.

**Measurements, mm.** Body length, 1.3; body width, 0.7; height, ca. 0.5.

**Comparison.** The new species differs from the Recent species of this subgenus in the long lobes of tarsomere 3; it differs from the two other new species from the Baltic amber in the longer elytra and the more rounded sides of the pronotum that lack distinct borders. In addition, it differs from *C. (M.) electricus* sp. nov. in the more smoothed sculpture of the dorsum, the less distinct pubescence, and the wider tibiae and femora of all legs. It also differs from *C. (M.) kerneggeri* sp. nov. in the distinct pubescence of the dorsum, the absence of bluish sheen on the head (although this sheen is probably a trait of sexual dimorphism), and the narrower and shorter setae along the margin of the abdominal apex.

**Remarks.** Because of the character of preservation, the puncturation and sculpture of the head as well as the labrum and the anterior part of the head are invisible.

**Material.** Holotype.

*Cybocephalus (Cybocephalus) electricus* Kurochkin et Kirejtshuk, sp. nov.

Plate 9, figs. 4–6

**Etymology.** From the Latin *electrum* (amber)

**Holotype.** Coll. of F. Kernegger, no. “173/2003 *Cyboceph.*,” well preserved female, with head bent almost at a right angle, wings partly extended from under elytra and somewhat stretched, in a small longitudinally flattened irregularly shaped piece of amber; there is an air vesicle close to the beetle, approximately three times as large as the beetle; the left part of the beetle is partly covered with milky coating spreading over most of the head, a third of the pronotum, and a small portion of the elytron; the amber does not contain additional inclusions; it is embedded in a parallelepipedal piece of synthetic resin  $10 \times 9 \times 7.5$  mm; Baltic amber; Late Eocene.

**Description (Fig. 4).** The body is oval, strongly convex dorsally and very slightly convex ventrally; the beetle has dark brown (almost black) body, antennae, and legs; it is strongly shining dorsally and moderately shining ventrally; the dorsum has semirecumbent, sparse, and contrasting light hairs, the distances between which are greater than their length

(which is equal to, or shorter by a half or one-third, than the distance between the punctures); the pubescence on the underside is considerably denser than on the dorsum, formed by brownish semirecumbent hairs, which are particularly dense on the abdominal ventrites.

The head surface is very finely microshagreen, covered with light, short, semirecumbent, widely spaced hairs. Puncturation of the pronotum is very sparse and shallow; the interspaces between punctures are distinctly rugose. The elytral puncturation is very sparse and shallow, the interspaces between punctures are similar to those of the pronotum, very finely rugose. The surface of the pygidium is probably not smooth. The areas of the metaventrite anterior to the femora are smooth, allowing the movement of the femora; each area is delimited by a distinct and slightly concave line, which is approximately three-fourths of the total metaventrite length. Abdominal ventrites 1–4 are finely microsculptured, lack a trace of puncturation.

The head is slightly convex, with a moderately strongly anteriorly protruding frons (with an almost transverse margin), shorter than the distance between the large eyes, which consist of medium-sized facets. The labrum has a slightly emarginate anterior margin. The mandibles are moderately developed and invisible in dorsal view. The antennae are 11-segmented, about three-fourths as long as the head width; the antennal club is three-segmented, relatively compact, and almost oval; antennomeres 9 and 10 are slightly longer than antennomere 11. The antennal club is covered with long, straight, sparse setae, becoming much denser on the apical antennomere. The pronotum is strongly transverse, more than twice as wide as long and approximately 0.42 as long as the elytra, with the maximum width in the basal third, strongly convex, steeply sloping towards the sides, which have narrow lateral borders (reaching the anterior angles, where the border becomes wide); the anterior margin of the pronotum is very widely and rather deeply excised; its sides are slightly rounded; the posterior margin is almost transverse; the anterior and posterior angles are very rounded widely apically. The scutellum is relatively large, almost triangular, more than twice as wide as long, with a pointed apex. The elytra are 1.5 times as long as wide together, convex at the disc, evenly and gently sloping towards the widely rounded apices, which form a relatively shallow sutural angle. The pygidium has a widely rounded apex, with whitish, long, straight, and dense setae along the margin of the apex. The distance between the mesocoxae is probably greater than the distance between the procoxae. The distance between the metacoxae is probably more than twice as great as the distance between the mesocoxae. The metaventrite is approximately 1.5 times as long as abdominal ventrite 1; its posterior margin between the metacoxae is rather widely and very shallowly arcuately emarginate. Abdominal ventrite 1 is less than twice as long as the hypopygidium and approximately

two-thirds as long as ventrites 2–4 taken together. The submetacoxal line is straight, begins at the posterior margin of the metacoxal cavity and reaches the posterior margin of abdominal ventrite 1. The hypopygidium has a widely rounded apex, with setae along the margin of the apex similar to those of the pygidium, but longer and slightly curved. The epipleura are narrow, sloping steeply outwards.

The legs are well developed. The femora of all legs are slightly wider than the antennal club, lack setae along the external margin. The pro- and mesofemora are approximately twice as wide as respective tibiae, with convex anterior and posterior margins; the metafemur is slightly wider than the pro- and mesofemora, with slightly convex anterior and posterior margins. The tarsi are moderately long and narrow; tarsomeres 1–3 are narrowly lobed; the claws are simple and thin.

**Measurements**, mm. Body length, 1.3; body width, 0.7; height, ca. 0.5.

**Comparison.** The new species differs from the Recent species of this subgenus in the border running along the sides of the pronotum; it differs from the two other new species in the less shining dorsum with a better developed sculpture, the denser and more distinct puncturation of the elytra, and the sparse short pubescence, in the shape of the pronotum, the compact and short antennal club, the narrow femora and tibiae of all legs, and the straight metacoxal lines. In addition, this new species differs from *C. (C.) kerneggeri* sp. nov. in the wider border at the anterior angles of the pronotum, the more raised pubescence of the underside, and the whitish short and thin setae along the abdominal margin. It also differs from *C. (C.) balticus* sp. nov. in the darker body, the presence of a border along the sides and at the anterior angles of the pronotum, the shorter elytra, and the metafemora not dilated in the distal part.

**Remarks.** The surface of the prosternum and mesoventrite is not visible because of the head bent downwards and the folded legs.

**Material.** Holotype.

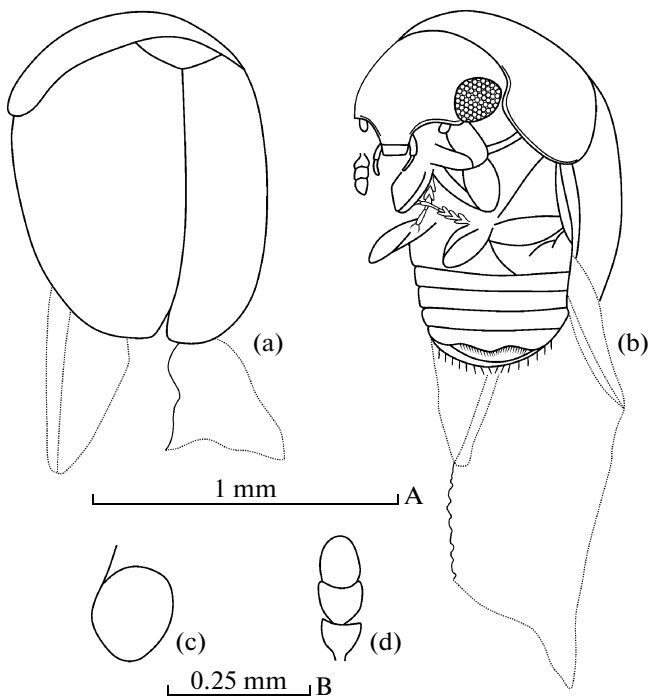
*Cybocephalus (Cybocephalus) kerneggeri* Kurochkin et Kirejtshuk, sp. nov.

Plate 9, figs. 7–9

**Etymology.** The species is named in honor of F. Kernegger.

**Holotype.** Coll. of F. Kernegger, no. “8/1999 Cyboceph.,” very well-preserved male, with the head bent almost at a right angle, integument (especially of the head) partly poorly discernible due to delamination and wings almost entirely extending from under the elytra and stretching, enclosed in a small piece of very light amber without additional inclusions; the sample is embedded in a parallelepipedal piece of synthetic resin 11 × 7 × 7 mm; Baltic amber; Late Eocene.

**Description** (Fig. 5). The body is oval, strongly convex dorsally and very slightly convex ven-



**Fig. 5.** *Cybocephalus (Cybocephalus) kerneggeri* sp. nov., holotype: (a) body in dorsal view, (b) body in ventral view, (c) eye, (d) antennal club. Scale bars: (A) Figs. 5a and 5b; (B) Figs. 5c and 5d.

trally; the dorsum is dark brown; the underside and appendages, except for the tarsi, are reddish brown (but antennomere 1 is dark brown); the tarsi are reddish; the beetle is strongly shining dorsally, with a tint of bluish on the head, and slightly shining ventrally; the dorsum has hardly discernible short, semirecumbent, sparse hairs, approximately equal in length to three-fourths of the distance between their insertions; the pubescence on the underside (except the abdominal ventrites) is markedly denser and more conspicuous; the abdominal ventrites have poorly visible, light, short, sparse hairs.

The head is covered with very shallow, small and sparse punctures; the surface between these punctures is finely rugose, becoming smooth on the frons. The puncturation of the pronotum is somewhat sparser than that of the head; the spaces between these punctures are more strongly rugose than on the head; the length of the hairs is subequal to the distance between punctures. The punctation and spaces between punctures on the elytra are similar to those on the pronotum, but their sculpture is very finely rugose and almost disappears near the apices. The surface of the pygidium is poorly visible, but not smooth. The surface of the mesoventrite and, probably, of the prosternum is finely punctured and moderately sculptured. The areas of the metaventrite in front of the femora are smooth and weakly impressed, allowing the femora to move; each area is delimited by a distinct and slightly concave line, approximately as long as

abdominal ventrites 2 and 3 taken together. Abdominal ventrites 1–4 lack a trace of visible puncturation.

The head is slightly convex, with a moderately strongly anteriorly protruding frons (with an almost transverse margin), shorter than the distance between the large eyes, which consist of medium-sized facets. The anterior margin of the labrum is very weakly notched. The mandibles are moderately developed and slightly protrude from under the frons. The antennae are 11-segmented, approximately three-fourths as long as the head width; the antennal club is three-segmented, strongly elongate, approximately one-third of the total antennal length; antennomere 2 is approximately two-thirds as long as antennomere 1; antennomere 2 is ovate, considerably narrower than antennomere 1; antennomeres 3–8 are subconical, shorter than antennomere 2; antennomere 9 is the shortest; antennomere 10 is slightly longer than antennomere 9, approximately three-fourths as long as the apical (11th) antennomere. The pronotum is approximately twice as wide as long and approximately 0.44 as long as the elytra, with the maximum width in the middle, strongly convex at the disc and steeply sloping towards the sides, which have extremely narrow lateral borders (reaching the anterior angles, where the border becomes wider) and very convex sides; the anterior margin of the pronotum is very widely and rather shallowly emarginate (the bottom of the emargination is subtransverse); its sides are rather strongly rounded; the posterior margin is slightly convex; the anterior and posterior angles are very widely rounded at the apex. The scutellum is relatively large, almost triangular, approximately 2.2 times as wide as long, very widely rounded at the apices. The elytra are 1.3 times as long as wide taken together, convex at the disc, evenly and gently sloping towards the widely rounded apices, which form a relatively shallow sutural angle. The pygidium has a widely rounded apex, with straight, relatively wide, long, and strong setae along the margin of the apex. The distance between the mesocoxae is probably greater than the distance between the procoxae. The distance between the metacoxae is probably more than twice as great as the distance between the mesocoxae. The metaventrite is approximately 1.2 times as long as abdominal ventrite 1; its posterior margin between the metacoxae is probably widely and not deeply arcuately notched. Abdominal ventrite 1 is more than twice as long as the hypopygidium and slightly shorter than ventrites 2–4 taken together. The submetacoxal line is curved smoothly arcuately, begins at the posterior margin of the metacoxal cavity and reaches the posterior margin of abdominal ventrite 1. The hypopygidium has a relatively shallow bisinuate apex, with setae along the margin of the apex, but finer and shorter than those on the pygidium. The anal sclerite is widely rounded at the apex and slightly protrudes between the abdominal sclerites. The epipleura are relatively narrow, sloping steeply downwards.

The legs are well developed. The tibiae of all legs are probably somewhat wider than the antennal club, without setae along their margins. The pro- and mesofemur are approximately twice as wide as the pro- and mesotibia, respectively, with moderately convex anterior and posterior margins; the metafemur is somewhat wider than the pro- and mesofemur, with slightly convex anterior and posterior margins. The tarsi are moderately long and narrow; tarsomeres 1–3 are narrowly lobed; the claws are simple and thin.

**Measurements**, mm. Body length, 1.3; body width, 0.75; height, 0.45.

**Comparison.** The new species differs from recent species of this subgenus in the border along the lateral margins of the pronotum and in the weakly protruding male anal sclerite; it differs from the two other new species in the strongly shining dorsum with smoother sculpture, the shape of the pronotum, and the longer, thicker, and straighter brown setae along the margin of the abdominal apex. In addition, the new species differs from *C. (C.) balticus* sp. nov. in the less dense and less distinct puncturation of the dorsal surface of the elytra, the shorter elytra, the presence of a border along the sides and at the anterior angles of the pronotum, the smaller distance between the metacoxae, and the metafemora not dilated in the distal part. It differs from *C. (C.) electricus* sp. nov. in the narrower border at the anterior angles of the pronotum, the long and narrow antennal club, the much wider femora and tibiae of all legs, and in the slightly curved metacoxal lines.

**Material.** Holotype.

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