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THE FIRST FOSSIL SPECIES OF THE EXTANT GENUS *CESSATOR* KAZANTSEV (COLEOPTERA: LYCIDAE): A NEW LEPTOLYCINI FROM DOMINICAN AMBER

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ABSTRACT

Cessator brodzinskiyi Ferreira and Ivie, **new species**, is the third lycid species known from Dominican amber. The new species is described, diagnosed, illustrated, and compared with other fossil and extant species. *Leptolycus parda* Zaya, 1988 is moved to *Cessator parda* (Zayas), **new combination**.

Key Words: Neotropical, Elateroidea, Lycinae, paleontomology, West Indies

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With about 4,600 extant described species (Bocák and Bocáková 2010), the family Lycidae is the second largest family of the elateroid group formerly known as the Cantharoidea. The family has a nearly worldwide distribution, including representatives in both temperate and tropical regions. A number of fossil Lycidae have been described, one a compression fossil, the others from amber (Wickham 1914; Winkler 1987; Kazantsev 2012, 2013). Four species are described from Baltic amber and one from Dominican amber. A detailed review of the amber species was recently published (Kazantsev 2013).

The first reported records of lycids from Dominican amber are photographs of two specimens in Wu (1997: 173, 179). The first of these (hereafter called “the Wu species”) is a still unnamed taxon, which is certainly a lycid, but like nothing known from the West Indies today, and its subfamilial placement remains uncertain. The second cannot be attributed to the Lycidae with certainty from the photograph and will not be discussed further. Poinar and Poinar (1999) used Wu’s record to include the family in their list of inclusions from Dominican Amber (G. Poinar, *in litt.*), but did not cite an identification below family. Next, a monotypic new genus, *Electropteron* Kazantsev, was described in the enigmatic tribe Leptolycini (Kazantsev 2012), a tribe rich in modern tropical America, particularly the Greater Antilles and Central America (Miller 1991; Kazantsev 2012). We have seen several extant Dominican species that belong to *Electropteron*, but they remain undescribed.

Herein we report an additional species from Dominican amber, also belonging to an extant genus

of Leptolycini, in this case the Greater Antillean genus *Cessator* Kazantsev, 2012. Unlike *Electropteron*, which we only know from Hispaniola, *Cessator* is currently known from one described species from Puerto Rico (Kazantsev 2009). However, the Cuban species *Leptolycus parda* Zaya, 1988 belongs in this genus as *Cessator parda* (Zayas), **new combination** (holotype in the Zayas collection, Havana, examined by MAI), and Miller (1991) reported this group from Cuba, Hispaniola, and Puerto Rico in his unpublished dissertation. In addition, we have seen several undescribed *Cessator* from these islands as well as the Virgin Islands.

The presence of amber species closely related to and even conspecific with extant species is not unusual in the Dominican fauna (Hopp and Ivie 2009; Hörschemeyer *et al.* 2010). Although there is some discrepancy regarding the age of Dominican amber, the generally accepted age is between 17 and 30 million years old (Grimaldi 1994, 1996; Grimaldi and Engel 2004). Careful study of material on hand that is congeneric with both leptolycine amber species has not revealed any evidence of conspecificity between the fossil and extant species.

MATERIAL AND METHODS

Photographs of the specimen were taken using a JVC (DC Ky-F75U) digital camera mounted on a Leica[®] MS5 stereoscope and a Visionary Digital Passport II imaging system, equipped with a Canon[®] 6D DSLR. The image layers were processed using Zerene Stacker version 1.04. The final pictures were then resized and edited for color correction, contrast correction, and increased

sharpness using Adobe® Photoshop CS6. Drawings were prepared from photographs with Adobe® Illustrator CS5.

TAXONOMY

Cessator brodzinskyi Ferreira and Ivie, new species (Figs. 1–5)

Diagnosis. Male. Among known Dominican amber species, *C. brodzinskyi* is characterized by dehiscent elytra and the cylindrical, filiform, very weakly subserrate antenna. The Wu species has expanded elytra in the posterior half, while *Electropteron avus* Kazantsev, 2012 shares the dehiscent elytra of *Cessator*. *Electropteron* has distinctly flattened and widened antennomeres from IV to XI. The antennal condition in the Wu species is not clear in the photograph. Further, *Cessator* has antennomere II much shorter than III, while both II and III are subequally short in *Electropteron* and the Wu species. *Cessator brodzinskyi* can further be separated from *E. avus* and the Wu species by the short, transverse pronotum (3:6), which is less transverse in *E. avus* (4:6), while the Wu species is as long as wide. Color also differs in these species, with the base of the elytra completely black in *C. brodzinskyi* and in the Wu species, while it is yellowish in *E. avus*.

From other *Cessator* species, *C. brodzinskyi* differs from *Cessator luquillonis* Kazantsev, 2009 and *C. parva* in having the pronotum yellow, while it is black in the others. A wide variety of color patterns is seen in the undescribed extant material before us, so having the same color pattern should not be considered strong evidence of conspecificity. The antennae of the previously described species and most of the several undescribed species we have seen are short and stout with the last antennomere dark, and the gena (from the eye to the posterior margin of the head) is as long as or longer than the eye when viewed from below (see Kazantsev 2009, figs. 3, 32). *Cessator brodzinskyi* has long antennae, a white antennomere XI, and the gena behind the eye apparently shorter than the eye. There are specimens from Cuba and the Dominican Republic that have antennae and genae similar to *C. brodzinskyi*, but further discussion of these will be left for a revision of the genus by the first author.

Description. Male. With the general characteristics of the Leptolycini (Miller 1991). General coloration dark black-brown, except pronotum, legs, and antennomeres XI yellowish. Body elongate (Fig. 1). Head transverse, small, not covered by pronotum, hypognathous. Eyes round, large, protuberant, coarsely granulate (Figs. 1, 4). Maxil-

lary palp 4-segmented, apical palpomere short, acute; mandibles not visible. Antennae inserted on gibbous prominence (Figs. 1, 3); subserrate, subcylindrical, densely setose; attaining median portion of elytra; antennomere I subconical, antennomere II short, *ca.* 0.25X length of I; III *ca.* 0.25X longer than I; antennomeres IV–X subequal to III; XI slightly longer. Pronotum transverse trapezoidal (3:6); margins thick, prominent; with obscure median impression in posterior third (Fig. 3). Scutellum subquadrate, notched posteriorly (Fig. 1). Prosternum short, V-shaped, posterior margin rounded (Fig. 4); mesoventrite trapezoidal, posteriorly rounded. Metaventricle convex; posterior lateral angles acute; metadiscrimen complete, attaining posterior margin of mesoventrite (Fig. 2).

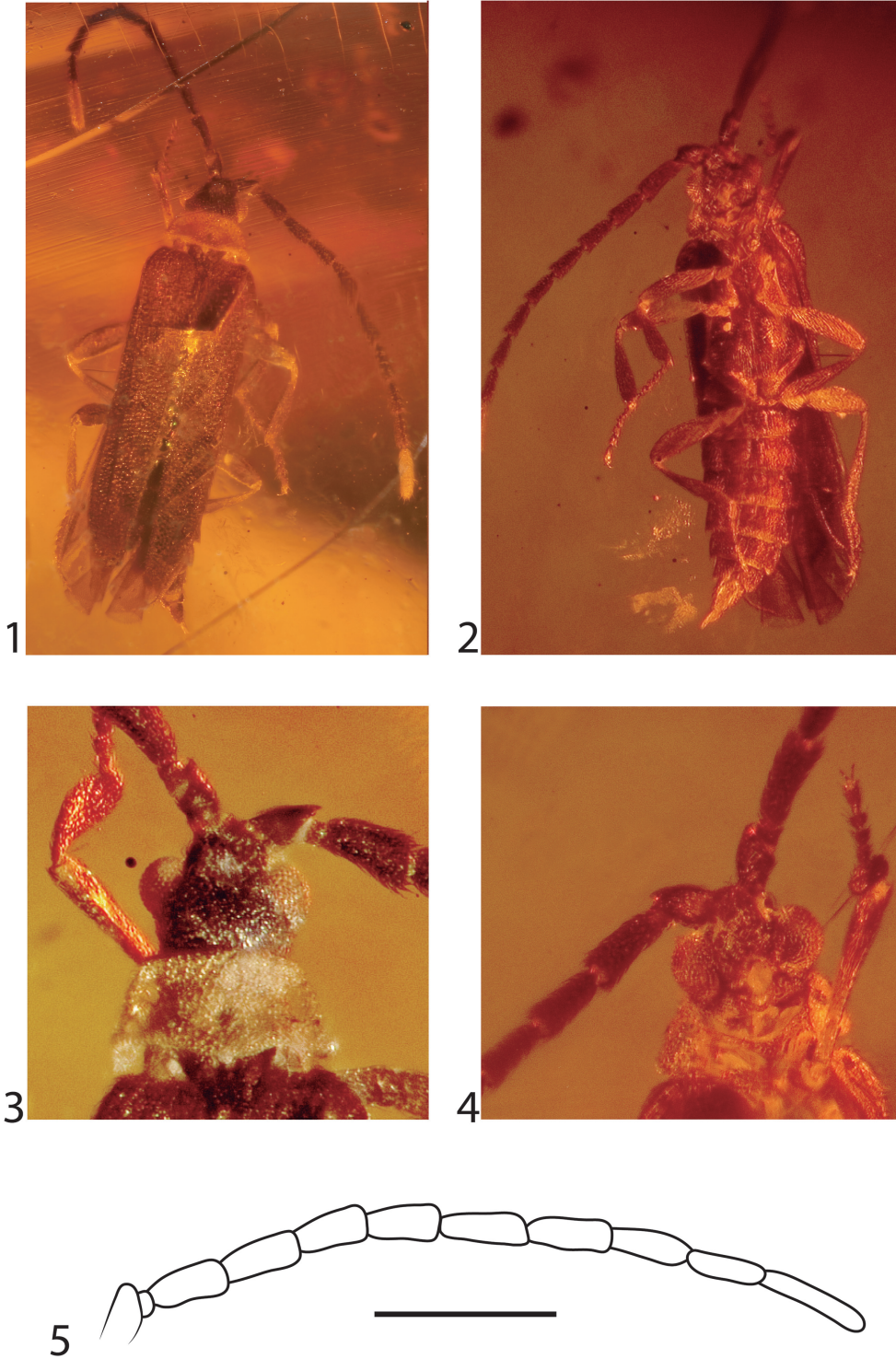
Elytra elongate, *ca.* 7X longer than pronotum, reaching nearly to end of abdomen when abdomen fully extended, distally dehiscent, apparently with 3 elytral costae (Fig. 1). Legs slender, elongate; trochanters tubular, *ca.* 0.33X length of femur; femora and tibiae clavate. Pro- and mesocoxae moderately oblique, elongate, projecting; metacoxa transverse. Abdomen with 8 ventrites (sternites II–IX), ventrite VII notched medially, IX elongate (Fig. 2). Male genitalia with median lobe elongate, leptolycine-like. Length: 2.5 mm. Width (across humeri): 0.5 mm.

Female. Unknown, probably larviform.

Type Material. Holotype, male. Dominican Amber, Oligocene to Miocene (between 3 and 33 MYA) from Santiago mine (from West Indian Beetle Fauna Project collection, to be deposited in the US National Museum of Natural History).

Etymology. The species was named after Jacob Brodzinsky in acknowledgement of the gift of the specimen to this study and his general assistance, hospitality, and friendship to MAI and many other visiting entomologists.

Discussion. The final division between Calopterini and Leptolycini remains unclear (Ferreira and Ivie 2016). Bocákova (2003, 2005) has done much to formalize the limits of the Calopterini, but points out that more study is needed. As is the case in several groups, *C. brodzinskyi* shares common features of both Leptolycini and Calopterini, including the absence of a transverse carina on the pronotum (Calopterini), reduced mouthparts (both Calopterini and Leptolycini), and dehiscent elytra (Calopterini and Leptolycini). However, this species has the general appearance of a Leptolycini, including reduced mouthparts, the clearly dehiscent elytra, and the antennae inserted on a gibbous prominence (Figs. 3, 4). A key character for distinguishing calopterines and leptolycines is the shape of the plantar pads of tarsomere 4, which are expanded laterally in Calopterini and narrowed in Leptolycini (Miller 1991; Ferreira and Ivie 2016). *Cessator*



Figs. 1–5. *Cessator brodzinskyi*, holotype. 1) Dorsal view; 2) Ventral view; 3) Pronotum and head; 4) Prosternum and mouthparts; 5) Antenna. Scale bar = 0.5 mm.

brodzinskyi has tarsomere 4 narrow although we could not see the plantar pad itself. Extant congeners have the plantar pad clearly narrow, and this is used as a deciding factor for the taxonomic placement of this species in the Leptolycini.

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