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A New Species of the Genus *Caulophilus* Woll. (Coleoptera: Curculionidae: Cossoninae) from the Rovno Amber

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Abstract—*Caulophilus zherikhini*, sp. nov. (Curculionidae: Cossoninae) is described from the Late Eocene Rovno amber. The new species is distinguished from all known species of the genus by its longer rostrum. It is especially similar to *C. falini* Davis et Engel, 2007 from Dominican amber, from which it probably differs also in the more strongly curved rostrum, less flattened body, longer and narrower profemur, and shorter elytral setae.

Keywords: Coleoptera, Curculionidae, Cossoninae, *Caulophilus*, Eocene, Rovno amber, new species.

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INTRODUCTION

Weevils of the subfamily Cossoninae are a specialized group adapted to living in the substrate. The world fauna of this subfamily includes about 1700 species, which belong to 300 genera (Kuschel, 1995). About 20 of the described species of the subfamily Cossoninae are known as fossils, including four species from the Late Eocene Baltic amber (Voss, 1953, 1972; Kuśka, 1992) and ten species from the Middle Miocene Dominican amber (Davis and Engel, 2006, 2007), as well as several species from the Middle Eocene (United States, Green River Formation), Early Oligocene (United States, Florissant locality), Early Miocene (Germany), and Late Miocene (France) (Heer, 1847; Scudder, 1893; etc.). Some species remain undescribed (Weitschat and Wichard, 2002).

In the collection of Late Eocene Rovno amber in the Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kiev (SIZK), the authors have found an inclusion of a member of the subfamily Cossoninae, family Curculionidae, described in this publication. The same specimen was mentioned earlier by one of the authors as a member of the subfamily Molytinae (Perkovsky et al., 2003, text-fig. 2). This specimen was among the first inclusions found in the Rovno amber after selection of inclusions was started at Ukryantar' amber factory; the peculiarity of this specimen was already noticed by V.V. Zherikhin, who initiated the study of inclusions from this *Lagerstätte*. The sample most probably originates from Klesiv, but amber was experimentally extracted in the same year also in Dubrovytsya, and the amber was subsequently mixed at the storehouse. Thus, only the origin of the sample from the northern Rovno Region can be stated with certainty. Of the 16 known families of Curculionoidea (Legalov, 2006), one species of Anthribidae (Gratshev and Perkovsky, 2008), one species of Dryophthoridae (Nazarenko and Perkovsky, 2009), and two species of Scolytidae (Petrov and Perkovsky, 2008) have been described from the Rovno amber. A generalized description of the fauna was published earlier (Perkovsky et al., 2007).

The measurements were taken with an eyepiece micrometer of an MBS-9 binocular microscope; the photographs were taken using a Canon PowerShot A640 digital camera with a Zeiss Stemi 2000-C binocular microscope and a Leica MZ 16 binocular microscope. The system of the family Curculionidae used in this publication follows Alonso-Zarazaga and Lyal (1999).

SYSTEMATIC PALEONTOLOGY

Superfamily Curculionoidea Latreille, 1802

Family Curculionidae Latreille, 1802

Subfamily Cossoninae Schoenherr, 1825

The new species belongs to the subfamily Cossoninae, as indicated by the unreduced series of epistomal setae, absence of the apical crown of setae, and weakly bilobed tarsomere 3.

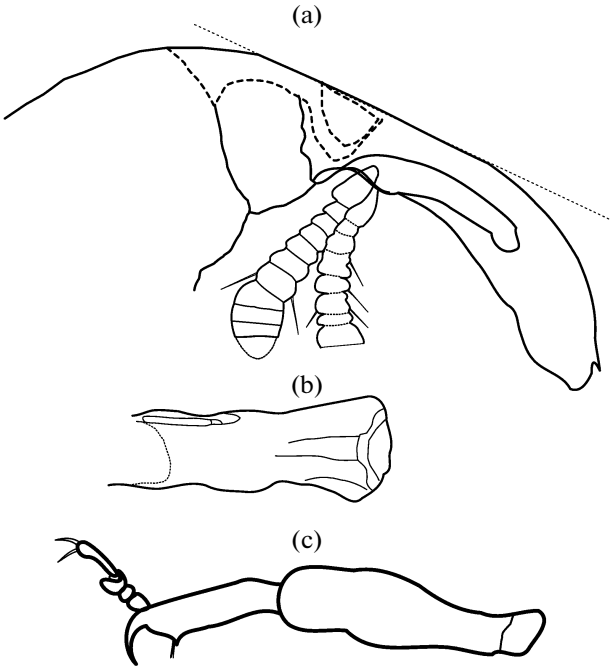


Fig. 1. *Caulophilus zherikhini*, sp. nov., holotype: (a) head and rostrum in lateral view; (b) rostrum in ventral view; (c) hindleg in lateral view. Dashed line shows the section of rostrum.

Tribe Dryotribini Leconte, 1876

Genus *Caulophilus* Wollaston, 1854

Type species. *Caulophilus sculpturatus* Wollaston, 1854.

Species composition. The genus *Caulophilus* includes nine recent American species and four species from the Dominican amber (*C. ashei* Davis et Engel, 2006, *C. falini* Davis et Engel, 2007, *C. swensoni* Davis et Engel, 2007, and *C. bennetti* Davis et Engel, 2007).

***Caulophilus zherikhini* Nazarenko, Legalov et Perkovsky, sp. nov.**

Plate 7, figs. 1–9

Etymology. In memory of the paleoentomologist V.V. Zherikhin.

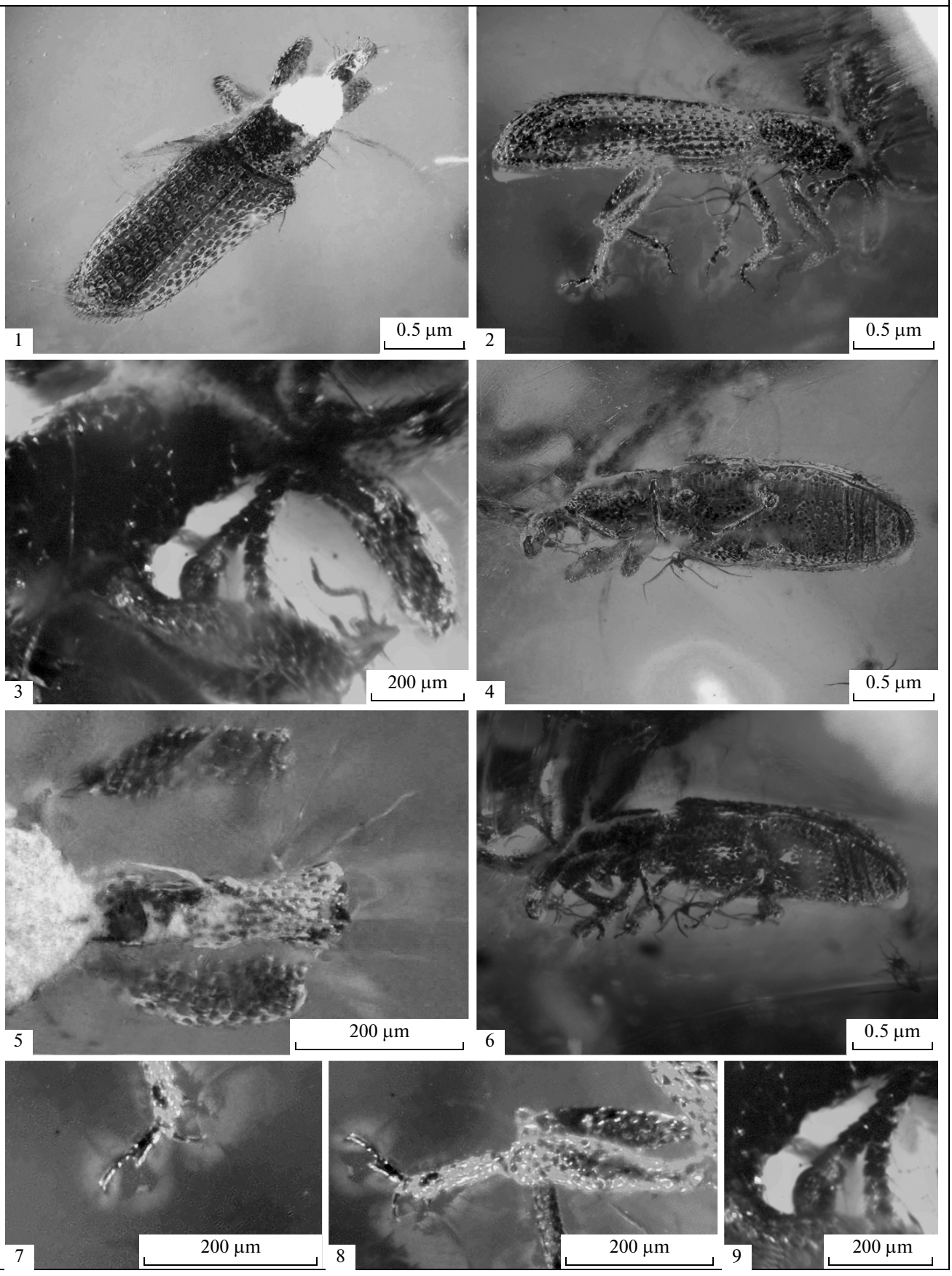
Holotype. SIZK, no. UA-1305, probably male; Rovno amber; Late Eocene. Syninclusions: Collembola (Entomobryidae), numerous stellate hairs.

Description (Fig. 1). The body is black, cylindrical, weakly flattened, almost without pubescence, appearing silvery shiny because of the presence of a cavity between the specimen and the internal surface of its impression in amber. The rostrum (Figs. 1a, 1b) is cylindrical, long, strongly curved, dilated towards the apex in the apical third. The surface of the rostrum is densely and coarsely punctate. The intervals sometimes form longitudinal rugae. The sides of the rostrum are covered with short semierect setae directed obliquely upward; near the apex these setae are larger, more erect, and directed forward. Epistome has a sinuation on anterior margin. The visible epistomal setae are six in number. The antennal grooves are lateral, directed obliquely towards the lower margin of the hypothetical position of the eye. The antenna (Fig. 1a) is attached near the middle of the rostrum. The flagellum is 7-segmented; its segment 1 is large, segments 2 and 3 are small, short, poorly distinguishable; segments 4–7 gradually increase in size apically. The club is short, oval. The first segment of the club is about one-third of its length; the limits of the other segments are not distinguishable with certainty. The pronotum (Fig. 1a) is narrower than the base of elytra; its sides are weakly rounded, with semirecumbent setae directed upward. The disk narrows basally and apically, with a constriction outlined laterally in front of the base, densely and coarsely punctate. The punctures are round. The distance between adjacent punctures is smaller than their diameter. The scutellum is small, round, weakly convex. The elytra are elongate, in the basal two-thirds of their length almost parallel-sided, in the posterior one-third narrowed towards the apex and jointly rounded apically. The humeral calli are distinct. The elytral grooves are ten in number. The punctures of the grooves are oval or rounded rectangular. The distance between them is equal to or greater than their longitudinal diameter, in lateral projection smaller than their longitudinal diameter. The punctures of the line-like groove 10 are large anterior of the level of metacoxae, behind this level small, poorly distinguishable. The intervals are narrow, weakly convex, 0.5–1.0 as wide as the grooves. In the posterior half, the intervals bear setae directed at an angle of about 45°, weakly dilated apically, equal in length to the longitudinal diameter of punctures in the grooves. The setae near the middle of elytra are sparse, denser at the slope, denser and shorter near the apex. The prosternum has no groove for embedding the rostrum, convex in front of the procoxae. Its surface is densely and coarsely punctate. The procoxae are separated. The mesoventrite and metaventrite, as well as the episterna, are densely punctate. The metepisternum is narrow, dilated anteriorly. The punctures are round; the distance between them is subequal to their diameter. The metasternum is flatly impressed medially. Abdominal ventrites 1 and 2 are large, flatly impressed medially, of subequal length, densely and coarsely punctate. The punctures are round, separated by the distance equal to their diameter laterally and greater than their diameter centrally. The suture between the

Explanation of Plate 7

Caulophilus zherikhini, sp. nov., (1) holotype: body in dorsal view; (2) body in lateral view; (3) anterior part of body in lateral view; (4) body in ventral view; (5) rostrum in dorsal view; (6) body in ventrolateral view; (7) metatarsus; (8) hindlegs; (9) antennae.

Plate 7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ventrites is smoothed out centrally. Ventrites 3 and 4 are short, coarsely punctate, their combined length is smaller than the length of ventrite 2. Ventrite 5 is long, subequal in length to ventrites 3 and 4, slightly curved out ventrally. The mesocoxae are rounded, cone-shaped. The distance between the mesocoxae is subequal to their diameter. The metacoxae are transverse, the distance between them is subequal to their maximum length. The femora (Fig. 1c) are club-shaped, without denticles, with a weak constriction along the internal margin in front of the apex, with sparse semierect setae along the internal margin, coarsely punctate. The tibiae are parallel-sided, punctures on their surface form indistinct rows; their external and internal margins bear obliquely protruding short setae. The apical crowns of setae are absent. The uncus is long, subequal in length to the terminal tarsomere, with a sickle-shaped inward curve. The mucro (premucro) is tooth-shaped, with a tuft of setae protruding at the base. Tarsomeres 1 and 2 (Fig. 1c) are triangular, the latter shorter than the former; tarsomere 3 is wider than tarsomere 2, weakly bilobed. The terminal tarsomere is slightly longer than tarsomeres 2 and 3 taken together. The claws are narrow, free, without denticles.

Measurements, mm. Body length (without rostrum) 2.3; maximum body width 0.7; body height 0.4; length of dorsal projection of rostrum about 0.4; width of dorsal projection of rostrum approximately 0.1 at bases of antennae and about 0.15 apically; length of antennal scape about 0.2; length of flagellum 0.25; length of antennal club approximately 0.15; length of pronotum about 0.55; width of pronotum about 0.5; length of elytra 1.7; width of elytra 0.7; length of femur 0.5; width of dilated part of femur about 0.15; length of tibia about 0.4; width of tibia about 0.05; length of tarsus about 0.2; width of third tarsomere 0.04.

Comparison. The new species is similar to 1 *C. falini* Davis et Engel, 2007, from which it is distinguished by the longer and probably more strongly curved rostrum, less flattened body, longer and narrower profemur, and shorter elytral setae.

Remarks. The specimen is positioned at an angle to a facet of a polished four-faceted piece of amber 11.5 mm long and about 9.0 mm wide. Most of the head capsule, the base of rostrum, and the anterior margin of pronotum are obliquely cut dorsally; the rest of the specimen is well preserved, visible in several aspects, in ventral, dorsal, and lateral views.

The new species is provisionally placed in the genus *Caulophilus*. Its affinity to this genus is indicated by the coarse sculpture of the body, almost parallel sides of the elytra, somewhat flattened body, 7-segmented antennal flagellum, and rather long rostrum.

Material. Holotype.

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