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A key to the bark beetles (Coleoptera, Scolytidae) of Dominican amber

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A key to species and a list of species of the family Scolytidae from Dominican amber,with new findings of *Electroborus brighti* Cognato, 2013 and *Scolytus poinari* Bright, 1994 .

Key words: Curculionoidea, Scolytidae, key, new findings, Miocene.

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INTRODUCTION

Bark beetles (Scolytidae) are well represented in Eocene and Miocene ambers (Schedl 1947; Alekseev 2013; Legalov 2015). These beetles are confined to certain host plants and assuming that the extinct amber species had the same host preferences as their extant counterparts, they can be used to re-construct the original habitat and natural environment. New genera and species of bark beetles from Dominican amber were first described by Bright and Poinar (1994) and later Cognato (2013) described an additional new genus and species. No further studies have appeared to date. Since contemporary keys (Wood 1986; Rabaglia 2002) do not include fossils, they are of little use for determining the genera of Dominican amber scolytids. Therefore, we have compiled a key to the Dominican amber Scolytidae, together with a systematic list of the known species.

MATERIAL AND METHODS

The specimens were obtained from amber mines in the Cordillera Septentrional of the Dominican Republic. The dating of Dominican amber is controversial, with the latest purported age of 20–15 Mya based on Foraminifera (Iturralde-Vinent and MacPhee, 1996) and the earliest, of

45–30 Mya, based on coccoliths (Schlee, 1990). In addition, Dominican amber is secondarily deposited in sedimentary rocks, which makes a precise age determination difficult (Poinar and Mastalerz, 2000). A range of ages for Dominican amber is possible, as 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 (Poinar, 1991), and a reconstruction 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).

The systematics of Scolytidae are based on the works of Gratshev and Legalov (2014) and Legalov (2015). We follow the systematic analysis of Scolytidae as presented by Wood (1986).

Photos and characters of *Electroborus brighti* Cognato, 2013 (Figs. 1A, B) are based on the Paratype (accession # D-7-87A) deposited in the Poinar amber collection maintained at Oregon State University, Corvallis (Oregon, USA).

RESULTS

Key to species of Scolytidae from Dominican amber

1. Anterior margins of elytra crenulate. Head visible from above.....2

- Anterior margins of elytra smooth. Head concealed from above.....7

2. Antennal club constricted at sutures..... *Phloeotribus antiquus* Bright et Poinar, 1994 (Fig. 2A)

- Antennal club fused at sutures..... 3

3. Procoxae separated by the width of procoxa.....*Electroborus brighti* Cognato, 2013 (Fig. 1A, B.)

- Procoxae contiguous or narrowly separated.....4

4. Procoxae very narrowly separated.....*Paleosinus fossulatus* Bright et Poinar, 1994

- Procoxae contiguous.....5

5. Tarsomere 3 slender.....*Protosinus hispaniolensis* Bright et Poinar, 1994

- Tarsomere 3 bilobed 6

6. Body blackish. Setae on forehead of female very long. Body more robust..... .....*Cladoctonus angustostriatus* Bright et Poinar, 1994 (Fig. 2B).

- Body reddish. Setae on forehead of female moderately long. Body more slender..... .....*Cladoctonus ruber* Bright et Poinar, 1994 (Fig. 2D)

7. Tibiae with denticles on exterior margin.....8

- Tibiae lacking denticles on exterior margin 9

8. Scutellum depressed.....*Scolytus poinari* Bright, 1994 (Figs. 1C, D)

- Scutellum not depressed.....*Cnemonyx priscus* Bright et Poinar, 1994

9. Metepisternum visible.....10

- Metepisternum largely covered by elytra, visible only in front.....15

10. Lateral margins of prothorax subacutely elevated.....11

- Lateral margins of prothorax rounded.....13

11. Anterior two-thirds of pronotum densely asperate.....
.....*Scolytodes neoschwarzi* Bright et Poinar, 1994

- Pronotum densely punctate.....12

12. Forehead convex. Elytral interstriae with fine granules at declivity.....
.....*Scolytodes electrosinus* Bright et Poinar, 1994 (Fig. 2C).

- Forehead concave. Elytral interstriae lacking sculpture.....
.....*Pycnarthrum senectum* Bright et Poinar, 1994

13. Anterior margin of pronotum simple..... ..... *Dryomites incognitos* Bright et Poinar, 1994

- Anterior margin of pronotum serrate.....14

14. Anterior part of pronotum densely asperate. Eyes contiguous ventrally.....
.....*Micracites squamifera* Bright et Poinar, 1994

- Pronotum punctate. Eyes distinctly separated ventrally.....
.....*Hypothenemus avitus* Bright et Poinar, 1994 (Figs. 3A,B).

15. Anterior margin of pronotum smooth.....16

- Anterior margin of pronotum serrate.....17

16. Antennal club almost spherical, with two arcuate sutures.....
.....*Corthylites bicolor* Bright et Poinar, 1994

- Antennal club oval, with two transverse sutures.....*Gnathotrichus fossor* Bright et Poinar, 1994

17. Elytral declivity convex, with 2 large, distinct tubercles.....
.....*Paleophthorus bispinatus* Bright et Poinar, 1994 (Fig. 3C).

- Elytral declivity unarmed.....18

18. Pronotum elongate, 2.0-2.1 times longer than wide. Antennal club as long as wide.....19

- Pronotum shorter, 1.2 times longer than wide. Antennal club 1.2 times as long as wide.....20

19. Elytral declivity with very small granules.....*Microcorthylus antiquarius* Bright et Poinar, 1994 (Fig. 3D).

- Elytral declivity without granules.....*Pityophthorus aphelofacies* Bright et Poinar, 1994

20. Elytral declivity with one granule on each elytron.....
.....*Pityophthorus temporarius* Bright et Poinar, 1994

- Elytral declivity without granules.....*Pityophthorus antiquarius* Bright et Poinar, 1994

List of members of the family Scolytidae in Dominican amber

Subfamily Hylesininae Erichson, 1836

Tribe Phloeotribini Chapuis, 1869

Genus *Phloeotribus* Latreile, 1797

Ph. antiquus Bright et Poinar, 1994

Tribe Hylesinini Erichson, 1836

Genus *Electroborus* Cognato, 2013

E. brighti Cognato, 2013

Tribe Phloeosinini Nuesslin, 1912

Genus *Cladoctonus* Strohmeyer, 1911

C. angustostriatus Bright et Poinar, 1994

C. ruber Bright et Poinar, 1994

Genus *Paleosinus* Bright et Poinar, 1994

P. fossulatus Bright et Poinar, 1994

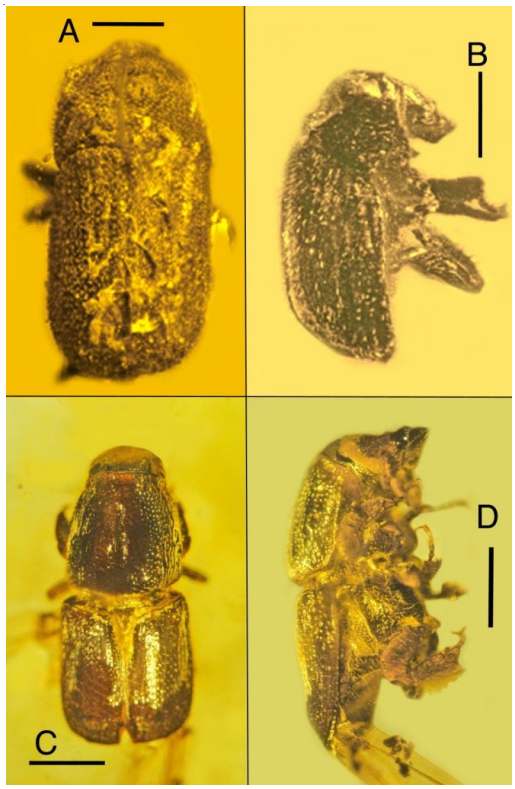

Fig. 1. A: Dorsum of *Electroborus brighti*. Scale bar = 0.6 mm. B: Lateral view of *Electroborus brighti*. Scale bar = 0.9 mm. C: Dorsum of *Scolytus poinari*. Scale bar = 0.9 mm.D: Lateral view of *Scolytus poinari*. Scale bar = 0.9 mm.

Genus *Protosinus* Bright et Poinar, 1994

P. hispaniolensis Bright et Poinar, 1994

Subfamily Scolytinae Latreile, 1804

Tribe Scolytini Latreile, 1804

Genus *Cnemonyx* Eichhoff, 1868

C. priscus Bright et Poinar, 1994

Genus *Scolytus* Geoffroy, 1762

S. poinari Bright, 1994

Tribe Hexacolini Eichhoff, 1878

Genus *Scolytodes* Ferrari 1867

S. electrosinus Bright et Poinar, 1994

S. neoschwarzi Bright et Poinar, 1994

Genus *Pycnarthrum* Eichhoff, 1878

P. senectum Bright et Poinar, 1994

Tribe Dryocoetini Lindemann, 1877

Genus *Dryomites* Bright et Poinar, 1994

D. incognitos Bright et Poinar, 1994

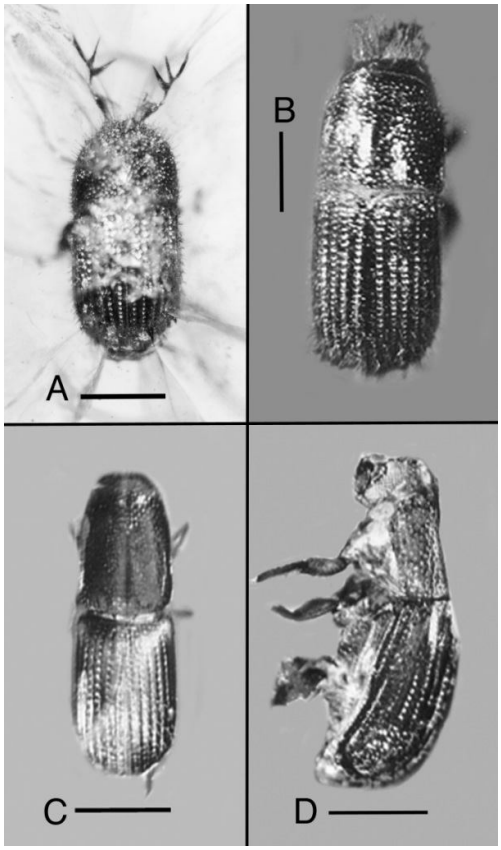

Fig. 2. A: Dorsum of *Phloeotribus antiquus*. Scale bar = 0.7mm. B: Dorsum of *Cladoctonus angustostriatus*. Scale bar = 0.5 mm.C: Dorsum of *Scolytodes electrosinus*. Scale bar = 0.5 mm. D: Lateral view of *Cladoctonus ruber*. Scale bar = 0.4 mm.

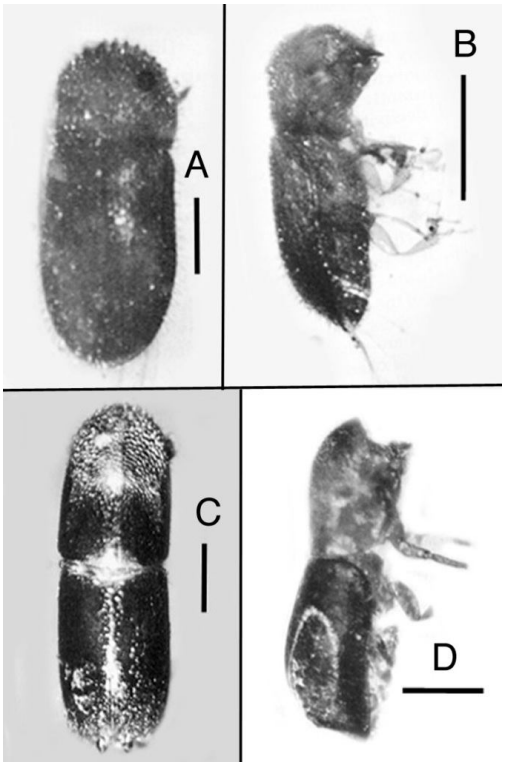

Fig. 3. A: Dorsum of *Hypothenemus avitus*. Scale bar = 0.2 mm. B: Lateral view of *Hypothenemus avitus*. Scale bar = 0.4 mm.C: Dorsum of *Paleophthorus bispinus*. Scale bar = 0.4 mm. D: Lateral view of *Microcorthylus antiquarius*. Scale bar = 0.5 mm.

Tribe Micracidini Leconte, 1876

Genus *Micracites* Bright et Poinar, 1994

M. squamifera Bright et Poinar, 1994

Tribe Cryphalini Lindemann, 1876

Genus *Hypothenemus* Westwood, 1834

H. avitus Bright et Poinar, 1994

Tribe Corthylini Leconte, 1876

Genus *Corthylites* Bright et Poinar, 1994

C. bicolor Bright et Poinar, 1994

Genus *Gnathotrichus* Eichhoff, 1869

G. fossor Bright et Poinar, 1994

Genus *Microcorthylus* Ferrari, 1867

M. antiquarius Bright et Poinar, 1994

Genus *Paleophthorus* Bright et Poinar, 1994

P. bispinatus Bright et Poinar, 1994

Genus *Pityophthorus* Eichhoff, 1864

P. antiquarius Bright et Poinar, 1994

P. aphelofacies Bright et Poinar, 1994

P. temporarius Bright et Poinar, 1994

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