Zootaxa 4358 (3): 430–440
http://www.mapress.com/j/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.4358.3.2
http://zoobank.org/urn:lsid:zoobank.org:pub:54A006AB-CAF0-4760-9E52-665ACBCC2EFF

Description of the larva and pupa of *Neocorvicoana reticulata* (Kirby, 1819) (Coleoptera: Scarabaeidae: Cetoniinae: Gymnetini)

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Abstract

The third instar and pupa of *Neocorvicoana reticulata* (Kirby, 1819) (Coleoptera: Scarabaeidae: Cetoniinae: Gymnetini) from Argentina, are described and illustrated. This is the first description of immatures in this genus. A key to the known third-stage larvae of New World Gymnetini species is provided, which now includes 19 species in 10 genera.

Key words: scarab beetle, morphology, immature stages, taxonomy, Argentina

Resumen

El tercer estadio y pupa de *Neocorvicoana reticulata* (Kirby, 1819) (Coleoptera: Scarabaeidae: Cetoniinae: Gymnetini) de Argentina, se describen e ilustran. Es la primera descripción de inmaduros de este género. Se provee una clave para las larvas conocidas del tercer estadio de Gymnetini del Nuevo Mundo, la cual incluye 19 especies en 10 géneros.

Introduction

The subfamily Cetoniinae (Coleoptera: Scarabaeidae) is comprised of nearly 4,000 species distributed worldwide (Krikken 1984), and 300 are estimated to be in the New World (Orozco 2012). The taxonomic level of this group is controversial, some authors ranked them at the subfamily level (Lawrence & Newton 1995; Smith *et al.* 2006; Bouchard *et al.* 2011; Šípek *et al.* 2016), while others consider that these beetles include enough characteristics to be ranked at the family level (Micó *et al.* 2008; Cherman & Morón 2014). However, the monophyly of the Cetoniinae is supported by the use of molecular data (Smith *et al.* 2006; Šípek *et al.* 2016) and the employment of morphological characters both larvae and adults (Micó *et al.* 2008; Šípek *et al.* 2009).

The adults of cetonids exhibit striking coloring patterns, which is why they are highly prized by collectors and beetle lovers. The size of the adults is variable (0.5–11.0 cm), they have typically diurnal habit and feed on flowers, pollen, sap, and ripe fruits (Neita *et al.* 2006; Orozco 2012). The larvae are predominantly saprophagous or saproxylophagous, and are found in different locations such as decomposed tree trunks, soil organic matter, tree-hollows, vertebrate nests, under dry dung pats, and in living tissue of Bromeliaceae (Orozco & Pardo-Locarno 2004; Neita *et al.* 2006; Micó *et al.* 2008). Some species are also found in termite and ant nests (Bruch 1929; Morelli 2000; Micó *et al.* 2001; Puker *et al.* 2015). Šípek & Kral (2012) provide an historical overview on the study of Cetoniinae immature stages.

The New World Gymnetini (Cetoniinae) contains more than 150 species (Vanin & Costa 1984) and according to different authors is comprised of 24 genera (Krikken 1984), 25 genera (Hardy 1987), or 27 genera (Krajčik 1998), (also see Ratcliffe 2015). Although their species are well represented in entomological collections, the

 Accepted by A.B.T. Smith: 24 Oct. 2017; published: 30 Nov. 2017

natural history and immature stages of most species are poorly known. Only the larvae and pupae of 19 and 10 species, respectively, have been described (Table 1).

Neocorvicoana Ratcliffe & Micó, 2001 is a small genus of the tribe Gymnetini distributed in the south half of South America that includes three species: *N. chalybea* (Blanchard, 1850), *N. reticulata* (Kirby, 1819), and *N. tricolor* (Schürhoff, 1933). However, according to Ratcliffe & Micó (2001) nothing is known of the natural history of the *Neocorvicoana* species, because there is no information on the labels of specimens examined to indicate how they were collected.

In this paper we describe the third instar and pupae of *N. reticulata* and a brief note on the natural history of this species. We also include a key to the known third instars of New World Gymnetini.

TABLE 1. Described third instars of New World Gymnetini species.

Genera	Species	Reference	Pupa
Amithao	*A. haematopus* (Schaum, 1848)	Morón & Arce (2002)	
Argyripa	*A. lansbergei* (Sallé, 1857)	Morón & Ratcliffe (1984)	X
Blaesia	*B. atra* Burmeister, 1842	Monné (1969)	
Cotinis	*C. mutabilis* (Gory & Percheron, 1833)	Ritcher (1966)	
	C. nitida (Linnaeus, 1758)	Ritcher (1966)	
Gymnetina	*G. cretacea* (LeConte, 1866)	Ritcher (1966)	
Gymnetis	*G. chalcipes* (Gory & Percheron, 1833)	Morelli (2000)	X
	G. difficilis Burmeister, 1842	Morón & Arce (2002)	
	G. holosericea (Olivier, 1789)	Orozco & Pardo-Locarno (2004)	X
	G. pantherina Blanchard, 1842	Orozco & Pardo-Locarno (2004)	X
	G. flavomarginata sallei Schaum, 1849	Ritcher (1966), Morón & Arce (2002)	/ X
	G. rufilateris (Illiger, 1800)	Rodrigues *et al.* (2016)	X
Hologymnetis	*H. cinerea* (Gory & Percheron, 1833)	Micó *et al.* (2001)	
Hoplopyga	*H. brasiliensis* (Gory & Percheron, 1833)	Costa *et al.* (1988)	X
	H. liturata (Olivier, 1789)	Morón & Arce (2002)	X
	H. singularis (Gory & Percheron, 1833)	Micó *et al.* (2001)	
Marmarina	*M. maculosa* (Olivier, 1789)	Morón & Arce (2002)	X
	M. tigrina (Gory & Percheron, 1833)	Monné (1969)	
Neocorvicoana	*N. reticulata* (Kirby, 1819)	this publication	X

Materials and methods

This description is based on five third instars and three pupae. Thirteen third instars were found inside the dump chambers of *Acromyrmex lundii* (Guérin-Méneville, 1838) (Hymenoptera: Formicidae: Myrmicinae) on an *Enterolobium contortisiliquum* (Vell.) (Fabaceae) tree, from a small forest patch. Locality data: ARGENTINA: Corrientes, Mercedes, Reserva Itatí, 28°44'56"S, 58° 07'31"W, 14.XI.2013, 56 m, M. Ibarra-Polesel & D. Larrea. The larvae were transported to the laboratory, where they were individually kept in 1-L plastic containers with debris piles of ants obtained in the field. The specimens were maintained in the laboratory at room temperature (25 ± 3 °C), 60–80% humidity, and a natural photoperiod (13 light, 11 dark hours). To ensure species identification eight of these larvae were reared, three (two female and one male) reached the pupal stage and three (one female and two male) the adult stage; two specimens died in the pupal stage.

Larvae used for morphological studies were killed by immersion in boiling water for 20 seconds and preserved in 70% alcohol for description. The photographs were taken using a Canon EOS T3i digital camera mounted on a Leica EZ4 binocular microscope. The software Combine ZP and Adobe Photoshop CS 6 were used for image processing. Terms and characters used in the larval and pupal descriptions were adopted from Ritcher (1966), Morón & Ratcliffe (1984), and Micó *et al.* (2001). The delimitation of the thoracic and abdominal segments were

based on descriptions provided by Ritcher (1966). Specimens are placed at the collection of the Cátedra de Biología de los Artrópodos, Departamento de Biología, Universidad Nacional del Nordeste (Corrientes, Argentina).

***Neocorvicoana reticulata* (Kirby, 1819)**
(Figs. 1–13)

Third instar. Dorsal body length 44.8–45.9 mm, width 7.4–8.2 mm, weight 1.2–1.6 g (preserved specimens). **Cranium** (Fig. 1): Width of head capsule 2.5–2.8 mm. Color orange brown. Surface mostly smooth, with few pits. Epicraneal, frontal, and clypeofrontal suture distinct. **Frons** (Fig. 1): Surface with 2 short anterior frontal setae, 2 short exterior frontal setae, and 2 posterior frontal setae; each frontal anterior angle with 1 long seta. Dorsoepicranium with 1–2 long dorsoepicranial setae followed by 5–10 small setae in a line diverging from mediobasal portion of head, and one lateral line of 4–8 small posterior frontal setae at each side. Two long anterior epicranial setae and 2–4 exterior epicranial setae. Stemmata absent. **Clypeus** (Fig. 1): Shape subtrapezoidal with 2 posterior clypeal setae and 2 exterior clypeal setae at each side. Preclypeus weakly sclerotized, without setae. **Labrum** (Fig. 1): Symmetrical, rounded margins and anterior border trilobed, clithra present. With 2 long central setae and 4–8 short setae; 2 lateral long setae at each side, without posterior labral setae. **Epipharynx** (Fig. 2): Plegmata absent. Corypha with 4–6 long stout setae. Haptomeral region without heli or haptomeral process. Zygum transverse, slighthly convex an arcuate row of 14–18 spinelike setae and 10 stout setae irregularly placed behind row. Acanthoparia with 6–10 short setae. Right chaetoparia with 30–45 setae and left chaetoparia with 25–35 setae. Pedium without sensilla. Acroparia with 2–4 long stout setae on each side. Dexiotorma well developed, transversally extended with poorly developed pternotorma. Laetorma short with pternotorma small and rounded. Nesia with sensorial cone. Haptolachus without sensilla below the cone. **Left mandible** (Fig. 3A–C): Scissorial region with 3 teeth well developed, teeth 1–2 separated by an acute scissorial notch and teeth 2–3 by broad furrow. Dorsal surface with 2 stout, long setae at level to basal scissorial notch, one seta in central area and other more lateral; 4–6 dorsomolar setae in tuft. Lateral edge with 4–7 setae. Ventral surface with elongate-oval stridulatory area (Fig. 3D), length approximately 2.6 times its width and formed by 14–15 subparallel ridges. Molar area with a tuft of around 8 ventral molar setae. Molar lobe large, forming a dorsoventral ridge, not subdivided. Molar crown with 2 lobes. Acia absent. Ventral process distinct, blunt, with asperites. Brustia formed by 6–9 setae. Postartis large, rounded. **Right mandible** (Fig. 4A–C): With 2 well-developed scissorial teeth below a vestigial tooth. Dorsal surface with 2 stout, long setae at level to the second scissorial tooth; 4-6 dorsomolar setae in tuft. Lateral edge with 5–9 setae. Ventral surface with elongate-oval stridulatory area (Fig. 4D), length approximately 2.4 times its width and formed by 13–15 subparallel ridges. Molar area trilobed, with a tuft of around 8 ventral molar setae. Calyx wide. Ventral process well developed, blunt, with asperites. Brustia formed by 11–13 setae. Postartis large, rounded. **Maxilla** (Fig. 5A): Galea and lacinia fused, forming mala. Mala with large uncus at apex and 3 subterminal unci fused at bases, the central uncus much larger than the lateral unci (Fig. 5B). Dorsal surface of the mala with approximately 25 setae. Maxillary palpus with 4 palpomeres, palpomere 4 almost as long as palpomeres 2 to 3 together; palpomere 3 with lateral seta. Stridulatory area with row of 5–6 curved acute teeth and a distal, truncate process (Fig. 5C). **Labium** (Fig. 6): Hypopharyngeal sclerome asymmetrical, left side with 4–6 setae; dorsal surface with well-developed, truncate process; both lateral lobes with 4–7 setae arranged in 2 rows. Glossa with 18–22 stout and 18–20 slender setae; apical area with transversal row of 6 sensillae and additional 2–4 sensillae below the row. Labial palpus with 2 palpomeres. **Antennae** (Fig. 1, 7A–B): Terminal antennomere almost as long as the antennomeres 2 and 3 together. Surface of terminal antennomere with 5 sensory spots: 2 dorsal, 2 ventral, and 1 apical. **Thorax** (Fig. 10): Thoracic spiracle (Fig. 8A) with C-shaped respiratory plate, yellowish brown, size 0.32–0.36 mm long and 0.20–0.24 mm wide. Lobes of respiratory plate separated, with 22–26 holes across diameter at middle, holes irregularly oval (Fig. 8D–E). Dorsal surface of each segment with many short setae and some slender, long setae (see Table 2). **Legs** (Fig. 9A–F): Tarsungulus cylindrical, rounded apically (Fig. 9A–C). Tarsungulus bearing 7 long setae; prothoracic tarsungulus short (0.24 mm) in relation to mesothoracic (0.29 mm) and metathoracic (0.38 mm). Legs growing gradually from the first to the third pair (Fig. 9D–F). Coxa, trochanter, femur, and tibia of all legs with many long, stout setae. **Abdomen** (Fig. 10): Abdominal spiracle I (Fig. 8B) smaller (0.32–0.36 mm long, 0.16–0.20 mm wide) than spiracles II–VIII; spiracles of segments II–VII

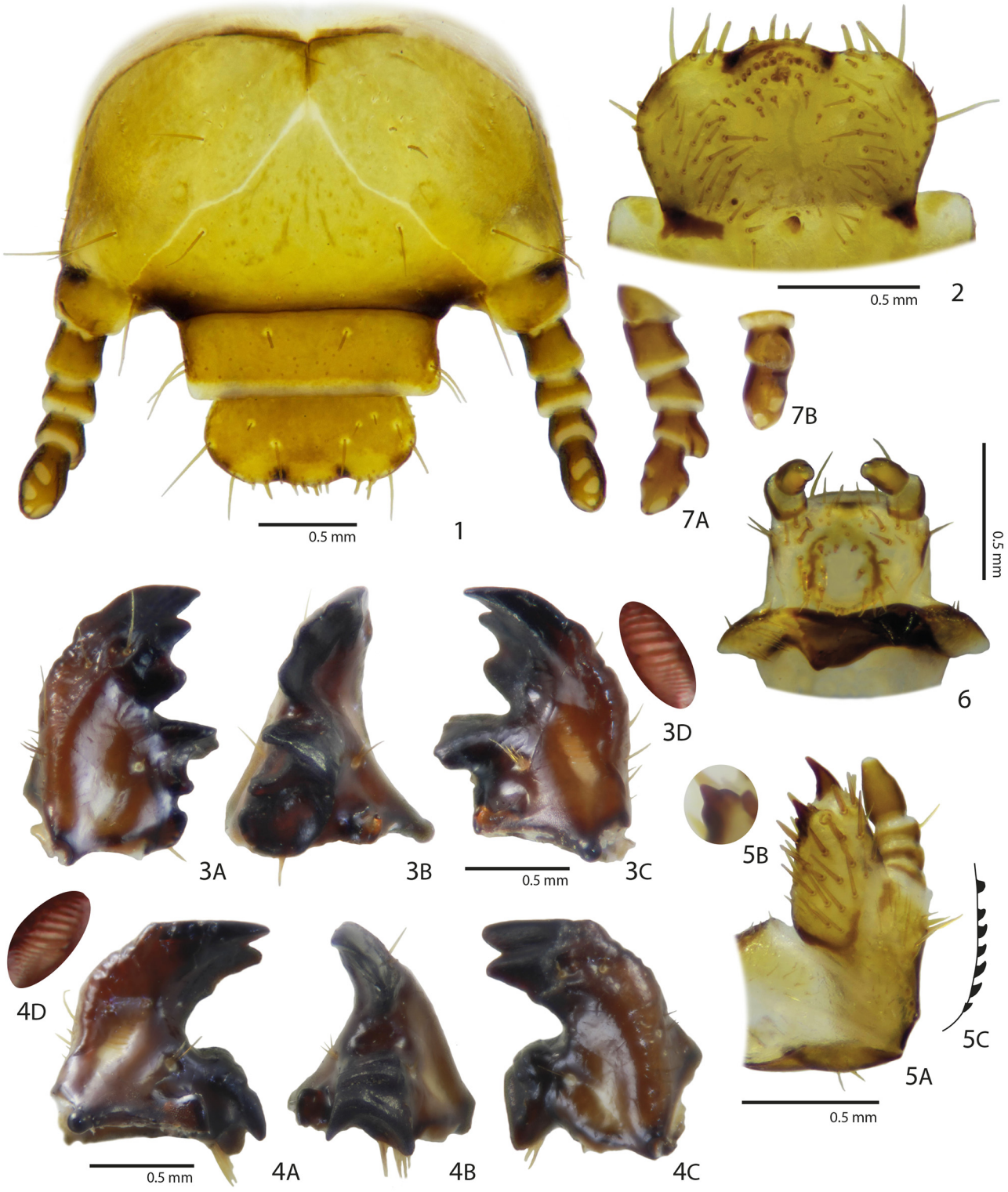
subequal in long (0.36–0.40 mm), but increasing in wide towards posterior segments (0.20 to 0.32 mm) (Fig. 8C); spiracle of segment VIII slightly shorter than the spiracles on segments III–VII. Distance between the two lobes of respiratory plate of spiracles slightly less than the dorsoventral diameter of the bulla, or as long as such diameter (Fig. 8A–C). Bulla irregularly oval, slightly convex. Dorsum of segment VII and VIII each divided into 2 annulets (prescutum and scutum); segments IX and X fused with many short setae. First abdominal segments with a higher proportion of long and slender setae than the terminal segments (see Table 2). **Raster** (Fig. 11A): Palidia monostichous, open posteriorly and closed anteriorly, sometimes open anteriorly (Fig. 11B–C); each palidium consisting of a row of 12–20 pali with flattened apex. Septula oval, length 2.3 times its width. Tegilla composed of 35–45 short, thick setae. Lower anal lip with 24 sparse, short setae and 10 long setae approximately. Anal slit bordered by dense rows of medium size setae.

TABLE 2. Chaetotaxy on thoracic and abdominal segments of third instar *Neocorvicoana reticulata* (based on one specimen). Long (L) and short setae (S) are mentioned for prescutum (PRSC), scutum (SCU), scutellum (SCL), spiracular area (SPA), and pleural lobe (PLL).

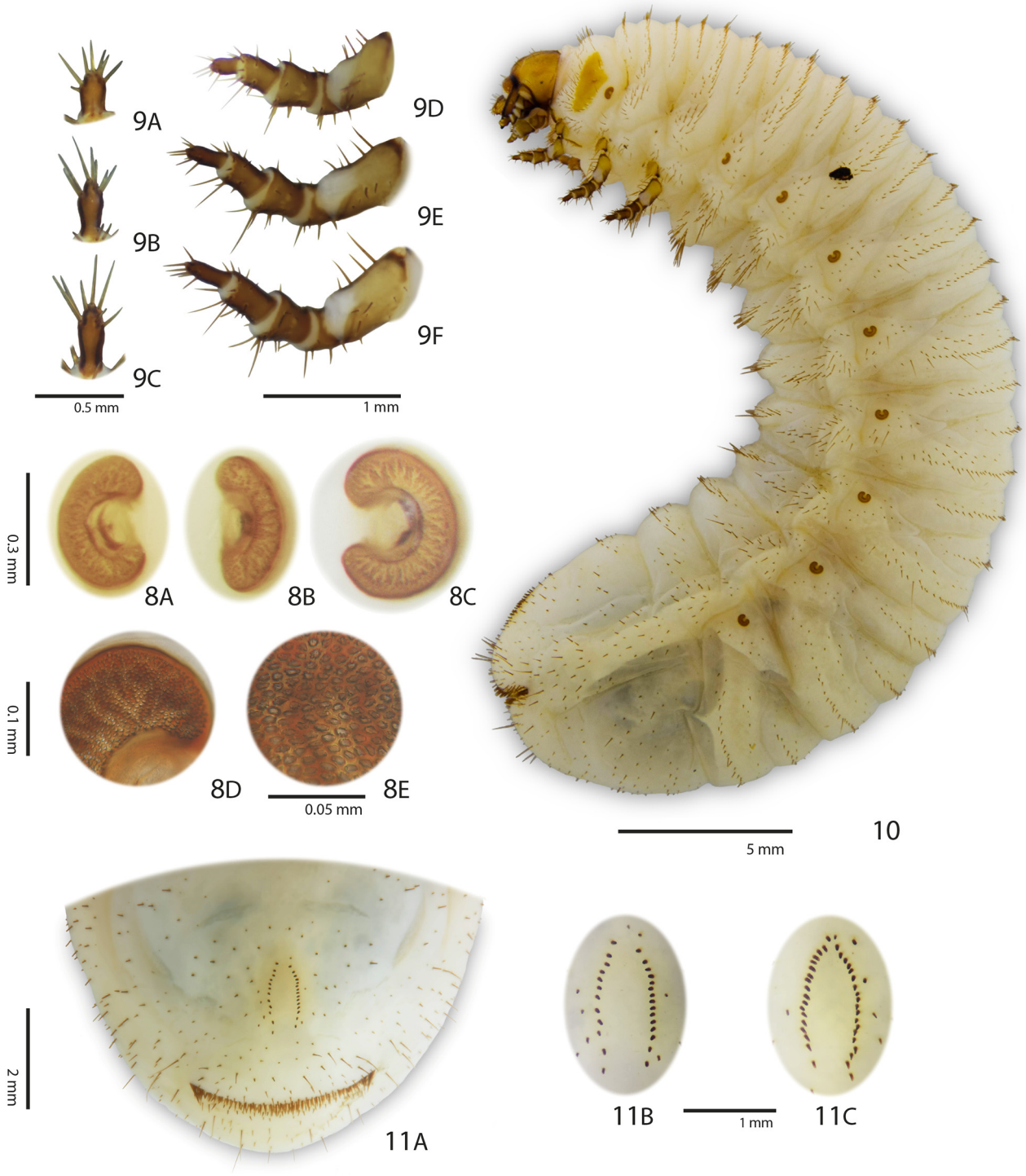
Segment/Terguite	PRSC		SCU		SCL		SPA		PLL	
	L	S	L	S	L	S	L	S	L	S
Pronotum	-	-	48	122	-	-	-	-	-	-
Mesonotum	48	42	74	96	18	36	-	-	-	-
Metanotum	22	30	58	60	22	30	-	-	-	-
Abdominal segment I	24	26	34	48	16	34	5	6	7	7
Abdominal segment II	14	24	30	62	20	34	4	8	7	13
Abdominal segment III	14	22	22	84	12	36	1	8	7	13
Abdominal segment IV	14	30	20	72	14	34	2	9	9	13
Abdominal segment V	12	22	30	62	14	28	3	9	6	20
Abdominal segment VI	14	28	16	64	12	28	-	12	7	18
Abdominal segment VII	14	28	16	58	-	-	-	12	5	12
Abdominal segment VIII	16	32	24	48	-	-	-	9	-	21
Abdominal segments IX+X	-	-	36	72	-	-	-	-	-	-

Female pupa (Figs. 12A–D). Length 16.1 mm; greatest width 9.4 mm, weight 0.6 g (preserved specimens). Shape subovate, stout, adecticous, exarate. Color yellowish brown. Entire body with very fine velvety microtrichia. **Head:** Mouthparts directed ventrally; antenna, labrum, mandibles, maxillae, and palps discernible; antennal tecae expanded, stout, with apices rounded. Compound eyes partially covered by the anterior edges the pronotum, with 2 tubercles between eyes. Clypeus trapezoid, slightly concave. Surface of frons slightly convex. **Thorax:** Pronotum convex, with well-defined margins, subheptagonal in shape, widest posteriorly; basal margin distinctly bisinuate, center base projecting posteriorly as in adult. Pronotal disc slightly convex, with 2 large protuberances near at the basal angles, weakly depressed at anterior angles. A narrow, median, longitudinal sulcus extending from apex to near base. Mesoscutellum and metascutellum acute, projecting posteriorly. Thoracic spiracle present in cavity formed between the anterior and medial legs, hypomeron, and elytral thecae. Mesometasternal process large and clearly discernible, with rounded apex emerging between the procoxa and mesocoxa. Metasternum wider than long. Pteroteca free, closely appressed, curved ventrally around body; posterior wing theca reaching the abdominal sternite V. **Legs:** Protibia with 2 short teeth on external apical border and with tubercle-like apical spurs. Mesotibia and metatibia each with 2 well-developed inner and external spurs and with 2 apical teeth. Metafemur covered by elytra and wings. Tarsomeres and pretarsus distinct; pretarsus of protibiae at level of mesofemur, pretarsus of mesotibia at level of abdominal sternite II, pretarsus of metatibia at level of abdominal sternite VII. **Abdomen:** Tergites II–VI convex, segments II, III, and IV widest; pairs of dioneiform organs not sclerotized between segments I–II, II–III, III–IV, IV–V, and V–VI, between segments VI–VII with only one dioneiform organ. Tergolateral tubercles II–VI prominent and the inner side of each tubercle a longitudinal fold. Spiracles I–IV light brown, tuberculiform, with ring-like, sclerotized peritreme; spiracle I partially covered by wing thecae. Spiracles V–VIII closed, tuberculiform, prominent, surrounded by fine rugae. Sternites VII and VIII with very fine, velvety,

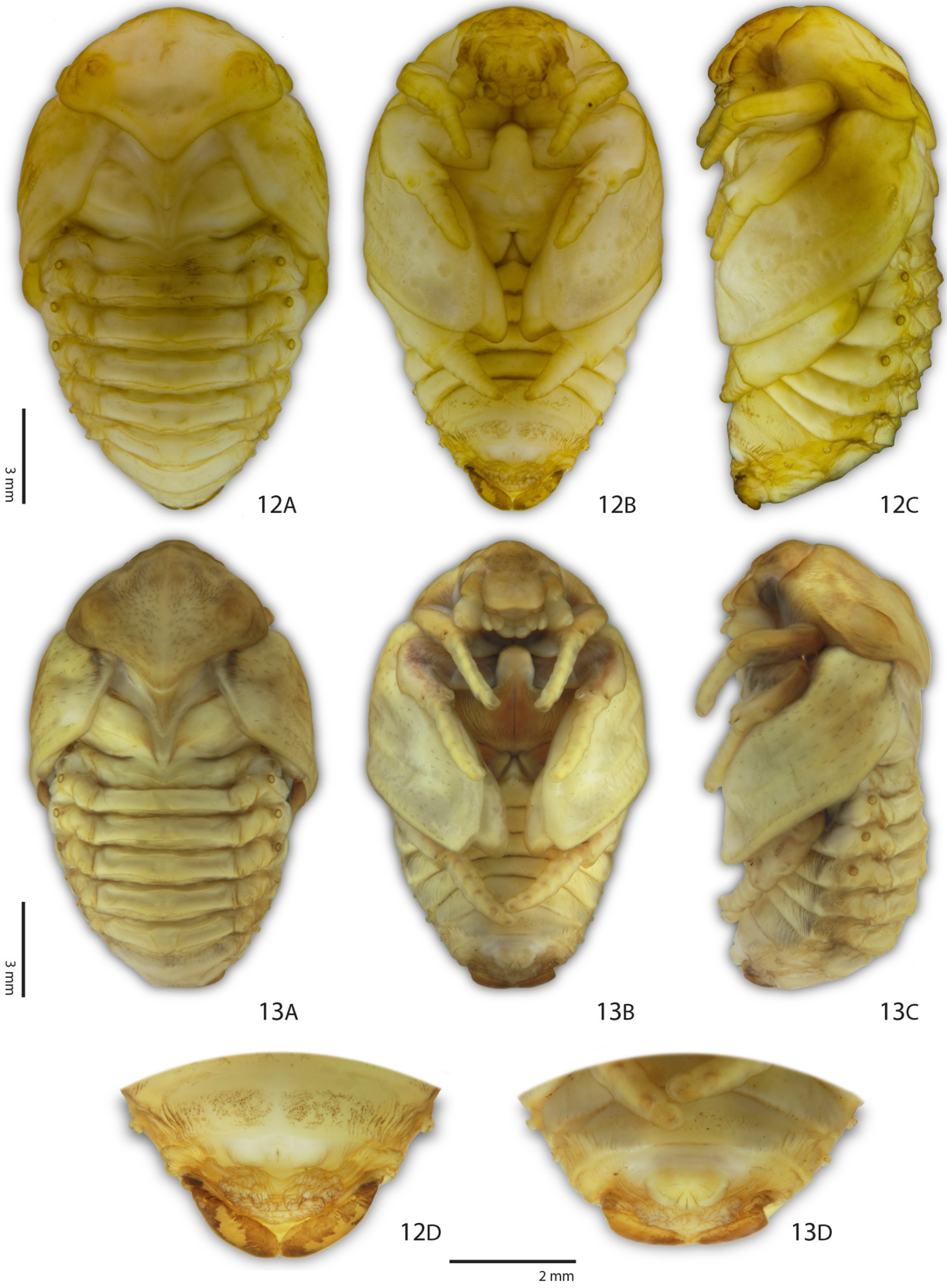
microtrichia. Terminal tergite with lateral rugae around small tubercle; narrow fleshy lobes with velvety-gold vestiture, extended to ventral-apical side, forming a rounded apex; without urogomphi. Terminal sternite with roughness on apical area; genital ampulla convex, wide, with genital pore distinct (Fig. 12D).



FIGURES 1–7. *Neocorvicoana reticulata*, third instar. **1,** Cranium, frontal view; **2,** epipharynx; **3,** left mandible, dorsal view (A), lateral view (B), ventral view (C), and detail of stridulatory area (D); **4,** right mandible, ventral view (A), lateral view (B), ventral view (C), and detail of stridulatory area (D); **5,** right maxilla, dorsal view (A), apex of mala showing unci (B), and stridulatory teeth of maxilla (C); **6,** dorsal view of labium; **7,** antenna in lateral view (A), and third and fourth segment of antenna in ventral view (B).



FIGURES 8–11. *Neocorvicoana reticulata*, third instar. **8,** Spiracles, thoracic (A), first abdominal (B), sixth abdominal (C), and spiracular holes (D and E); **9,** prothoracic (A), mesothoracic (C), and metathoracic (E) tarsungulus in dorsal view, and lateral view of prothoracic (B), mesothoracic (D), and metathoracic (F) legs; **10,** third instar, entire body in lateral view; **11,** terminal abdominal segment, ventral view (A), and detail of raster (B and C).



FIGURES 12–13. *Neocorvicoana reticulata*, pupa. **12,** Female pupa, in dorsal view (A), ventral view (B), lateral view (C), and ventral view of apex with genital ampulla (D); **13,** Male pupa, in dorsal view (A), ventral view (B), and lateral view (C), and ventral view of apex with genital ampulla (D).

Male pupa (Figs. 13A–D). Length 14.1 mm; largest width 8.7 mm, weight 0.4 g (preserved specimens). Protarsus, mesotarsus, and metatarsus longer that female; pretarsus of protibiae surpass the mesofemur, pretarsus of mesotibia at level of abdominal sternite III, pretarsus of metatibia at level of abdominal sternite VIII. Dioneiform organs less evident than the female. Terminal tergite with lateral rugae around small tubercle; narrow fleshy lobes with velvety-gold vestiture, extended to apical side, forming a blunt apex; without urogomphi. Terminal sternite with roughness on apical area; genital ampulla very convex, rounded, and distinct (Fig. 13D).

Distribution. *Neocorvicoana reticulata* occurs in Argentina, Brazil, Paraguay, and Uruguay (Ratcliffe & Micó 2001) and French Guiana and Peru (Di Iorio 2013). Two records from French Guiana and Surinam are considered erroneous by Ratcliffe & Micó (2001). In its southernmost distribution, this species reaches temperate areas (latitude 39°S) of northern Patagonia, Argentina (Di Iorio 2013).

Natural history. Larvae collected in November 2013 reached their largest size in late December. In mid-January 2014 all specimens were in the pupal stage, by late January - early February the adults emerged. Adults have been captured during all months of the year (Ratcliffe & Micó 2001).

Discussion

The third instars of *N. reticulata* are similar morphologically to the larvae of *Marmarina* species. Among the main characters in common are: the monostichous palidia, the dorsum of abdominal segment VII with two annulets, and tarsungulus with 5–7 setae. However, the larvae of *N. reticulata* differ from the larvae of *Marmarina* species by the distance between the two lobes of respiratory plate of spiracles slightly less than the dorsoventral diameter of the bulla, or as long as such diameter and right mandible with two scissorial teeth.

Regarding the pupa of *N. reticulata*, a remarkable aspect found in this study is the presence of dioneiform organs. Among the previous works that described the pupae of New World Gymnetini (see Table 1), only Morelli (2000) mentions dioneiform organs (as gin-traps) in *Gymnetis chalcipes* pupae. However, dioneiform organs present in *N. reticulata* are less sclerotized than those present in Rutelinae and Dynastinae (Coleoptera: Scarabaeidae) species. Others characters present in the pupa of *N. reticulata* are similar to the Gymnetini species pupae described on previous studies.

The association the larva of *N. reticulata* with nests of *Acromyrmex lundii* found in this study support the hypothesis of Ratcliffe & Micó (2001). They suggested that the extremely shortened and compacted tarsi in the females of the genus *Neocorvicoana* is an adaptation to myrmecophily, which allows females to lay eggs in the nests of ants.

Aadults of *N. reticulata* were also found in the nests of *Acromyrmex lobicornis* Emery, 1888 (Bruch 1929 cited in Puker *et al.* 2015). Among the Gymnetini species, *Gymnetis chalcipes* (Gory and Percheron, 1833), *Heterocotinis semiopaca* (Moser, 1907), and *Marmarina tigrina* (Gory and Percheron, 1833) were reported associated with *A. lundii* and *A. lobicornis*; and others, such as *Cotinis mutabilis* (Gory & Percheron, 1833), *Cotinis nitida* (Linnaeus, 1758), and *Hologymnetis cinerea* (Gory & Percheron, 1833) were found with *Atta mexicana* (Smith, 1858) and *Atta texana* (Buckley, 1860) (Hymenoptera: Formicidae: Myrmicinae) (Puker *et al.* 2015). Micó *et al.* (2001) report the presence of adults and larvae of *Hoplopyga singularis* (Gory and Percheron, 1833) in termite nests.

Key to the third instars of New World Gymnetini

Modified from Micó *et al.* (2001) and Morón & Arce (2002)

1. Palidia present 2
- Palidia absent (southwestern United States of America to northwestern Mexico) . . . . . *Gymnetina cretacea* (LeConte, 1866)
2. Raster with each palidium consisting of 2 or more irregular rows of pali. Terminal antennomere with 3–7 dorsal sensory spots. Haptomeral process absent 3
- Raster with palidia monostichous. Other characters not as above 5
3. Tarsungulus with 7 setae. Maxillary stridulatory area with 5 teeth. Terminal antennomere with 3 ventral sensory spots (Southern United States to Honduras) . . . . . *Hologymnetis cinerea* (Gory and Percheron, 1833)
- Tarsungulus with 10–12 setae. Maxillary stridulatory area with 7–9 teeth. Terminal antennomere with 5–13 ventral sensory

spots. . . . . 4 (*Cotinis*)

4. Raster with inner row of each palidium having 9–10 pali slightly larger than those in outer row (southeastern United States of America) . . . . . *C. nitida* (Linnaeus, 1758)
- Raster with inner row of each palidium having 7–10 pali much stouter and larger than those in outer row (southern United States of America to northern South America) . . . . . *C. mutabilis* (Gory and Percheron, 1833)
5. Dorsum of abdominal segment VII with 3 annulets 6
- Dorsum of abdominal segment VII with 2 annulets 10
6. Terminal antennomere with 10–20 sensory spots 7
- Terminal antennomere with 5–8 sensory spots 8
7. Stemmata present, well defined. Haptomeral region with 14–16 heli in a transverse row. Each palidium consisting of a row of 17–20 pali (Mexico to Panama) . . . . . *Amithao haematopus* (Schaum, 1848)
- Stemmata absent. Haptomeral region with 10–15 heli in a transverse row. Each palidium consisting of a row of 23–26 pali (southern Mexico to Ecuador). . . . . *Argyripa lansbergei* (Sallé, 1857)
8. Terminal antennomere with 8 sensory spots. Maxillary stridulatory area with 7 teeth. Septula very narrow, elongate, length 9 times its width (Argentina, Brazil, Paraguay, and Uruguay). . . . . *Blaesia atra* Burmeister, 1842
- Terminal antennomere with 5–6 sensory spots. Maxillary stridulatory area with 5 teeth. Septula oval or elongate, length 2.5–3.5 times its width . . . . . 9 (*Gymnetis*)
9. Terminal antennomere with 6 sensory spots. Haptomeral region with a transverse row of 19–20 heli. Septula oval, length 2.5 times its width (Argentina, Brazil, Peru, Paraguay and Uruguay) . . . . . *G. chalcipes* (Gory & Percheron, 1833)
- Terminal antennomere with 5 sensory spots. Haptomeral region with a transverse row of 14 heli. Septula elongated, length 3.5 times its width (Peru and Brazil). . . . . *G. rufilateris* (Illiger, 1800)
10. Tarsungulus with 5–7 setae 11
- Tarsungulus with 8–15 setae 13
11. Distance between the 2 lobes of respiratory plate of spiracles slightly less than the dorsoventral diameter of the bulla, or as long as such diameter (Fig. 8). Right mandible with 2 scissorial teeth (Fig. 4). Terminal antennomere with 5 sensory spots. (Argentina, Brazil, Paraguay, Peru, and Uruguay). . . . . *Neocorvicoana reticulata* (Kirby, 1819)
- Distance between the 2 lobes of respiratory plate of spiracles much less than the dorsoventral diameter of the bulla, or almost surrounding it. Right mandible with 3 scissorial teeth. Terminal antennomere with 5–10 sensory spots . . . . . 11 (*Marmarina*)
12. Terminal antennomere with 10 sensory spots. Maxillary stridulatory area with row of 9 acute teeth. Each palidium consisting of an irregular row of 12–13 pali (Argentina, Brazil, Paraguay, and Uruguay) . . . . . *M. tigrina* (Gory and Percheron, 1833)
- Terminal antennomere with 5–7 sensory spots. Maxillary stridulatory area with row of 6 acute teeth. Each palidium consisting of an irregular row of 19–20 pali (southern Mexico to the Amazon regions of Brazil, Colombia, Peru, and Bolivia) . . . .*M. maculosa* (Olivier, 1789)
13. Distance between the 2 lobes of respiratory plate of spiracles subequal to the dorsoventral diameter of the bulla . . . . . 14 (*Hoplopyga*)
- Distance between the 2 lobes of respiratory plate of spiracles much less than the dorsoventral diameter of the bulla, or almost surrounding it . . . . . 16 (*Gymnetis*)
14. Right mandible with 3 scissorial teeth. Haptomeral region with a transverse row of 12–19 heli. Each palidium consisting of an irregular row of 14–18 pali 15
- Right mandible with 2 scissorial teeth. Haptomeral region with a transverse row of 8–11 heli. Each palidium consisting of an irregular row of 18–25 pali (Argentina, Brazil, Paraguay, and Colombia). . . . . *H. singularis* (Gory and Percheron, 1833)
15. Tarsungulus with 9–10 setae. Haptomeral region with a transverse row of 12 heli. Terminal antennomere with 4 dorsal sensory spots (Mexico to northern Argentina) . . . . . *H. liturata* (Olivier, 1789)
- Tarsungulus with 11–12 setae. Haptomeral region with a transverse row of 17–19 heli. Terminal antennomere with 3 dorsal sensory spots (South America) . . . . . *H. brasiliensis* (Gory and Percheron, 1833)
16. Each palidium consisting of an irregular row of 18–23 pali 17
- Each palidium consisting of an irregular row of 10–16 pali 18
17. Anterior frontal setae absent. Tarsungulus with 9–13 setae. Spiracles of abdominal segments I–VIII similar in size (Panama to northern Argentina). . . . . *G. pantherina* (Blanchard, 1842)
- Anterior frontal setae present. Tarsungulus with 8 setae. Spiracles of abdominal segments I–VIII increasing in size towards posterior segments (Mexico and Guatemala) . . . . . *G. difficilis* Burmeister, 1842
18. Stemmata absent. Anterior frontal setigerous punctures absent. Haptomeral region with a transverse row of 12–14 heli. Septula narrow, elongated, length 5 times its width (Brazil, Bolivia, Ecuador, Colombia, French Guyana, and Peru) . . . . . *G. holosericea* (Olivier, 1789)
- Stemmata present. Anterior frontal setigerous punctures present. Haptomeral region with a transverse row of 10–12 heli. Septula oval, length 2.5 times its width (Mexico to Panama). . . . . *G. chevrolati sallei* Schaum, 1849

Acknowledgments

We are grateful to Susan Ryan for improving the English language. We thank the comments and constructive suggestions provided by Petr Šípek and an anonymous reviewer to improved the quality of the manuscript. We are grateful to Andrew Smith for his corrections to this work. This study was funded by Secretaria General de Ciencia

y Técnica-Universidad Nacional del Nordeste (Project 12-IF-04). The first author obtained a scholarship from the Consejo Nacional de Investigaciones Científicas y Técnicas and Universidad Nacional del Nordeste (CONICET-UNNE). The second author thanks the Instituto Alexander von Humboldt for support.

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