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The genus *Ontherus* Erichson 1847 (Coleoptera: Scarabaeidae: Scarabaeinae): description of a new species, and notes on the genus in Colombia

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Abstract

The state of knowledge of the genus *Ontherus* Erichson 1847 in Colombia is reviewed and updated since the revision of the genus by Génier (1996), and the species list for Colombia of Medina *et al.* (2001). Two new distributional records for Colombia are confirmed; *Ontherus politus* Génier 1996 and *Ontherus gilli* Génier 1996. An updated species list of *Ontherus* for Colombia is presented with comments on the species with doubtful distribution in Colombia. *O. felicitae* n. sp., a new species from the *mexicanus* species group, is described from Western Andes of Colombia.

Key words: Dung beetles, *Ontherus*, Colombia, new records, *O. felicitae* n. sp.

Resumen

Se revisa y actualiza el estado del conocimiento del género *Ontherus* Erichson 1847 en Colombia, desde la revisión del género por Génier (1996), y del listado de especies de Colombia de Medina *et al.* (2001). Se confirmaron dos nuevos registros del género para Colombia; *Ontherus politus* Génier 1996 y *Ontherus gilli* Génier 1996. Se presenta el listado actualizado de especies de *Ontherus* para Colombia con comentarios de las especies con distribución dudosa en Colombia. Se describe una nueva especie del grupo *mexicanus* de los Andes occidentales de Colombia, *O. felicitae* nueva especie.

Introduction

The genus *Ontherus* Erichson 1847, a neotropical dung beetle of the subfamily Scarabaeinae, is widely collected in the Colombian Andes, mainly from the inner montane forest, between 0 and 3000 m, although some species are typical of open pastures. The genus was reviewed by Génier (1996), which included 58 valid species for the genus. 19 species were registered for Colombia, seven with uncertainty (with no specific locality, or doubtful locality). One species, *O. gladiator* Génier 1998 was described two years later for a total of 59 species (Génier 1998). Medina *et al.* (2001) registered 18 species of *Ontherus* for Colombia, seven of which differed from what was reported by Génier (1996).

Currently a project of taxonomic verification of the Colombian species of dung beetles, together with the establishment of a reference collection at the Alexander von Humboldt Institute, is being implemented. The project also includes the unification of the registers of dung beetles of Colombia, using a unique code for those species lacking a specific name; this is especially needed in those groups lacking a recent taxonomic revision (Medina & González 2014). A careful revision of the species of *Ontherus* present in different dung beetles collection, allowed the taxonomic verification of the species registered for Colombia, which also contribute to the revision and the update of the species list for Colombia. Also, a new species from the *mexicanus* species group, collected in the Mesenia Nature Reserve, Jardín Antioquia, is described.

Materials and methods

This study is based on the examination of 2946 specimens of the genus *Ontherus* from the following collections: Colección Entomológica del Instituto Alexander von Humboldt (IAvH), Villa de Leyva, Colombia (Arturo González), Colección de Escarabajos Coprófagos de Colombia (CECC), Bogotá, Colombia (Alejandro Lopera), and collections under the projects of the Wildlife Conservation Society Colombia (WCSC) Cali, Colombia (Carlos Cultid). Although only three collections were reviewed, the IAvH dung beetle collection is the largest dung beetle collection of Colombia. It has national coverage and receives duplicate specimens from different projects across the country. The ECC, although smaller, also has a country wide representation. The WCSC is more focused on dung beetles from coffee growing region (Central Western Andes).

For species identification, the taxonomic keys and species descriptions in Génier (1996) were used. Descriptions are based on external morphology and characters from the male genitalia. The male genitalia, including the internal sac, were dissected. The aedeagus and the internal sac of the aedeagus were macerated in 10% solution of KOH for several minutes, following the methodology of Medina *et al.* (2003); the names of the structures of the internal sac are based on Medina *et al.* (2013) That paper includes a wide review of internal sac structures in Scarabaeinae and provides a comparative table of alternative nomenclatures for aedeagal structures used in Génier (1996) and Tarasov & Solodovnikov (2011).

Species distributions are based only on the specimens examined, except for *O. brevipedennis* Harold 1867 and *O. lichyi* Martínez 1947, which are cited from Génier (1996).

The material examined section was prepared using AUTOMATEX (Brown 2013).

Results and discussion

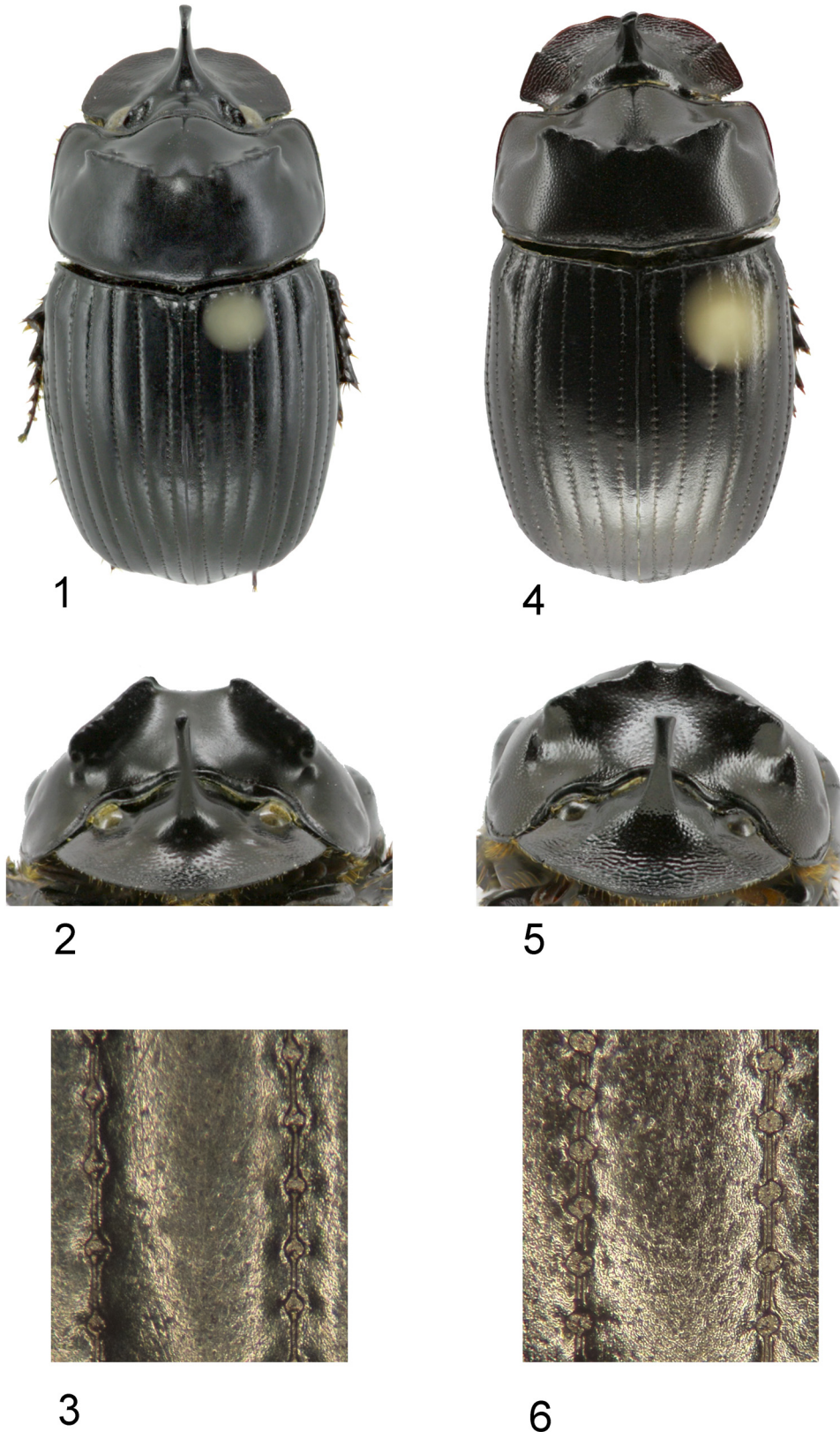
Ontherus felicitae González & Medina new species

(Figures 1–3, 7–8, 10–14, 19–24)

Holotype. ♂, **COLOMBIA: Antioquia:** Jardín, Reserva Natural Mesenia, Secondary Forest, 5°29'18"N, 75°53'39"W, 2357m, ii.2012, Edwards Felicity, T.Exc.H. #1 (IAvH-E-147505)/ [handwritten] Mesenia, 2012, Colombia, Forest. Near, Trap #1/ [handwritten, yellow label] Mesenia, # 126/ [red label] *Ontherus felicitae* Holotype González & Medina 2014.

Paratypes. **COLOMBIA: Antioquia:** Jardín, PNN Tatamá, Reserva Natural Mesenia, Forest, 5°28'38"N, 75°53'49"W, 2357m, 1♂, ii.2012, Edwards Felicity, T.Exc.H. #1 (IAvH-E-147509), Jardín, PNN Tatamá, Reserva Natural Mesenia, Forest, 5°29'53"N, 75°52'13"W, 2523m, 1♀, ii.2012, Edwards Felicity, T.Exc.H. #2 (IAvH-E-147511), Jardín, Reserva Natural Mesenia, Forest, 5°28'38"N, 75°53'49"W, 2357m, 1♂, ii.2012, Edwards Felicity, T.Exc.H. #2 (IAvH-E-147507), Jardín, Reserva Natural Mesenia, Forest, 5°29'53"N, 75°52'13"W, 2523m, 1♀, ii.2012, Edwards Felicity, T.Exc.H. #2a (IAvH-E-147513), Jardín, Reserva Natural Mesenia, Forest, 5°28'38"N, 75°53'49"W, 2357m, 1♂, ii.2012, Edwards Felicity, T.Exc.H. #3 (IAvH-E-147510), Jardín, Reserva Natural Mesenia, Secondary Forest, 5°29'18"N, 75°53'39"W, 2357m, 2♂, ii.2012, Edwards Felicity, T.Exc.H. #2 (IAvH-E-147514, IAvH-E-147515), Jardín, Reserva Natural Mesenia, Secondary Forest, 5°29'53"N, 75°52'59"W, 2232m, 2♂, vi.2012, Edwards Felicity, T.Exc.H. (IAvH-E-147506, IAvH-E-147508), Jardín, Reserva Natural Mesenia, Secondary Forest, 5°29'26"N, 75°53'15"W, 2334m, 1♂, vi.2012, Edwards Felicity, T.Exc.H. (IAvH-E-147512).

Diagnosis. the species belongs to *Mexicanus* species group as defined by Génier (1996), since *O. felicitae* n. sp. has the anterior suture of median lobe of metasternum straight; pronotum with carina (Figs. 1 and 2); head of large males with horn compressed laterally; parameres apically expanded (Fig. 10), and females with 2 denticles on the head (Fig. 7). The new species is closely related to *O. compressicornis* Luederwaldt 1931 due to: 1. large males with cephalic horn compressed laterally; 2. large males with pronotal carina with inner portion lower than lateral portion, without tubercles (Figs. 2 and 5) and 3. stria punctures, simples (not ocellate), and larger, punctures more than twice as wide as connecting stria (Figs. 3 and 6). But *O. felicitae* n. sp. can be separated by: 1. the minutely punctate pronotal disc (Figs. 1 and 2), punctures not visible at 8x; 2. elytral striae punctures almost three times as wide as connecting stria (Fig. 3); 3. elytral striae deeper apically; 4. eighth elytral stria with punctures longitudinally elongated and irregularly shaped (not rounded) (Fig. 8); 5. plate-shape sclerite of the internal sac of the aedeagus elongated, straight and slightly bent (Fig. 12); 6. internal sac of the aedeagus with small accessory sclerite



FIGURES 1–6. Figures 1–3 *Ontherus felicitae* n. sp. Figure 1, dorsal view (holotype); Figure 2, frontal view, head and pronotum (holotype); Figure 3, elytral sculpture (holotype). Figures 4–6 male of *Ontherus compressicornis* Luederwaldt 1931. Figure 4, dorsal view; Figure 5, frontal view head and pronotum; Figure 6, elytral sculpture.

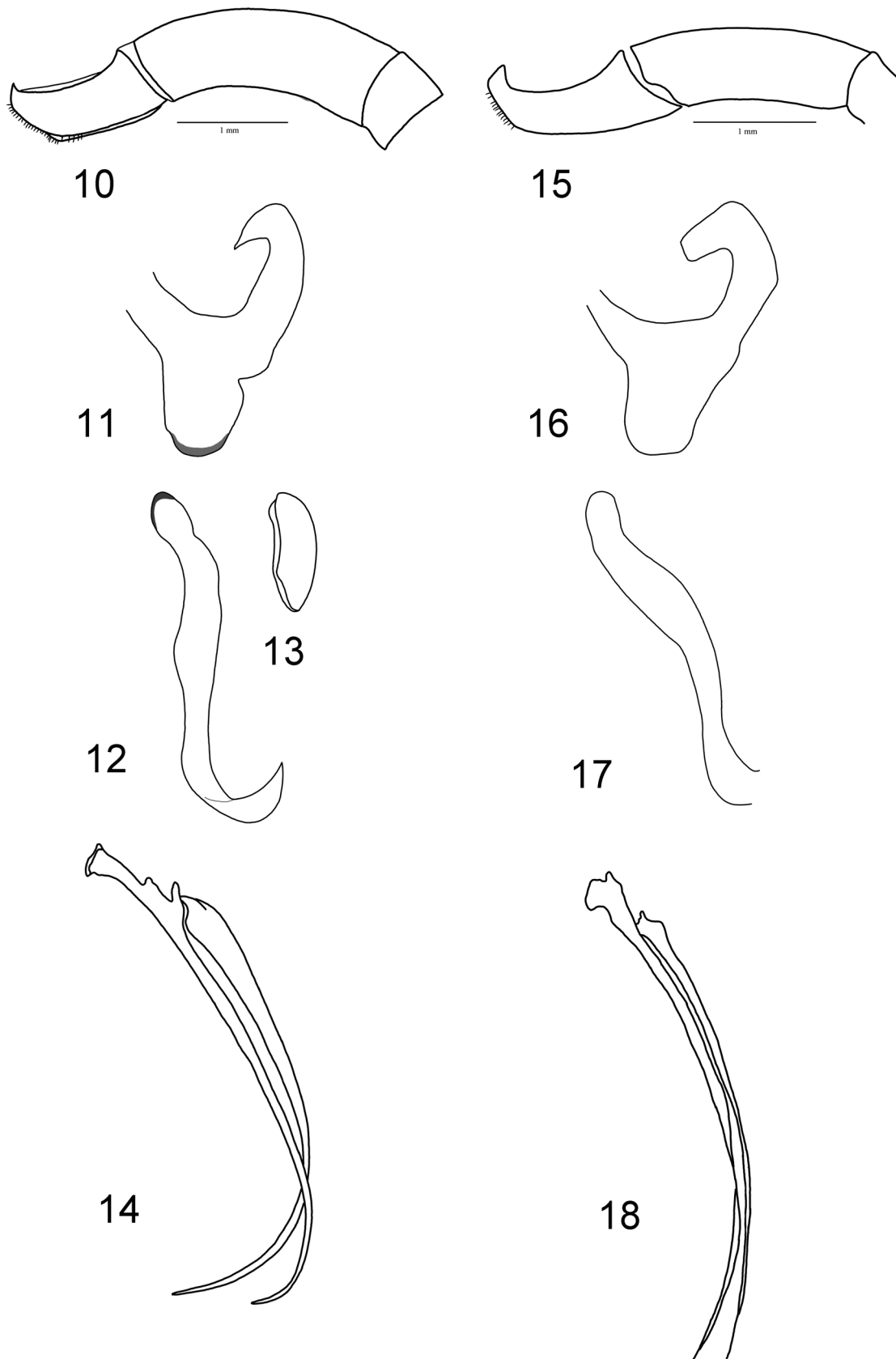


FIGURES 7–9. Figures 7–8 *Ontherus felicitae* n. sp. Figure 7, female dorsal view (paratype); Figure 8, 8th elytral stria, female (paratype). Figure 9, *Ontherus compressicornis* Luederwaldt 1931, 8th elytral stria, female. Black arrow pseudoepipleuron, white arrow 8th elytral stria.

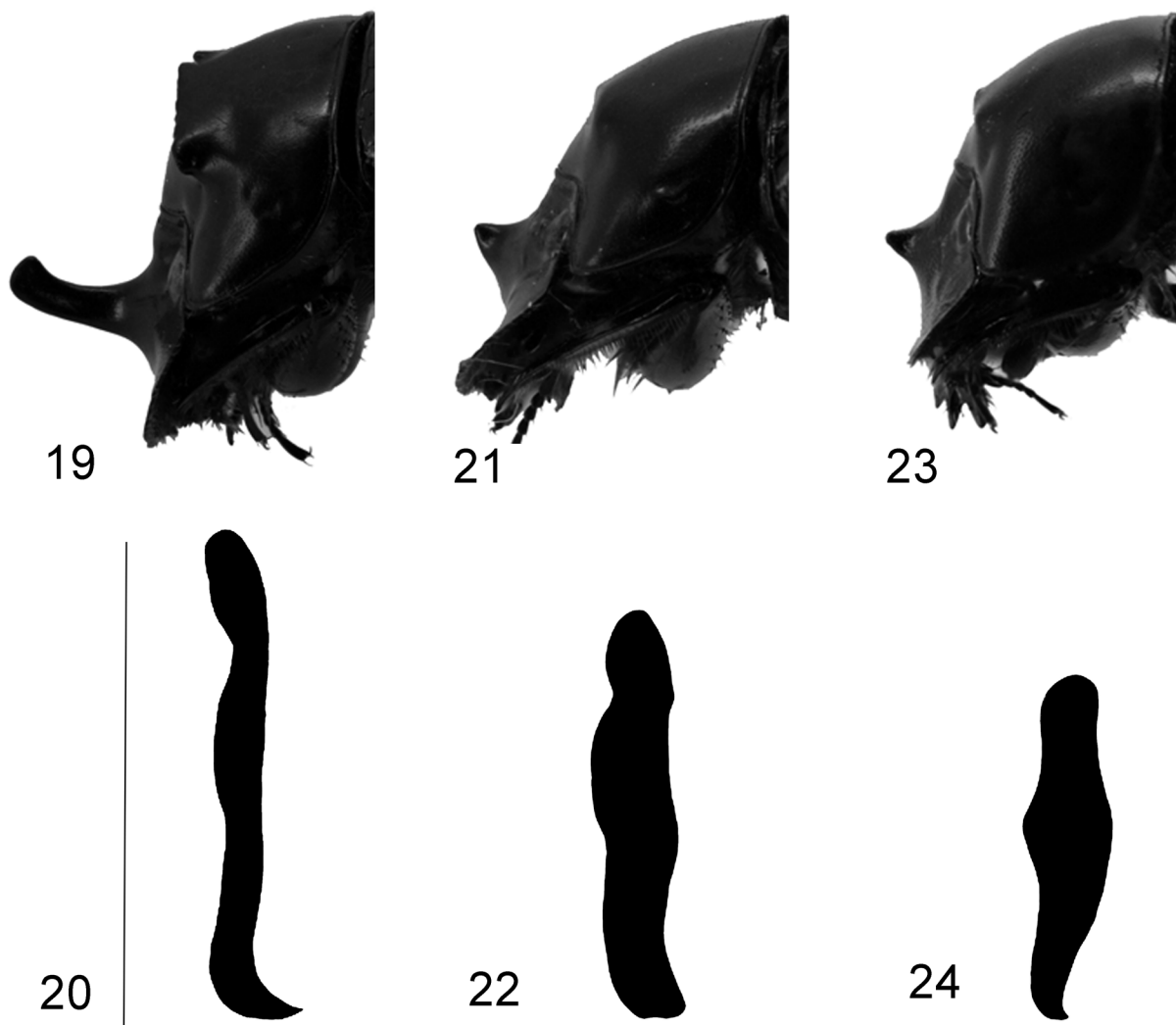
between the elongate and plate-shape sclerites (Fig. 13). In *O. compressicornis*: 1. the pronotal disc larger punctures visible at 8x (Figs. 4 and 5); 2. elytral striae punctures almost five times as wide as connecting stria (Fig. 6); 3. elytral striae slightly deeper apically; 4. eighth elytral stria with punctures rounded (Fig. 9); 5. plate-shape sclerite of the internal sac of the aedeagus sinuated (Fig. 17); 6. internal sac of the aedeagus without accessory sclerites.

The females of *O. felicitae* n. sp. and *O. compressicornis* can be separated by: *O. felicitae* n. sp. elytral striae punctures almost three times as wide as connecting stria, and eighth elytral stria with punctures longitudinally elongated, irregularly shaped (not rounded) (Fig. 8). In *O. compressicornis* the elytral striae punctures are almost five times as wide as connecting stria, and the punctures on the eighth elytral stria are rounded (Fig. 9).

Description. holotype male: size, length, from pronotal anterior margin to elytral apex, 12.17 mm; humeral width, 7.30 mm. Body black with weakly reddish reflection ventrally, easier to see on meso-metafemur and metasternum, and weakly bluish reflection dorsally, easier to see on elytra. **Head** with a backwardly directed, laterally gradually compressed horn (Fig. 19), truncate apically. Clypeus and genae transversely wrinkled; anterior edge of clypeus feebly bisinuate, edge between the sinuation and the clypeogenal junction rounded; clypeogenal junction feebly notched; clypeofrontal suture feebly noticeable; vertex with a deep depressions, on the internal side of each eye (Fig. 1). **Pronotum** smooth with simple punctures (not ocellate); punctures in the antero-lateral areas denser and larger than in the disc, the disc is smooth, the punctures are small and not easily visible (Figs. 1 and 2). Punctures separated by twice the diameter in the anterolateral areas and by more than twice the length of the diameter in the disc; disc with two oblique raised carinae (Fig. 2); carina with irregular border (small denticles), except lateral and inner edges that are smooth and rounded; pronotal anterior margin wider and sinuated behind the eyes; anterior, lateral and posterior area of hypomeron with setae, setae denser anteriorly, without punctures or setae submedially; **Prosternum** with dense punctures, each puncture with a long seta. **Mesosternum** with dense punctures, each puncture separated by less than one diameter, and setae shorter than those of the prosternum, except along the mesocoxa where they are subequal in size. **Metasternum** smooth and glabrous on disc, shagreened and with few setae on lateral lobes; lateral lobes punctures larger posteriorly and denser anteriorly. Median lobe punctures larger and denser than discal punctures; median lobe of metasternum anteriorly with atrophied carina medially, mesometasternal suture almost straight. **Elytral** striae deeper apically; strial punctures simple, separated by one diameter on the disc and by less than one diameter apically; 1–7th strial punctures rounded, eighth stria with punctures longitudinally elongated, irregularly shaped (not rounded); strial punctures



FIGURES 10–18. Figures 10–14 male genitalia *Ontherus felicitae* n. sp. Figure 10, lateral view aedeagus; Figure 11, basal sclerite; Figure 12, plate-shape sclerite; Figure 13, accessory sclerite; Figure 14, elongate sclerite. Figures 15–18 male genitalia *Ontherus compressicornis* Luederwaldt 1931. Figure 15, lateral view aedeagus; Figure 16, basal sclerite; Figure 17, plate-shape sclerite; Figure 18, elongate sclerite.



FIGURES 19–24. Cephalic horn size variation and plate-shape sclerite in *Ontherus felicitae* n. sp. Figures 19–20 well-developed male (holotype). Figure 19, lateral view head and pronotum; Figure 20, plate-shape sclerite. Figures 21–22 moderately developed male (paratype). Figure 21, lateral view, head and pronotum; Figure 22, plate-shape sclerite. Figures 23–24 underdeveloped male (paratype). Figure 23, lateral view, head and pronotum; Figure 24, plate-shape sclerite.

almost three times as wide as the connecting stria (Fig. 3), except at the apex of the sixth and seventh striae where the punctures are slightly larger. **Interstriae** smooth, with simple punctures (Fig. 3); punctures small and disperse, smaller than the line of the striae and separated by 2–3 times their diameter. **Abdominal sternites** weakly shagreened; sternite 1–5 reduced in width medially, sternite 6 as wide as 2–5 combined medially. **Pygidium** approximately 1.5 times wider than long; pygidium smooth between punctures, punctures fine and slightly larger than the punctures on the middle of the sixth abdominal sternite. **Legs**, anterior tibiae tridentate, basal tooth smallest, basal and medial teeth laterally projected, apical tooth projecting forward; anterior femur weakly shagreened, with large setiferous punctures on posterior half; surface of middle and posterior femur weakly shagreened, with small punctures separated by 2–3 times their diameter; hind leg unmodified.

Male genitalia: **aedeagus** (Fig. 10) with phallobase elongated, nearly twice as long as parameres. Parameres sinuated in lateral view, apex turned up. Internal sac well developed with four sclerites in the apical area. **Basal sclerite** (Fig. 11) robust, well sclerotized, with a thick base and two lateral arms, one shorter, and the other elongated and bent apically. **Plate-shape sclerite** (Fig. 12), called sigmoid sclerite in Génier (1996), is slender and elongated, with the apices bent laterally. **Accessory sclerite** (Fig. 13) small and oval shaped. **Elongate sclerite** (Fig. 14) with two separated filaments. Medial area of the internal sac without sclerites. Submedial area without defined raspules, but covered by homogeneous small scales.

Variation. The paratypes vary in sexual features and in the body development of the males. Female, head with

two denticles, without horn (Fig. 7); clypeus and genae more wrinkled than developed males, vertex without depressions. Pronotal punctures nearly twice as large as in developed males, mainly in the antero-lateral areas; anterior third of pronotum with two straight transversal swelling, as long as the distance between the eyes (Fig. 7). Sixth abdominal sternite as wide as 1–5 combined medially. Pygidium approximately three times wider than long. Anterior tibiae quadridentate, the basal tooth smallest.

Small males, head with small conical or subquadrate horn (Figs. 21 and 23); clypeus and genae more wrinkled than developed males; vertex with shallower depressions. Pronotal punctures nearly twice as large as in developed males, principally in the anterolateral areas; anterior third of pronotum with two straight transversal swelling, as long as the distance between the eyes.

In small males and females the lateral swelling of pronotum, may be the same size or larger than inner swelling, depending of the development grade of the individual.

The greater variation found in the genitalia was observed in the plate sclerite, mainly in the size of the sclerite correlated with the size of the cephalic horn and the body of the beetle (Figs. 19–24).

Etymology. A patronymic after Felicity Edwards who collected all known specimens of this species.

Remarks. *O. felicitae* n. sp. will key out to couplet eleven and to *O. compressicornis* in Génier's key (1996). However it can be separated by the six characters described in the diagnosis.

New records of species from Colombia

Two species of *Ontherus* that had not previously been reported for Colombia were found in Colombia, *Ontherus gilli* Génier 1996 and *Ontherus politus* Génier 1996. *O. gilli* was originally described from Mérida and Tachira (Venezuela); no other locality had previously been registered for this species, It was found in the Norte de Santander and Santander departments, near the region in Venezuela where the species was originally found. *O. politus*, which had been known only from its type locality Napo (Ecuador), has been found in the southwestern region of Colombia, in the departments of Caldas, Caquetá, Huila and Putumayo. Specimens of both species are deposited in the IAvH Entomological Collection.

The localities of these two species are cited as following:

Ontherus gilli Génier 1996

Material examined. COLOMBIA: Norte de Santander: Cucutilla, Sisavita, Qda. Grande, Bosque andino, 7° 26' 20" N, 72° 50' 27" W, 2380–2520 m, 1♂, 31-02.iii-iv.2002, Pulido, Astrid; González, E.; Santamaría, A., T.Exc.H (IAvH-E), Cucutilla, Sisavita, Qda. Poveda, Robledal, 7° 28' 28" N, 72° 50' 11" W, 2040–2200 m, 1♀, 1♂, 26–28.iii.2002, Pulido, Astrid; González, E.; Santamaría, A., T.Exc.H (IAvH-E), Cucutilla, Sisavita, Qda. Salinas, Bosque andino, 7° 27' N, 72° 50' W, 2600–2850 m, 1♀, 2♂, 20–22.iii.2000, González, E.; Santamaría, A., T.Exc.H (IAvH-E); **Santander:** Piedecuesta, Cgto. Sevilla, Vda. Cristales, Reserva Experimental y Demostrativa el Rasgón, Bosque Alto Andino, 7° 3' N, 72° 57' W, 2150 m, 1♂, 21–23.ix.2004, González, E.; Quintero, I., T.Exc.H (IAvH-E).

Ontherus politus Génier 1996

Material examined. COLOMBIA: Caldas: Palestina, Vda. Jericó, Bosque Villa Nora, 01° 39' 54" N, 76° 08' 28" W, 1980 m, 3♀, 4♂, 29–31.viii.2005, Ospina, M.; Londoño, H.; Ortiz, P., T.Exc.H (IAvH-E); **Caquetá:** PNN Picachos, Bosque, 2° 48' N, 74° 40' W, 1250 m, 2♀, 1♂, ix.1998, González, E.; Ospina, M., T.Exc.H (IAvH-E), San José del Fragua, Vda. La Esmeralda, Alto río Yuruyaco, 1° 20' N, 76° 06' W, 1500 m, 1♀, 06–08.ix.2000, Escobar, F., T.Exc.H (IAvH-E), San Vicente del Caguán, IP. Guayabal Alto del río Pato, Fca. Andalucía, 2° 47' 51" N, 74° 51' 18" W, 2000 m, 3♀, 3♂, xi–xii.1997, Escobar, F., T.Exc.H (IAvH-E); **Huila:** Acevedo, PNN La Cueva de Los Guacharos, Bosque secundario bien conservado, 1° 36' 59" N, 76° 6' 15" W, 2100 m, 1♀, 27–29.xi.2001, Franco, L.; Ortiz, R., T.Exc.H (IAvH-E), Acevedo, PNN La Cueva de Los Guácharos, Bosque Secundario bien conservado, 1° 36' N, 76° 06' W, 2100 m, 1♂, 27–29.xi.2001, González, E.; Ospina, M., T.Exc.H (IAvH-E), Acevedo, Vda. Villa Fátima, Finca El Diviso - Bienestar, Reserva, 01° 40' 28" N, 76° 04' 26" W, 1950 m, 1♀, 1♂, 10–12.viii.2005, Franco, L.; Buesaquillo, S.; Montealegre, G., T.Exc.H (IAvH-E), Palestina, Vda. La Guajira, Reserva La Rivera, 1° 39' 23" N, 76° 11' 13" W, 1970 m, 6♀, 5♂, 24–26.viii.2005, Ospina, M.; Galindez, B., T.Exc.H (IAvH-E), PNN

Cueva de los Guácharos, Bosque secundario bien conservado, 1° 36' 59" N, 76° 6' 15" W, 2100 m, 3♀, 3♂, 27–29.xi.2001, Franco, L.; Ortiz, R., T.Exc.H (IAvH-E), PNN Cueva de los Guácharos, Bosque secundario robledal, 1° 37' 59" N, 76° 6' 19" W, 1980 m, 1♀, 02–04.xii.2001, Franco, L.; Ortiz, R., T.Exc.H (IAvH-E), San Agustín, Vda. La Castellana, Reseva Natural Privada, Los Yalcones, 1° 48' 36.44" N, 76° 20' 59" W, 2400 m, 3♀, 16–18.viii.2005, Franco, L.; Buesaquillo, S.; Montealegre, G., T.Exc.H (IAvH-E); **Putumayo:** Mocoa, Los Mayos, Bosque, 01° 08' N, 76° 38' W, 2250 m, 1♀, 1♂, i.1999, Escobar, F., T.Exc.H (IAvH-E).

Species with uncertain distribution in Colombia

O. bridgesi Waterhouse 1891 was recorded from Colombia by Génier (1996) without a specific locality, indicating that the distribution of the species in Colombia was doubtful. The species was not found in the collections, and has not been reported from Colombia.

Recently, two species, *O. sulcator* (Fabricius 1775) and *O. alexis* (Blanchard 1845) have been reported from Colombia. *O. sulcator* was cited by Génier (1996) without specific locality, subsequently, a specimen of this species was recorded from Guaviare in the IAvH (Pulido & Medina 2009); after the taxonomic verification, this specimen corresponds to a female of *O. azteca* Harold 1869, and is not *O. sulcator*. This misidentification is probably due to the fact that females of *O. sulcator* lack the main diagnostic characters and the females of the two species are morphologically similar.

Génier (1996) reported *O. alexis* from Colombia with doubts, and Medina *et al.* (2001) cited this species from Nariño (ECC), but in the revision of collections no specimen of this species has been found.

For the above reasons; *O. bridgesi*, *O. alexis* and *O. sulcator* are not considered species present in Colombia. As we mentioned these species were reported (Génier 1996) as doubtful or/and without specific locality, and no specimen of these species has been detected so far in Colombian collections.

According current study a total of 18 species of *Ontherus* are recorded from Colombia (Table 1). This is the first update in the species list of the genus *Ontherus* from Colombia, since Medina *et al.* (2001).

TABLE 1. Distribution, by Department, of the genus *Ontherus* in Colombia; distribution based on specimens observed, except species marked with an asterisk, where distribution is based on Génier (1996).

Species	Departmental distribution	Altitudinal distribution
<i>Ontherus aphodioides</i> Burmeister 1874	Meta	200
<i>Ontherus appendiculatus</i> (Mannerheim 1829)	Cundinamarca, Meta	150–245
<i>Ontherus azteca</i> Harold 1869	Cundinamarca, Guaviare, Meta, Quindío	200–1800
<i>Ontherus brevicollis</i> Kirsch 1871	Boyacá, Cundinamarca, Huila, Norte de Santander, Risaralda	1250–2950
<i>Ontherus brevipennis</i> Harold 1867*	Magdalena, Valle del Cauca	
<i>Ontherus compressicornis</i> Luederwaldt 1931	Nariño	1380–2050
<i>Ontherus diabolicus</i> Génier 1996	Caquetá, Cauca, Nariño, Putumayo, Vaupés	100–2000
<i>Ontherus felicitae</i> sp. nov.	Antioquia	2232–2523
<i>Ontherus gilli</i> Génier 1996	Norte de Santander	2040–2850
<i>Ontherus incisus</i> (Kirsch 1871)	Caquetá, Cundinamarca, Huila	1250–2100
<i>Ontherus kirschii</i> Harold 1867	Boyacá	1300–2200
<i>Ontherus lichyi</i> Martínez 1947*	Magdalena, Meta, Norte de Santander	
<i>Ontherus lunicollis</i> Génier 1996	Antioquia, Caquetá, Cundinamarca, Huila, Nariño, Quindío, Risaralda, Valle del Cauca	1000–2680
<i>Ontherus pilatus</i> Génier 1996	Nariño, Valle del Cauca	670–1380
<i>Ontherus politus</i> Génier 1996	Caldas, Caquetá	1250–2000
<i>Ontherus pubens</i> Génier 1996	Caquetá, Cundinamarca, Meta	150–1250
<i>Ontherus sanctaemartae</i> Génier 1996	Magdalena	940
<i>Ontherus trituberculatus</i> Balthasar 1938	Nariño, Valle del Cauca	50–1000

The updated species list of dung beetles of Colombia is still a work in progress. Taxonomic uncertainty is still enormous; approximately the 40 % of the species in ecological surveys are still lacking specific identification (Cultid *et al.* 2012, Medina & González 2014). Although the genus *Ontherus* has been reviewed, changes in the species list were needed. A significant number of changes in the species list of dung beetles of Colombia are expected, when more genera, especially those without taxonomic review, will be studied.

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