

New species of the subfamily Conoderinae (Coleoptera: Curculionidae) in Dominican amber

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**New species of *Eulechriops* (Curculionidae: Conoderinae: Lechropini) and *Geratozygops*
(Curculionidae: Conoderinae: Zygopini) in Dominican amber.**

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Abstract

Eulechriops argyrosoma sp. n. (Curculionoidea: Conoderinae: Lechropini) and *Geratozygops platysoma* sp. n., *G. stenosoma* sp. n. and *G. arsinotus* sp. n. are described from Dominican amber. The small size, nearly parallel side of the pronotum and silvery sheen distinguish *E. argyrosoma* from other members of the genus, which has not been recorded from Hispaniola. Rostral, pronotal and size characters separate the three *Geratozygops* species from the single species (*G. atropos*) previously described from Dominican amber.

Keywords: Dominican amber, Coleoptera, Curculionoidea, Conoderinae, new species, Tertiary weevils

Introduction:

The weevil subfamily Conoderinae, sometimes called the hidden-snout weevils, is widely distributed throughout the world but reaches its greatest diversity in the tropics. They are characterized by the large closely set eyes and the relatively narrow rostrum that is held tightly against the body during repose. Some are economically important pests, although for the most part, they are quite small and difficult to detect. A single member of the subfamily was previously described from Dominican amber (Davis & Engel, 2006). The present study describes an additional 4 species of Conoderinae from Dominican amber.

Materials and methods

The specimens were obtained from mines in the Cordillera Septentrional of the Dominican Republic. Dating of Dominican amber is still controversial with the latest proposed age of 20-15 mya based on foraminifera (Iturralde-Vinent and MacPhee 1996) and the earliest as 45-30 mya based on coccoliths (Cêpek in Schlee 1990). In addition, Dominican amber is secondarily deposited in sedimentary rocks, which makes a definite age determination difficult (Poinar and Mastalerz 2000). A range of ages for Dominican amber is possible since the amber is associated with turbiditic sandstones of the Upper Eocene to Lower Miocene Mamey Group (Draper et al. 1994). Dominican amber was produced by the leguminous tree, *Hymenaea protera* Poinar and a re-construction of the Dominican amber forest based on amber fossils indicated that the environment was similar to that of a present day tropical moist forest (Poinar and Poinar 1999). Observations, drawings and photographs were made with a Nikon SMZ-10

stereoscopic microscope. Helicon Focus Pro X64 was used to stack photos for better clarity and depth of field.

Conoderinae Schoenherr, 1833

Lechropini Lacordaire, 1866

Eulechriops Faust, 1896

Eulechriops argyrosoma Poinar and Legalov, n. sp. (Figs. 1,2)

Description

Length body, 1.8 mm; length rostrum 0.4 mm. Body silvery-shiny with mostly monochrome scales on elytra.

Head. Rostrum elongate, thin, 1.2 times as long as pronotum, curved; frons very narrow; eyes large, not protruding from contour of head; vertex weakly flattened, punctate; temples short, punctate.

Pronotum. Pronotum bell-shaped, width apices 0.8 times as long as length, in middle and at base 1.2 times as long as length; disk weakly convex, with distinct pronotal groove, greatest width in middle and at base, densely, coarse and large punctate, without striae; sides almost parallel; distance between punctures 2.0-2.5 times their diameter.

Elytra. Elytra back trapezoidal, weakly convex, 1.1 times as long as wide at base, 1.2 times as long as wide in middle; 2.3 times as long as wide at apex, 2.0 times as long as pronotum; greatest width at base; humeri convex; punctured striae regular and distinct; punctures oval, dense; intervals weakly convex, 1.7-1.8 times as wide as striae, with row of scales.

Thorax. Prothorax densely punctate, without postorbital lobes, with prosternal channel; precoxal part of prothorax elongated; mesocoxal cavities separated; metepisternum narrow; metathorax weakly convex, punctate; metacoxal cavities widened.

Abdomen. Abdomen convex, concealed by elytra; first ventrite elongated; second ventrite 0.4 times as long as first; 3rd ventrite 0.6 times as long as second; 4th ventrite 0.8 times as long as 3rd; 5th ventrite equal to 4th.

Legs. Legs long; femora weakly clavate, without teeth, not carinate externally and unarmed on internal margin; profemora length / width = 4.6; metafemora length / width = 6.7; trochanter triangular; tibiae almost curved; protibiae length / width = 3.1; tarsi long.

Type: Holotype deposited in the Poinar amber collection (accession Cur-14-56) maintained at Oregon State University, Corvallis, Oregon.

Type locality: Amber mine (La Bucara) in the northern portion of the Dominican Republic.

Etymology: The specific epithet is taken from the Greek “argyros = silver and the Greek “soma” = body, in reference to the fossil’s shiny appearance.

Diagnosis. The new species is similar to *E. boops* but differs with the monochrome dorsal scales, almost parallel sides of the pronotum and the smaller body size.

Remarks.

The strongly ascending mesepimeron, large and dorsally subcontiguous eyes, very narrow frons, and tibiae with uncus place the new species in the subfamily Conoderinae. The more or less horizontal pygidium concealed by the elytra, suggest placement in the tribe Lechropini. The narrowly separated eyes, femora lacking teeth, non-carinate externally and unarmed on the inner margin, place the species in the genus *Eulechropis*.

Zygopini Lacordaire, 1866

Geratozygops Davis et Engel, 2006

Geratozygops atropos Davis et Engel, 2006

Length body, 4.1-4.8 mm; length rostrum 1.1-1.8 mm. (Fig. 3)

Material: deposited in the Poinar amber collection (accession numbers Cur-14-62, Cur-14-65, Cur-14-69, Cur-14-72, Cur-14-77) maintained at Oregon State University, Corvallis, Oregon. The description of *G. atropos* was based on a single individual whose body length was 3.92 mm. We record a length range of 4.1-4.8 mm for 5 additional specimens. While the rostral length was not provided in the original description, this value ranged from 1.1-1.8 mm in the specimens we examined. Fig. 3 clearly shows the strong tooth at the mid-ventral surface of the metafemur as well as the smaller apical tooth.

Geratozygops platysoma Poinar and Legalov, n. sp. (Figs. 4, 5)

Description

Length body, 3.2-5.0 mm; length rostrum 1.2-1.7 mm.

Body brown, with small short mostly light brown scales, appearing silvery-shiny from the presence of cavities between specimen and internal surface of its impression. Pronotum with three longitudinal stripes of light scales. Elytra with indistinct transverse bands in middle and obscure spots on elytra of brown scales.

Head. Rostrum 5.8-10.4 times as long as wide at apex, 6.8-10.4 times as long as wide at middle, 5.4 times as long as wide at base, 1.3-2.2 times as long as pronotum, slightly expanded at apex and to base, finely punctate; with carinae from antennal attachment to frons; frons very narrow; eyes large, transversely elongated, dorsally subcontiguous, not protruding from contour of head; vertex weakly punctate; temples very short; antennae elongate, reaching middle of pronotum; scape 3.8-4.6 times as long as width, much shorter than flagellum, at base narrower than in apex; 1st flagellomere trapezoidal, rather short, 2.1-3.0 times as long as wide, 0.5 times as long as and 0.8-0.9 times as narrow as scape; 2nd flagellomere elongate, 8.8-10.0 times as long as wide, 2.7-2.9 times as long as and 0.6-1.0 times as narrow as first; 3rd flagellomere 5.5-6.3 times as long as wide, 0.6 times as long as second; 4th-7th flagellomeres trapezoidal; fourth 1.5-1.8 times as long as wide, 0.3 times as

long as third; fifth 1.8 times as long as wide, 1.0-1.2 times as long as fourth; sixth 1.4-1.8 times as long as wide, 1.0-1.4 times as long as fifth; seven 1.2-1.3 times as long as wide, 0.9 times as long as fifth; club 0.2-0.3 times as long as flagellum; first club article trapezoidal, 0.7-1.0 times as long as wide, 1.1-1.7 times as long and 1.7-2.0 times as wide as seventh flagellomere; second article 0.7 times as long as wide, 0.8-1.0 times as long as first article; 3rd article 0.6-0.8 times as long as wide, 0.8 times as long as 2nd article, weakly acuminate.

Pronotum. Pronotum bell-shaped, apices 0.7-0.8 times as long as wide, in middle and at base 0.7 times as long as wide; disk with distinct pronotal groove, finely densely wrinkled-punctate, with weak middle carina; distance between punctures 2.0-2.5 times their diameter; greatest width before base.

Elytra. Elytra weakly elongated and weak convex, 1.7 times as long as wide at base, 1.7 times as long as wide in middle, 2.3 times as long as wide in apex, 2.3-2.5 times as long as pronotum; greatest width in middle; humeri weakly flattened; punctured striae regular, distinct and deep; punctures small; intervals weakly convex, 2.7-3.3 times as wide as striae.

Thorax. Prothorax densely punctate, with prosternal channel and postorbital lobes; precoxal part of prothorax elongated; postcoxal part of prothorax short; procoxal cavities round, separated, 7.6 times as long as prosternal process; mesothorax without mesosternal channel; mesepimeron strongly ascending; mesocoxal cavities rounded, separated, 1.2 times as long as metasternal process; metepisternum wide, 4.2 times as long as wide; metathorax weakly convex, densely punctate; metacoxal cavities widened.

Abdomen. Abdomen convex; first ventrite elongated; second ventrite 0.4-0.5 times as long as first; 3rd ventrite short, 0.3-0.5 times as long as second; 4th ventrite equal length to 3rd; 5th ventrite elongate, 2.6-3.3 times as long as 4th; pygidium convex.

Legs. Legs long; femora weakly clavate, with 3 teeth; 1st tooth large; 2nd tooth small; 3rd small tooth, poorly developed on meso- and metafemora; profemora length / width = 5.3; metafemora length / width = 4.3-5.0; trochanter triangular; tibiae almost curved, weakly widened at apices, with uncus and row of setae on anterior apical edge and long erect setae on apex; protibiae length / width = 5.2; metatibiae length / width = 5.3-6.5; tarsi long; 1st-3rd tarsomeres trapezoidal; 1st tarsomere elongate; 2nd tarsomere wide-trapezoidal; 3rd tarsomere bilobed, with thick light erect setae ventrally; fifth tarsomere elongated; claws large, free, without teeth; protarsi: first tarsomere 3.0 times as long as width; second tarsomere 1.3 times as long as width, 0.8 times as long and 1.9 times as wide as first tarsomere; third tarsomere 0.9 times as long as width, 0.7 times as long as second tarsomere; fifth tarsomere 4.0 times as long as width, 1.4 times as long as third tarsomere; mesotarsi: first tarsomere 2.1 times as long as width; second tarsomere 0.9 times as long as width, 0.8 times as long as first tarsomere; third tarsomere 0.8 times as long as width; metatarsi: first tarsomere 3.7 times as long as width; second tarsomere 1.2 times as long as width, 0.6 times as long and 1.8 times as wide as first tarsomere; third tarsomere 0.9 times as long as width, 0.9 times as long as second tarsomere; fifth tarsomere 3.6 times as long as width, 1.7 times as long as third tarsomere.

Type: Holotype (accession # Cur-14-64) and paratypes: (accession numbers Cur-14-63, Cur-14-66, Cur-14-67, Cur-14-68, Cur-14-71, Cur-14-73, Cur-14-74 and Cur-14-80) deposited in the Poinar amber collection maintained at Oregon State University, Corvallis, Oregon.

Type locality: Amber mine (La Bucara) in the northern portion of the Dominican Republic.

Etymology: The specific epithet is taken from the Greek “platys” = broad and the Greek “soma” = body in references to the relatively wide width of the fossil.

Geratozygops stenosoma Poinar and Legalov, n. sp. (Figs. 6,7)

Description

Length body, 5.1-5.5 mm; length rostrum 1.4-1.8 mm.

Body brown, with small short brown scales, appearing silvery-shiny from the presence of cavities between specimen and internal surface of its impression. Pronotum with three longitudinal stripes of light scales. Elytra with indistinct transverse bands before and for middle middle on elytra of light scales.

Head. Rostrum 9.2 times as long as width at apex, 15.7 times as long as width in middle, 5.5 times as long as width in base, 2.1 times as long as pronotum, slightly expanded at apex and to base, finely and rare punctate; with carinae from antennal attachment to frons; frons very narrow; eyes large, transversely elongated, dorsally subcontiguous, not protruding from contour of head; vertex weakly punctate; temples very short; antennae elongate, reaching middle of pronotum; scape 4.0 times as long as width, much shorter than flagellum; 1st flagellomere trapezoidal, 2.2 times as long as width, 0.7 times as long as and 1.3 times as narrow as scape; 2nd flagellomere elongate, 15.0 times as long as width, 2.7 times as long as and 0.4 times as narrow as first; 3rd flagellomere 7.0 times as long as width, 0.5 times as long as second; 4th-7th flagellomeres trapezoidal.

Pronotum. Pronotum bell-shaped, apices 1.1 times as long as width, in middle and at base 0.8-0.9 times as long as width; disk with distinct pronotal groove, finely densely wrinkled-punctate, with weak middle carina; greatest width before base.

Elytra. Elytra weakly elongated and weak convex, 1.9-2.2 times as long as width at base, 2.0-2.1 times as long as width in middle, 2.4 times as long as width in apex, 2.8-3.0 times as long as pronotum; greatest width in middle; humeri weakly flattened; punctured striae regular, distinct and deep; punctures small; intervals weakly convex, 4.7-6.0 times as wide as striae.

Thorax. Prothorax densely punctate, with prosternal channel and postorbital lobes; precoxal part of prothorax elongated; postcoxal part of prothorax short; procoxal cavities round, separated, 3.1 times as long as prosternal process; mesothorax without mesosternal channel; mesepimeron strongly ascending; mesocoxal cavities rounded, separated; metepisternum wide, 3.8 times as long as width; metathorax weakly convex, densely punctate; metacoxal cavities widened.

Abdomen. Abdomen convex; first ventrite elongated; second ventrite 0.5-0.7 times as long as first; 3rd ventrite short, 0.1-0.2 times as long as second; 4th ventrite equal length to 3rd; 5th ventrite elongate, 3.7-4.8 times as long as 4th; pygidium convex.

Legs. Legs long; femora weakly clavate, with 3 teeth; 1st tooth large; 2nd tooth small; 3rd small tooth, poorly developed on meso- and metafemora; metafemora length / width = 4.8; trochanter triangular; tibiae almost curved, weakly widened at apices, with uncus and row of setae on anterior apical edge and long erect setae on apex; metatibiae length / width = 6.7; tarsi long; 1st-3rd tarsomeres trapezoidal; 1st tarsomere elongate; 2nd tarsomere wide-trapezoidal; 3rd tarsomere bilobed, with thick light erect setae ventrally; fifth tarsomere elongated; claws large, free, without teeth; mesotarsi: first tarsomere 2.6 times as long as width; second tarsomere 1.0 times as long as width, 0.6 times as long as first tarsomere; third tarsomere 0.6 times as long as width; fifth tarsomere 4.8 times as long as width, 1.9 times as long as third tarsomere.

Type: Holotype (accession # Cur-14-79) and paratype (accession # Cur-14-72) deposited in the Poinar amber collection maintained at Oregon State University, Corvallis, Oregon.

Type locality: Amber mine (La Bucara) in the northern portion of the Dominican Republic.

Etymology: The specific epithet is taken from the Greek “stenos” = narrow and the Greek “soma” = body in reference to the relatively narrow width of the fossil.

Geratozygops aloxsinotus Poinar and Legalov, n. sp. (Figs. 8, 9)

Description

Length body, 2.6-3.0 mm; length rostrum 0.7-0.9 mm.

Body brown, with small short mostly brown scales, appearing silvery-shiny from the presence of cavities between specimen and internal surface of its impression. Pronotum with three longitudinal stripes of light scales. Elytra with indistinct transverse bands of light scales.

Head. Rostrum 1.6 times as long as pronotum, slightly expanded from apex to base, punctate; with carinae from antennal attachment to frons; frons very narrow; eyes large, transversely elongated, dorsally subcontiguous, not protruding from contour of head; vertex weakly punctate; temples very short; antennae elongate, reaching past middle of pronotum; scape 3.1 times as long as wide; 1st flagellomere trapezoidal, 2.0 times as long as wide, 0.6 times as long as and 0.9 times as narrow as scape; 2nd flagellomere elongate, 12.3 times as long as wide, 2.3 times as long as and 0.4 times as narrow as first; 3rd flagellomere 7.0 times as long as wide, 0.6 times as long as second; fourth 2.7 times as long as wide, 0.4 times as long as third; fifth equal to fourth; sixth 1.8 times as long as wide, 1.2 times as long as fifth; seven 1.3 times as long as wide, 0.7 times as long as fifth; club 0.3 times as long as flagellum; first club article trapezoidal, equal length an width, 2.3 times as long and 2.3 times as wide as seventh flagellomere; second article 0.9 times as long as wide, 0.9 times as

long as first article; 3rd article equal length and width, 0.8 times as long as 2nd article, weakly acuminate.

Pronotum. Pronotum bell-shaped, apices 1.0 times as long as width, in middle and at base 0.8 times as long as width; disk with distinct pronotal groove, finely densely wrinkled-punctate, lacking middle carina; greatest width before base.

Elytra. Elytra weakly elongated and weak convex, 1.7 times as long as wide at base, 1.5 times as long as wide in middle, 1.9-2.0 times as long as wide in apex, 2.4-2.5 times as long as pronotum; greatest width in middle; humeri weakly flattened; punctured striae regular, distinct and deep; punctures small; intervals weakly convex, 4.0-6.0 times as wide as striae.

Thorax. Prothorax densely punctate, with prosternal channel and postorbital lobes; precoxal part of prothorax elongated; postcoxal part of prothorax short; procoxal cavities round, separated; mesothorax without mesosternal channel; mesepimeron strongly ascending; mesocoxal cavities rounded, separated; metepisternum wide, 2.8 times as long as wide; metathorax weakly convex, densely punctate; metacoxal cavities widened.

Abdomen. Abdomen convex; first ventrite elongated; second ventrite 0.6 times as long as first; 3rd ventrite short, 0.4 times as long as second; 4th ventrite equal length to 3rd; 5th ventrite elongate, 2.1 times as long as 4th; pygidium convex.

Legs. Legs long; femora weakly clavate, with 3 teeth; 1st tooth large; 2nd tooth small; 3rd tooth small, poorly developed on meso- and metafemora; profemora, length / width = 5.3; metafemora length / width = 5.3; trochanter triangular; tibiae slightly curved, weakly widened at apices, with uncus and row of setae on outer apical edge and long erect setae on apex; tarsi long; 1st-3rd

tarsomeres trapezoidal; 1st tarsomere elongate; 2nd tarsomere wide-trapezoidal; 3rd tarsomere bilobed, with thick light erect setae ventrally; fifth tarsomere elongated; claws large, free, without teeth.

Type: Holotype (accession # Cur-14-75) and paratypes (accession numbers Cur-14-76 and Cur-14-78) deposited in the Poinar amber collection maintained at Oregon State University, Corvallis, Oregon.

Type locality: Amber mine (La Bucara) in the northern portion of the Dominican Republic.

Etymology: The specific epithet is taken from the Greek “*alox*” = furrow and the Greek “*noton*” = back in reference to the pronotal groove.

The following key separates the four species of *Geratozygops* in Dominican amber.

1. Distal 2/3 of rostrum thick -----*G. atropos* (Fig. 3)
- Distal 2/3 of rostrum thin ----- 2
2. Small species (2.6-3.0 mm). Pronotum lacking middle carina----*G. aloxsinotus* (Fig. 8)
- Larger species (3.2-5.5 mm). Pronotum with weak middle carina ----- 3
3. Large species (5.1-5.5 mm). Body relatively narrow, elytra 2.0-2.1 times as long as wide in middle -----*G. stenosoma* (Fig. 6)
- Small species (3.2-5.0 mm). Body relatively wide, elytra 1.7 times as long as wide in middle---
-----*G. platysoma* (Fig. 4)

Discussion

Eulechriops is a large genus and Hesperheide (2007) has found more than 270 species of *Eulechriops* in Costa Rica alone, all undescribed except one. The genus is widely distributed in Mexico and Central America and also extends into the West Indies (Guadelope) and South and

North America (O'Brien & Wibmer, 1982). However, there are no extant or extinct records of *Eulechriops* in Hispaniola (Perez-Gelabert 2007).

The biology of only a few species is known. The *minutus* group of the genus, including *E. minutus* and *E. elongatus*, are associated with oaks in Eastern North America (Blatchely & Leng, 1916) and Mexico (Hespenheide, 2003). The larvae of *Eulechriops rubi* feed in the shoots of *Rubus* spp. in Brazil, eventually destroying the plants (Hespenheide, 2005). Also in Brazil, the larvae of *E. manihoti* Monte feed beneath the bark of the stems of cassava (*Manihot esculenta*) (Monte, 1940).

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Figures

Fig. 1. Dorsal view of *Eulechriops argyrosoma* in Dominican amber. Bar = 360 μm .



Fig. 2. Lateral view of *Eulechriops argyrosoma* in Dominican amber. Bar = 330 μm .

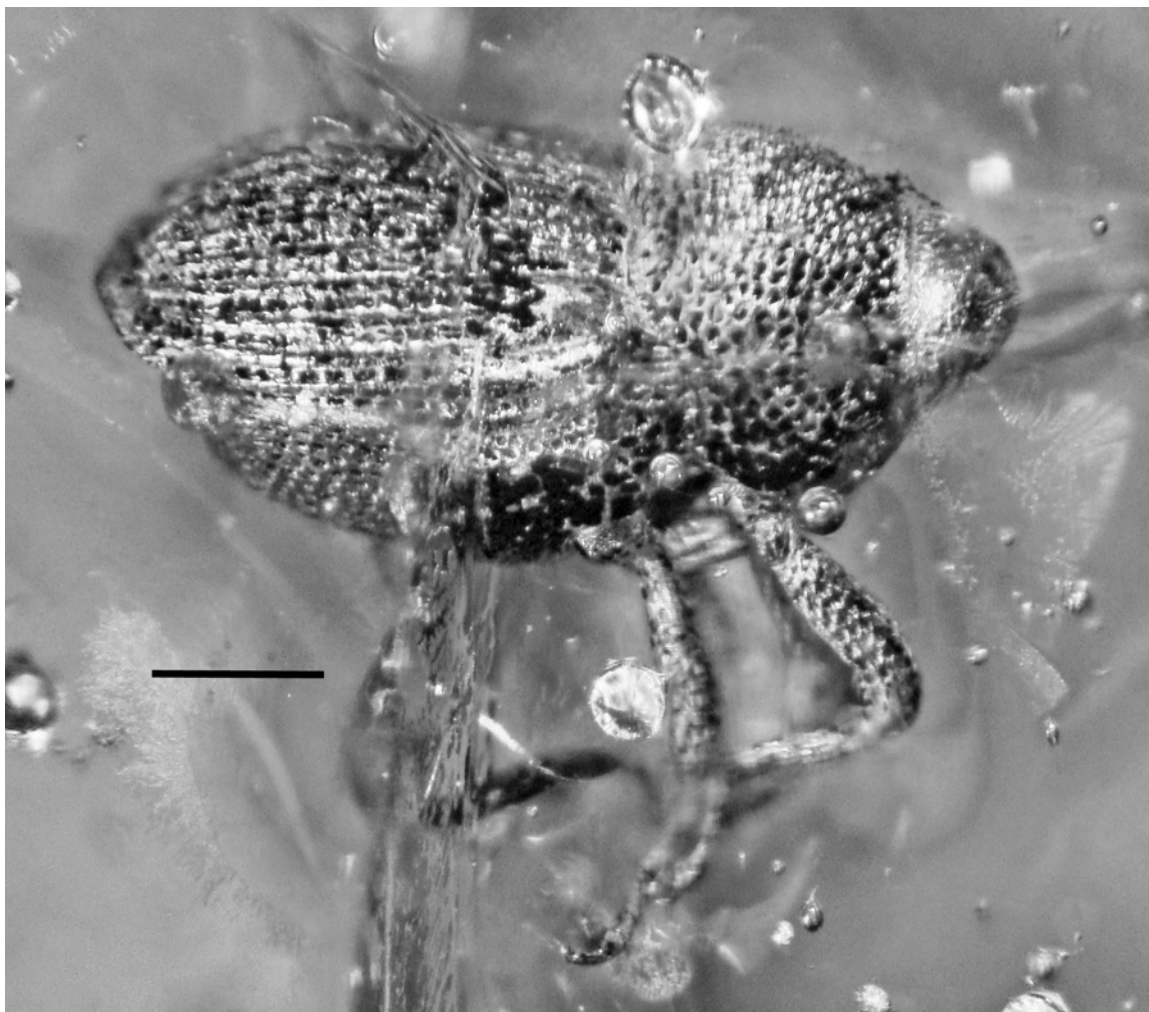


Fig. 3. Lateral view of *Geratozygops atropos* in Dominican amber. Bar = 730 μm .



Fig. 4. Dorsal view of *Geratozygops platysoma* in Dominican amber. Bar = 620 μm .

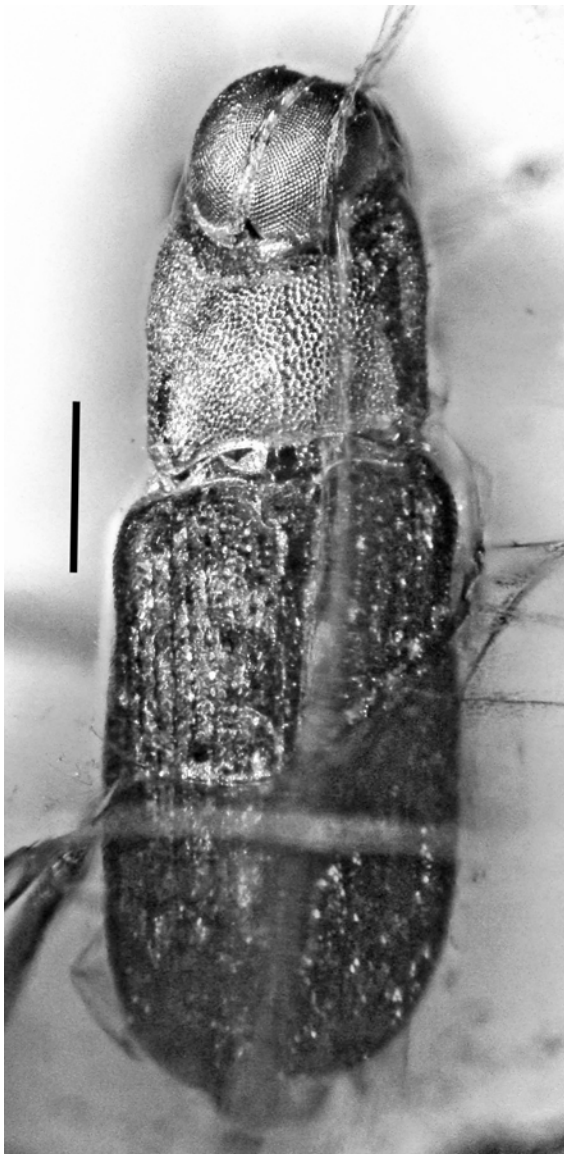


Fig. 5. Lateral view of *Geratozygops platysoma* in Dominican amber. Bar = 800 μ m.

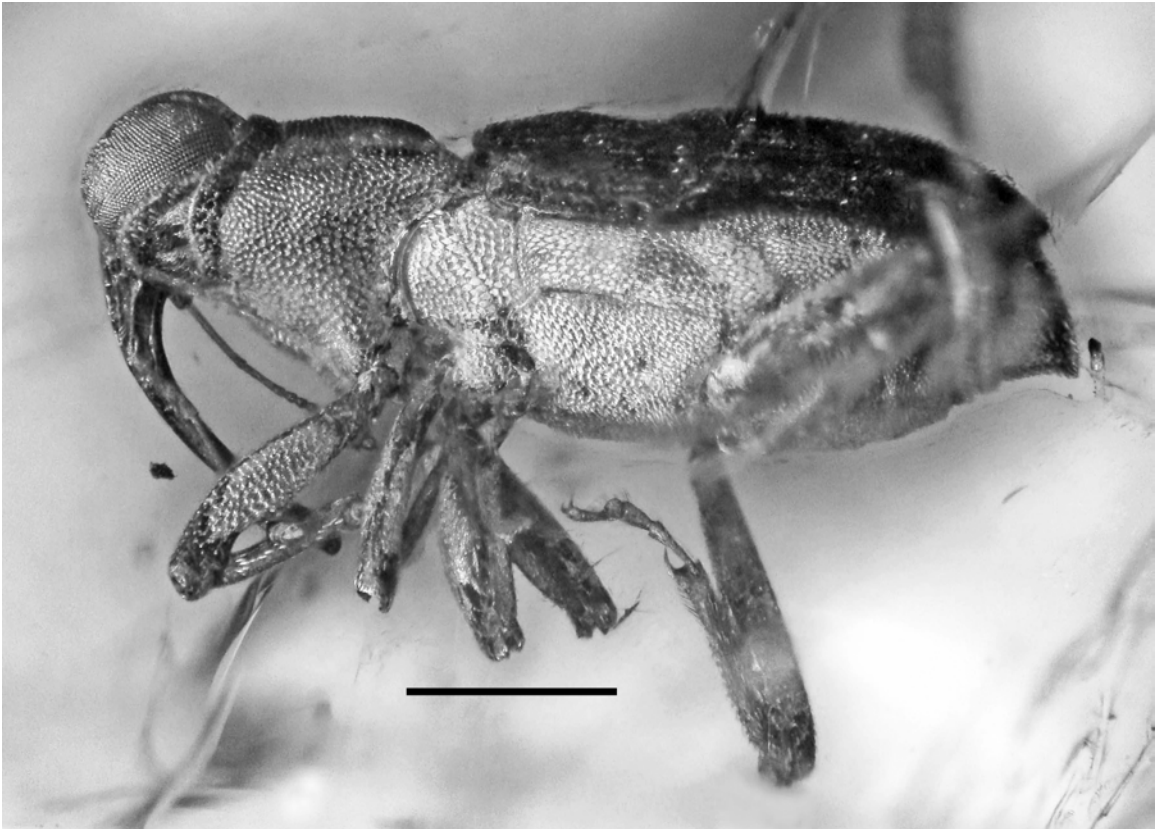


Fig. 6. Dorsal view of *Geratozygops stenosoma* in Dominican amber. Bar = 900 μm .



Fig. 7. Lateral view of *Geratozygops stenosoma* in Dominican amber. Bar = 890 μ m.

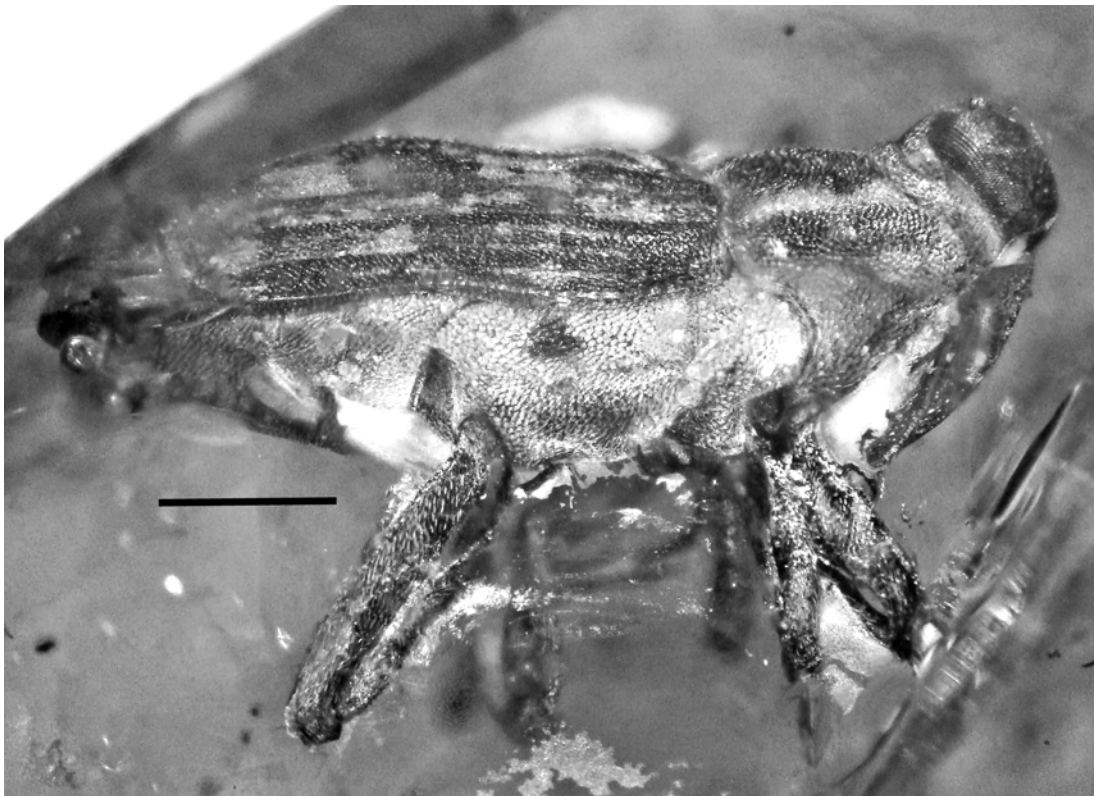


Fig. 8. Dorsal view of *Geratozygops aloxinotus* in Dominican amber. Bar = 420 μ m.

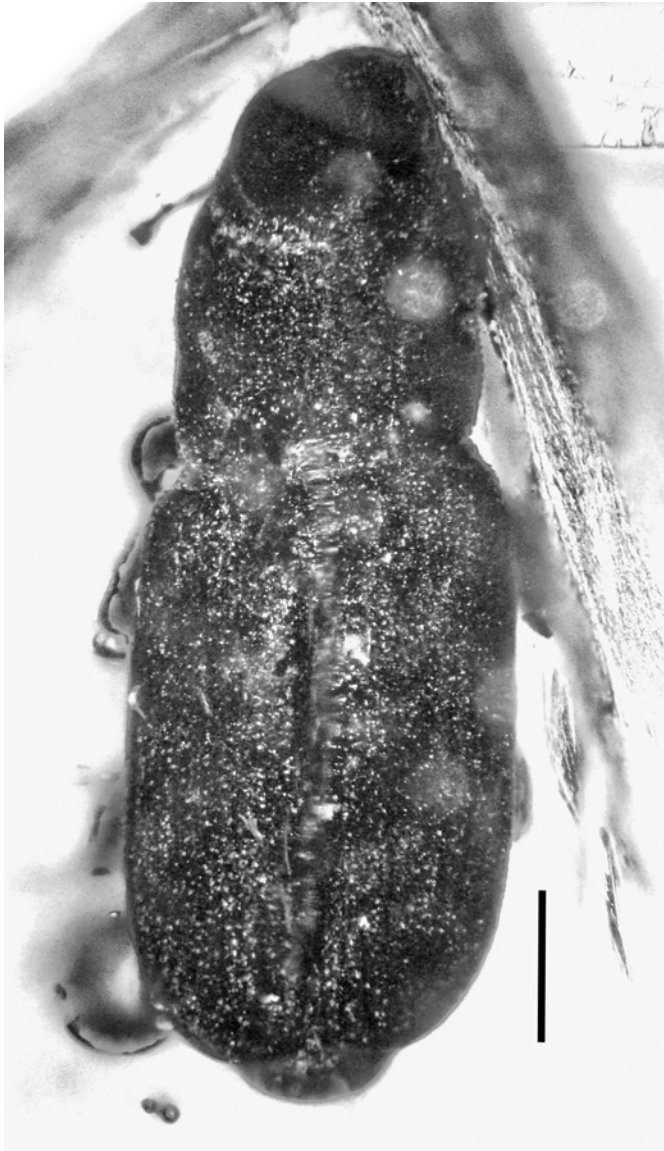


Fig. 9. Lateral view of *Geratozygops aloxsinotus* in Dominican amber. Bar = 520 μ m.

