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NEW RECORDS OF DELTOCHILINI FROM ECUADOR (COLEOPTERA: SCARABAEIDAE)

The tribe Deltotchilini Lacordaire, 1856 is a tribe of scarabaeid beetles, in the dung beetle of subfamily Scarabaeinae. Members of the tribe vary widely in size (2—33 mm long). The tribe Deltotchilini includes 22 genera. Species of the tribe are widespread in South America and extend north into the temperate zones of North America. Most species are coprophagous, some species are saprophagous and feed on rotting mushrooms and plant debris.

During the expedition to Ecuador in the Yasuni National Park and Lalo Loor Dry Forest Reserve in 2018, some data were obtained on representatives of the family Scarabaeidae, including species from the tribe Deltotchilini. As a result of the research new finds for four species of the tribe Deltotchilini are presented (*Canthon (Goniocanthon) fulgidus martinezi* Nunes et al., 2018, *Deltotchilum (Deltotchilum) rosamariae* Martínez, 1991, *Dichotomius (Dichotomius) mamillatus* (Felsche, 1901) and *Dichotomius (Dichotomius) podalirius* (Felsche, 1901)). Three species (*Deltotchilum rosamariae*, *Dichotomius mamillatus* and *Dichotomius podalirius*) were collected at night under light, and one during the day (*Canthon (fulgidus martinezi)*).

The article illustrates diagnostic features of rare and little-known species (*Canthon (fulgidus martinezi* and *Deltotchilum rosamariae*) and indicates some of their ecological preferences. For the first time, *Deltotchilum rosamariae* is recorded for the Manabí Province and Lalo Loor Dry Forest Reserve.

Key words: Insecta; Coleoptera; Scarabaeidae; Deltotchilini; fauna; Ecuador.

Fig. 6. Ref.: 5 titles.

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НОВЫЕ УКАЗАНИЯ DELTOCHILINI ИЗ ЭКВАДОРА (COLEOPTERA: SCARABAEIDAE)

Триба Deltotchilini Lacordaire, 1856 — триба пластинчатоусых жуков в подсемействе навозных жуков Scarabaeinae. Представители трибы сильно различаются по размеру (длина от 2 до 33 мм). Триба Deltotchilini включает 22 рода. Виды трибы широко распространены в Южной Америке и доходят на север до умеренных зон Северной Америки. Большинство видов являются копрофагами, некоторые виды являются сапрофагами и питаются гниющими грибами и растительными остатками.

Во время экспедиции в Эквадор в национальный парк Ясуни и заповедник сухого леса Лало Лоор в 2018 году были получены некоторые данные о представителях семейства Scarabaeidae, в том числе о видах из трибы Deltotchilini. В результате исследования сделаны новые находки для четырех видов трибы Deltotchilini (*Canthon (Goniocanthon) fulgidus martinezi* Nunes et al., 2018, *Deltotchilum (Deltotchilum) rosamariae* Martínez, 1991, *Dichotomius (Dichotomius) mamillatus* (Felsche, 1901) и *Dichotomius (Dichotomius) podalirius* (Felsche, 1901)). Три вида (*Deltotchilum rosamariae*, *Dichotomius mamillatus* и *Dichotomius podalirius*) были собраны ночью при свете, а один — днем (*Canthon fulgidus martinezi*).

В статье проиллюстрированы диагностические признаки двух редких и малоизвестных видов (*Canthon fulgidus martinezi* и *Deltotchilum rosamariae*) и указаны некоторые из их экологических предпочтений. Впервые *Deltotchilum rosamariae* отмечен для провинции Манаби и заповедника сухих лесов Лало Лоор.

Ключевые слова: Insecta; Coleoptera; Scarabaeidae; Deltotchilini; фауна; Эквадор.

Рис. 6. Библиогр.: 5 назв.

Introduction. Scarabaeinae species have attracted much attention as they are used as biodiversity indicators and the subject of numerous faunistic studies in South America [1]. For the Ecuadorian fauna, 217 species of dung beetles of the family Scarabaeidae are known [2].

The tribe Deltophilini Lacordaire, 1856 is a tribe of scarabaeid beetles, in the dung beetle of subfamily Scarabaeinae. Members of the tribe are vary widely in size (2—33 mm long). The tribe Deltophilini includes 22 genera [3]. They are widespread in South America and extend north into the temperate zones of North America.

Most species are coprophagous, some species are saprophagous and feed on rotting mushrooms and plant debris. Among the members of the tribe Deltophilini there are species that are found on carrion [4].

Many species are diurnal. Some species actively fly towards light.

During our expedition to Ecuador, we conducted research on the coleopteroфаuna in the Yasuni National Park and Lalo Loor Dry Forest Reserve. The Yasuni National Park and the Yasuni Biosphere Reserve are both situated within the Amazonian region of northern Ecuador, Napo Province. Yasuni is a convergence point of the Andes, Amazon, and the equator regions. The Lalo Loor Dry Forest Reserve was created for the purposes to develop research and volunteer projects, and to offer education programs to local communities. The Reserve protects the tropical dry forest, and is one of the last remnants of this highly threatened and unique habitat. It is located in the Pacific coastal province of Manabí in western Ecuador. During the research we collected representatives of three genera of the tribe Deltophilini (*Canthon* Hoffmannsegg, *Deltophilum* Eschscholtz and *Dichotomius* Hope).

The genus *Canthon* Hoffmannsegg, 1817 is one of the most diverse, including more than 170 described species [5]. The genus *Deltophilum* Eschscholtz, 1822 is one of the mega-diverse New World genera and includes 85 species. The genus *Dichotomius* Hope, 1838 includes 191 species in the Western Hemisphere [3; 6]. All three genera listed include species with incompletely understood distribution and ecological characteristics.

Material and methods. The material for this article was the authors' collection during the Belarusian expedition in the Yasuni National Park and Lalo Loor Dry Forest Reserve (Ecuador) in November and December 2018.

The material was examined with the use of a Nikon SMZ-745T stereomicroscope. Habitus photographs were taken with the use of Nikon D5100 with Nikon 60 mm 1:2.8G Macro Lens and Meik Macro Extension Ring Kit.

The figures were prepared with the help of Photoshop CS5 program.

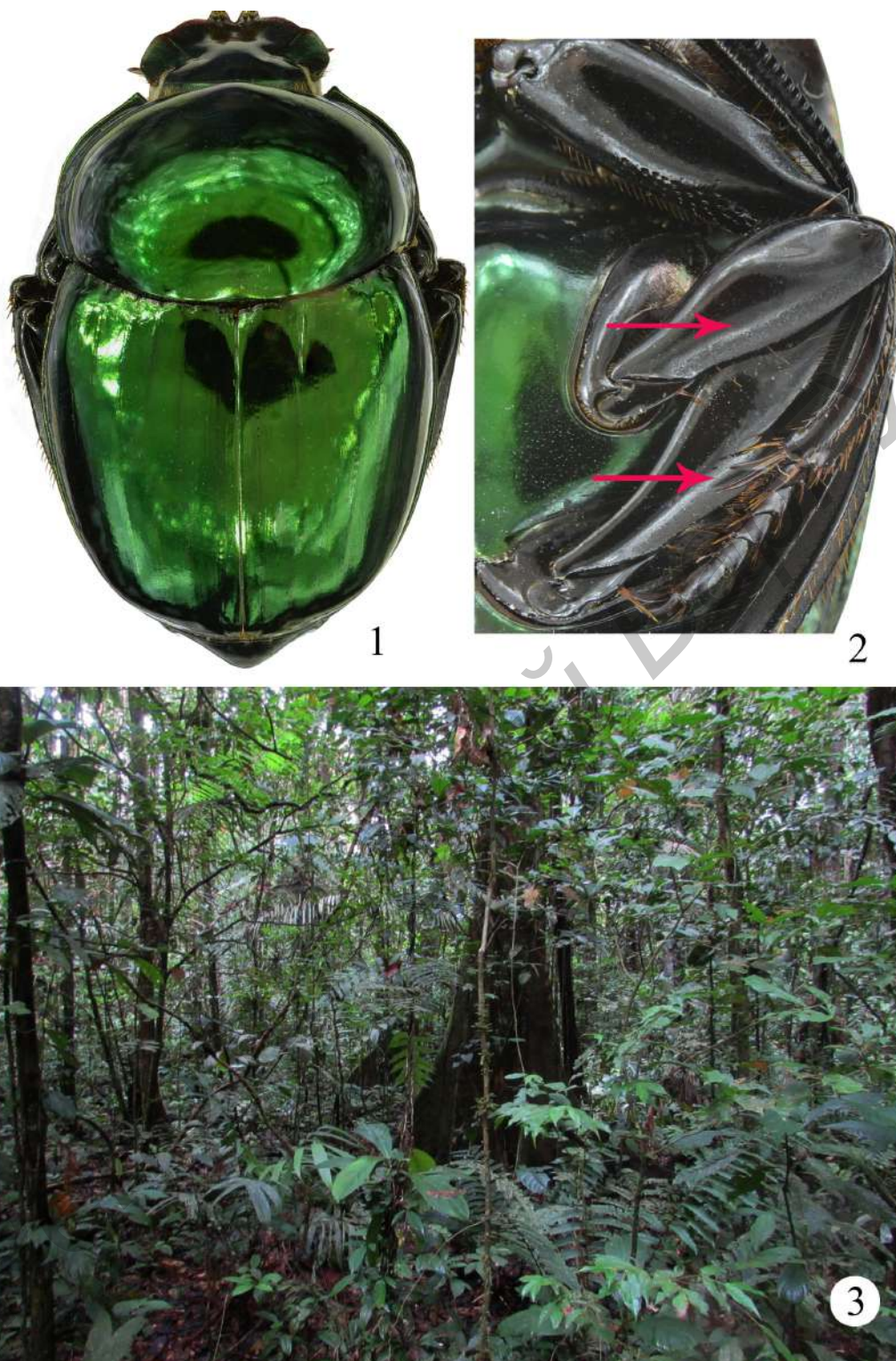
Results and discussion. During the research, 4 species from the tribe Deltophilini were found. Below is an annotated list of these species, indicating their localities, distribution in Ecuador and environmental preferences.

Subfamily Scarabaeinae:

Tribe Deltophilini

Canthon (Goniocanthon) fulgidus martinezi Nunes et al., 2018 (Figures 1—3)

Material examined. **S America, Ecuador**, 20.11.2018 Orellana Prov., Yasuni National Park, near Tiputini Biodiversity Station, S0038'00,3" W07609'48,6", leg. A. V. Derunkov, 2 specimens; Orellana Prov., Yasuni National Park, near Tiputini Biodiversity Station, forest, on leaves, 18.11.2018, leg. S. K. Ryndevich, A. P. Kashtalian, 1 specimen; same data but S0038'07,8" W07608'53,3", 20.11.2018, 3 specimens; same data but in excrement of *Alouatta seniculus*, 21.11.2018, leg. S. K. Ryndevich, A. P. Kashtalian, 5 specimens.



Figures 1—3. — *Canthon (Goniocanthon) fulgidus martinezi* Nunes et al., 2018:
 1 — dorsal view of habitus; 2 — ventral view of meso- and metasternum (arrows show the rugose area of meso- and metafemora); 3 — habitat of *C. (G.) fulgidus martinezi*

Рисунки 1—3. — *Canthon (Goniocanthon) fulgidus martinezi* Nunes et al., 2018:
 1 — габитус, вид сверху; 2 — средне- и заднегрудь, вид снизу (стрелками показана морщинистая область на средних и задних бедрах); 3 — местообитание *C. (G.) fulgidus martinezi*

Remarks. This newly described subspecies was described from 8 specimens (including the holotype) from Ecuador, of which 5 paratypes were collected from Yasuni National Park. The type series also includes specimens from Colombia (1), Peru (2), Brazil (33) and Bolivia (1) [5].

This subspecies is distinguished by the following features: dorsal surface of pronotum and elytral disc with similar metallic green metallic colouration (Figure 1); ventral surface of meso- and metafemora rugose on its posterior half (Figure 2); metasternal anterior lobe slightly convex (Figure 2). Body length of collected specimens 13—16 mm.

The beetles were found in microstations specific to most species of dung beetles — on the leaves of ferns and low trees and shrubs about 1—1.5 m high. Beetles use leaves as a platform to better capture the smell of food. Being at such a height allows beetles to quickly react to the smell and determine the direction of their flight to the source of the smell. We watched as they very quickly took off from the leaves and flew towards the howler monkey excrement. Some of the specimens were collected in excrement of colombian red howler (*Alouatta seniculus* (Linnaeus, 1766)).

***Deltochilum (Deltochilum) rosamariae* Martínez, 1991 (Figures 4—6)**

Material examined. S America, Ecuador, Manabí Prov., 19 km SW Pedernales, Lalo Loor Dry Forest Reserve, 04.XII.2018, at light, leg. A. P. Kashtalian, 1 specimen (juvenile).

Remarks. This rare little-known species previously was known only on the type series (22 specimens) from, Quevedo (Los Ríos Province). Due to the softness of the chitinous integument, the juvenile specimen it has damage to the pronotum (Figure 4). The species is clearly distinguishable by the structure of parameres of male aedeagus (Figure 5).

The collected specimen (body length 21.3 mm) was collected under lantern on the ground at night in a dry subequatorial forest, on the outskirts of Lalo Loor Dry Forest Reserve campus (Figure 6). The food source for this species in this habitat was most likely the excrement of the ecuadorian mantled howler (*Alouatta palliata aequatorialis* Festa, 1903), which inhabited this biotope.

New to the fauna of Manabí Province and Lalo Loor Dry Forest Reserve.

***Dichotomius (Dichotomius) mamillatus* (Felsche, 1901)**

Material examined. S America, Ecuador, Orellana Prov., Yasuni National Park, near Tiputini Biodiversity Station, at light, 20.11.2018, leg. S. K. Ryndevich, A. P. Kashtalian, 1 specimen.

Remarks. The species is widespread in the provinces Species Morona Santiago, Napo, Orellana, Sucumbíos and Zamora Chinchipe. Previously recorded in Yasuni National Park [2].

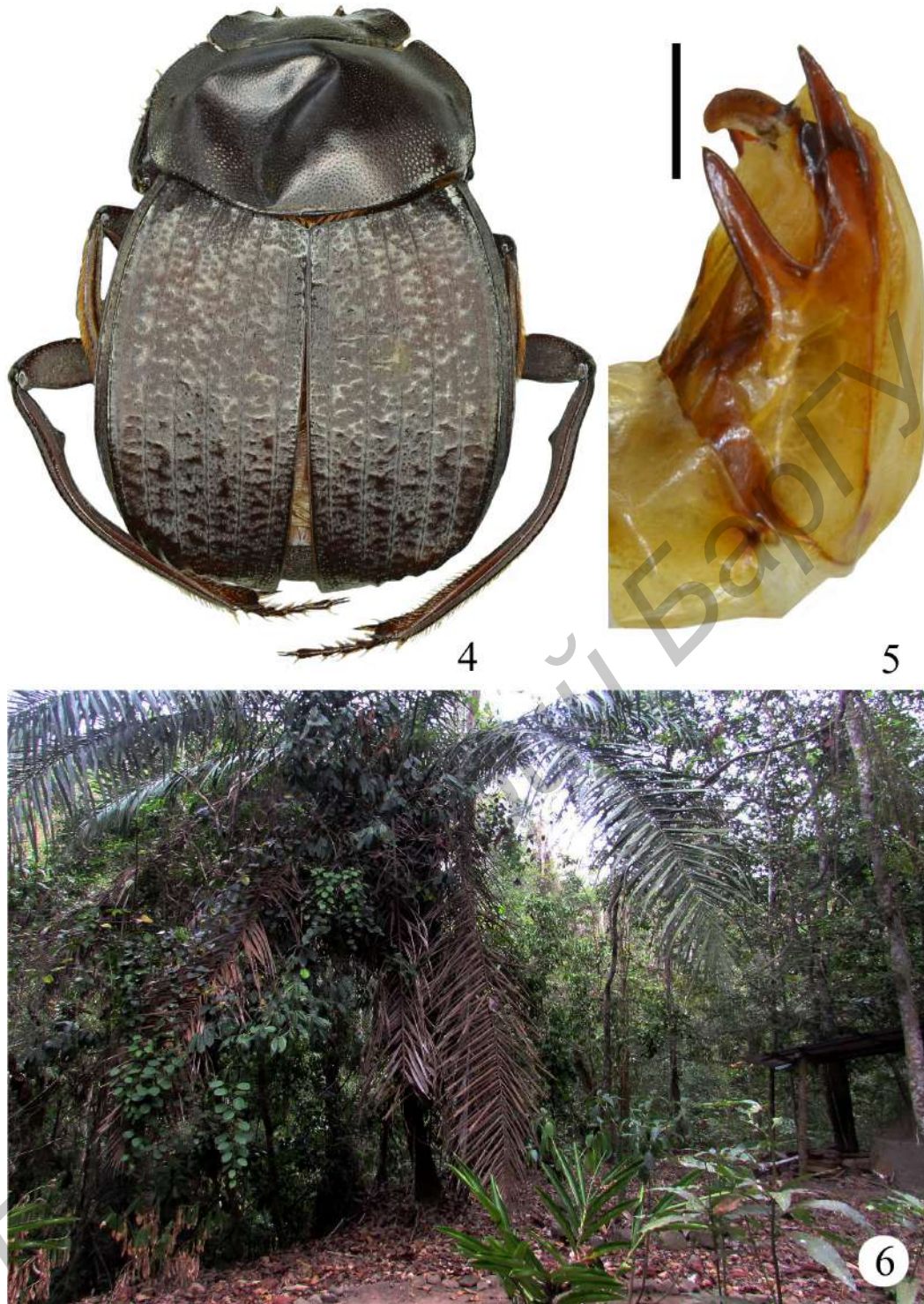
***Dichotomius (Dichotomius) podalirius* (Felsche, 1901)**

Material examined. S America, Ecuador, Orellana Prov., Yasuni National Park, near Tiputini Biodiversity Station, at light, 20.11.2018, leg. S. K. Ryndevich, A. P. Kashtalian, 1 specimen.

Remarks. *D. podalirius* is known from Napo, Orellana, Pastaza, Zamora Chinchipe Province [2; 6]. Previously recorded in Yasuni National Park [2].

Conclusion. As a result of the research new finds for four species of the tribe Deltochilini are presented. For the first time, *Deltochilum (Deltochilum) rosamariae* is recorded for the Manabí Province and Lalo Loor Dry Forest Reserve.

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Figures 4—6. — *Deltochilum (Deltochilum) rosamariae* Martínez, 1991: 4 — dorsal view of habitus; 5 — lateral view of male aedeagus; 6 — habitat of *D. (D.) rosamariae*. Scale bar for Figure 5 — 1 mm

Рисунки 4—6. — *Deltochilum (Deltochilum) rosamariae* Martínez, 1991: 4 — габитус, вид сверху; 5 — эдеагус самца, вид сбоку; 6 — местообитание *D. (D.) rosamariae*. Длина масштабной линейки для рисунка 5 — 1 мм

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