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Additions to the taxonomy of *Gnamptogenys* Roger (Hymenoptera: Formicidae: Ectatomminae) with an updated key to the New World species

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Abstract

This study aimed to raise and address nomenclatural issues surrounding Neotropical species in the genus *Gnamptogenys*, in addition to describing new species accumulated in myrmecological collections. New and reinstated names recognized here include *G. pernambucana* (Santschi) **sp. rev.**, **stat.n.**, *G. lenis* **sp. n.**, *G. latistriata* **sp. n.**, and *G. avus* **sp. n**. The queen and intercaste of *G. lavra* Lattke and the queen of *G. pernambucana* are described for the first time. For these five species we provide complete descriptions and diagnoses, comments on taxonomy and natural history, distribution data, and high-resolution images, including the first images of *G. lavra*. An updated identification key for all the Neotropical species of *Gnamptogenys* is also provided, including the new and revived species as well as *G. aspera* Morgan and *G. pilosa* Lattke, not present in previous keys for the genus.

Keywords: ants, morphology, systematics, new species

Introduction

Gnamptogenys Roger is a highly diverse and frequently collected ant genus. It is the most geographically widespread of all genera in the subfamily Ectatomminae, occurring in the New and Old World tropics. In the Neotropical and Nearctic regions, it occurs from the southern United States to central Argentina. In the Paleotropics it occurs in the Indo-Malayan and Australian regions and in Oceania (Janicki *et al*. 2016). The greatest diversity of the genus is in the New World, where 85 (60%) of the 139 extant species occur. Little is known about the biology of the species but most of them are inhabitants of rainforests, where they nest and forage in decomposed wood, within the leaf-litter and sometimes under rocks, soil and, rarely, in the vegetation (Lattke 1995). Most species are generalist predators, but there are specialized species that prey on millipedes (*rastrata* group), beetles, and other ants (Lattke 1995).

Lattke (1995) presented the latest revision for the genus in the New World, with a comprehensive phylogeny recognizing six species groups based on morphological characters, as well as a complete identification key for workers. Nevertheless, recent techniques of litter extraction, mainly applied in quantitative surveys, have revealed several specimens of *Gnamptogenys* that do not fit the descriptions of the known species of the genus. Examination of this new material and of those deposited in different ant collections has allowed a broad comparative study. Here we describe three new species for the genus, raise one species from synonymy, add new castes descriptions for a species, and provide an updated identification key for *Gnamptogenys*. The key includes new morphological characters of taxonomic importance that will allow a more precise and objective identification of species.

Methods

The material gathered in this study was provided by the Brazilian institutions that house the largest collections of Formicidae in the Neotropics, and by important local collections. The type material was examined in person or by

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photographs, when available at Antweb.org website (Antweb.org 2019). Taxonomic history for the species follows Bolton (2019). Depository collections are referred to by the following acronyms:

CPDC—Comissão Executiva do Plano da Lavoura Cacaueira, Ilhéus, BA, Brazil.
CSBD—Centre for the Study of Biological Diversity, Georgetown, Guyana.
DZUP—Coleção Entomológica Padre Jesus Santiago Moure, Curitiba, PR, Brazil.
INPA—Instituto Nacional de Pesquisas da Amazônia, Manaus, AM, Brazil.
MCZC—Museum of Comparative Zoology, Cambridge, MA, USA.
MPEG—Museu Paraense "Emílio Goeldi", Belém, PA, Brazil.
MZSP—Museu de Zoologia da Universidade de São Paulo, São Paulo, SP, Brazil.
NHMB—Naturhistorisches Museum, Basel, Switzerland.
NMNH—Smithsonian Institution, United States National Museum of Natural History, Washington, DC, USA.
UFV—Departamento de Biologia Geral, Universidade Federal de Viçosa, Viçosa, MG, Brazil.

For the external morphology of the adult forms we followed the terminology traditionally used for myrmecological revisions (Keller 2011). For the surface sculpturing, we followed the terminology proposed by Harris (1979). Some otherwise worker-like individuals exhibit queen features such as ocelli, subdivisions in the mesosomal sclerites, and enlarged gaster. However, since dissections of the ovaries were not performed in order to identify if these specimens are indeed ergatoid or secondary queens, we refer to them as "intercastes" (Peeters 2012).

The identification key was updated based on the observation of *Gnamptogenys* specimens available at the depository collections, as well as by images of types available online (Antweb.org 2019). We also examined and photographed the type material for 42 *Gnamptogenys* species at the MCZC that are to be made available online at Antweb.org. The key provided by Lattke *et al.* (2007) was completely revised based on those observations and all terminology was standardized based on Keller (2011). Conflicting or imprecise couplets, as well as non-described species included in previous versions of the key, were excluded in order to improve the clarity and efficiency of the key. In addition to the species described in the present work, we also included in the key species previously described but not considered in any keys for the genus (*G. aspera*, *G. pilosa*) and species included only in an early version of the key published in Spanish (Lattke *et al*. 2008). We also incorporated the changes made by Lattke & Delsinne (2016) to the key to Neotropical species and added the species distribution in the couplets to facilitate the identification. Finally, we also revised and rewrote the couplets for particularly difficult species to key, like *G. striatula* Mayr, *G. moelleri* (Forel), *G. pleurodon* (Emery), and *G. strigata* (Norton), making those species identification more easily accessible to non-specialists.

Before the description of the species we present the minimum and maximum values of the measures in millimeters, except for the species represented by a single individual or measures which have identical values for different specimens. Individuals of all castes and sexes available for each species were measured. For species with less than 10 specimens available, all of them were measured. For species with a higher number of individuals, one specimen of each locality in which the species was recorded were measured. Measurements were taken with a micrometer attached to a Leica S8 APO® stereomicroscope. Abbreviations for the measures and indexes are listed below, followed by their description.

HL: head length; the length of head capsule excluding the mandible, measured in full face view, in a straight line from the midpoint of the anterior clypeal margin to the midpoint of the vertex margin.
HW: head width; the width of the head capsule, measured in full face view, at a median transverse line that touches the superior margins of the compound eyes.
ML: mandible length; in full face view taken with the mandible closed, the distance from the anterior clypeal margin to the apex of closed mandible.
SL: antennal scape length; the chord length of the antennal scape, excluding the basal condyle and its peduncle.
EL: eye length; maximum diameter of compound eyes in lateral view.
WL: mesosoma length (Weber´s length); the diagonal length of mesosoma in profile, from the midpoint of the anterior pronotal declivity to the posterior basal angle of the metapleuron.
PL: petiole length; the length of petiole in lateral view, measured in a straight line from the anterior margin of the petiole peduncle to the posterior margin.

GL: gaster length; the maximum length of gaster (abdominal segments III to VII) in lateral view, excluding sting.
TL: total length; the summed length of HL, ML, WL, PL and GL.
CI: cephalic index; 100*HW/HL.
SI: scape index; 100*SL/HW.
OI: ocular index; 100*EL/HW.

High resolution images presented here were obtained with a LEICA DFC295 digital camera attached to a LEICA M125 stereoscopic microscope at the *Laboratório de Biologia Comparada de Hymenoptera*—DZUP. Photos were combined using Zerene Stacker software. Images were then processed as TIFF files in Adobe Photoshop CS6® to enhance parameters of brightness and contrast.

Geographical coordinates were obtained from information on the labels of the specimens, imported to Google Earth 7.3.2® and then exported to Qgis 3.12.3® for generating the distribution map, using Natural Earth® free vector and raster map data (available at http://www.naturalearth.com). Distribution records of all species were obtained from references compiled in Antmaps.org (Janicki *et al.* 2016) and original species descriptions (Dias & Lattke 2019).

Results

Identification key to workers of *Gnamptogenys* in the New World

(Modified from Lattke *et al*. 2007; Lattke & Delsine 2016; and Dias & Lattke 2019)

1. In dorsal view, promesonotal suture well marked, totally interrupting dorsal mesosomal sculpture (Fig. 1A); in frontal view, frontal carina not expanded or, if expanded into frontal lobe, not completely covering all of base of scape, at least neck visible; in lateral view, petiolar spiracle facing ventrolaterally, not in depression 2
- In dorsal view, promesonotal suture absent to well-impressed but never interrupting dorsal mesosomal sculpture (Fig. 1B); in frontal view, frontal carina not expanded or, if expanded into frontal lobe, not completely covering base of scape, with at least neck visible; in lateral view, petiolar spiracle facing ventrolaterally, not in depression (also see third lug) 31
- In dorsal view, promesonotal suture absent to lightly impressed, never interrupting dorsal mesosomal sculpture (Fig. 1C); in frontal view, frontal carina expanded into a frontal lobe, covering all of scape base, including condyle and neck; in lateral view, petiolar spiracle facing ventrally, located in depression 81

FIGURE 1. Dorsal view of mesosoma, showing: **A)** promesonotal suture well marked, totally interrupting dorsal mesosomal sculpture (*G. pleurodon*—CASENT0281219); **B)** promesonotal suture well impressed, but not interrupting dorsal mesosomal sculpture (*G. mediatrix*—CASENT0281839); and **C)** promesonotal suture absent (*G. minuta*—CASENT0281213). Photos by Estella Ortega (A, C) and Shannon Hartmann (B) available from www.antweb.org.

2(1). In dorsal view, vertex smooth and shiny, sometimes presenting faded striae or rugulae, but never costulate or heavily sculptured; in frontal view, scape not reaching or slightly surpassing the vertex margin, never by more than twice its larger diameter; in lateral view, petiolar node with semiparallel anterior and posterior margins, both forming approximate right angles with the dorsal margin 3
- In dorsal view, vertex completely sculptured, with well-marked costulae; in frontal view, scape always surpassing the vertex margin; in lateral view, petiolar node with a single curved anterodorsal margin or anterior and dorsal margins separated by a blunt angle 9

3(2). In dorsal view, mesosomal dorsum totally sculptured, usually costulate or rugulose (Fig. 2A) 4
- In dorsal view, mesosomal dorsum with large smooth and shiny areas (Fig. 2B) 8

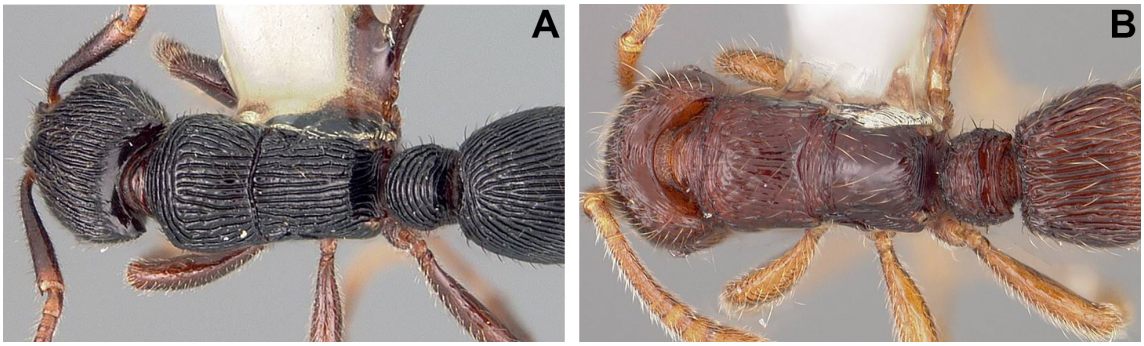

FIGURE 2. Dorsal view of mesosoma, showing: **A)** mesosomal dorsum completely sculptured (*G. avus*—USNMENT00413910); and **B)** mesosomal dorsum with smooth and shiny areas (*G. relicta*—USNMENT00412058). Photos by Jeffrey Sosa-Calvo available from www.antweb.org.

4(3). In dorsal view, segments I and II of gaster (abdominal segments III and IV) totally sculptured, costulate or rugulose 5
- In dorsal view, segments I and II of gaster (abdominal segments III and IV) smooth and shiny, sometimes with small striae at the base of the hairs 7

5(4). In dorsal view, segment I of gaster (abdominal segment III) transversely rugulose; body yellowish. Brazil (PA) and Hispaniola . . . . . *haytiana*
- In dorsal view, segment I of gaster (abdominal segment III) longitudinally costulate; body black to dark brown 6

6(5) In frontal view, scape slightly surpassing the vertex margin; in lateral view, propodeal spiracle strongly projecting from integument, forming a tubuliform projection. Guyana . . . . . *avus* **sp. n.**
- In frontal view, scape not reaching the vertex margin; in lateral view, propodeal spiracle not projected. Bolivia, Brazil (AM, BA, PA), Colombia, Ecuador, French Guiana, Mexico, Peru and Venezuela . . . . . *mina*

7(4). In frontal view, scape not reaching the vertex margin; metacoxal dorsum with a lobe or denticle; in dorsal view, segments I and II of gaster (abdominal segments III and IV) covered by small ridges or striae, extending from the base of the hairs. Brazil (MG, RS, SC, SP) . . . . . *lavra*
- In frontal view, scape slightly surpassing the vertex margin; metacoxal dorsum unarmed; in dorsal view, segments I and II of gaster (abdominal segments III and IV) completely smooth and shiny. Brazil (SC) . . . . . *lenis* **sp. n.**

8(3). In dorsal view, metanotal groove well-impressed, interrupting dorsal mesosomal sculpture; metacoxal dorsum unarmed; in lateral view, propodeal declivity lacking lobes; propodeal spiracle located directly on the declivity margin, elevated above the integument; in dorsal view, declivitous face of propodeum with transverse costulae. Brazil (AM, PA, MT, RO), Colombia, French Guiana, Guyana, Peru, Suriname and Venezuela . . . . . *relicta*
- In dorsal view, metanotal groove absent; metacoxal dorsum with a lobe or denticle; in lateral view, propodeal declivity with anterolateral lobe; propodeal spiracle distant from declivity margin; in dorsal view, declivitous face of propodeum smooth and shiny, with some inconspicuous striae. Brazil (MG, PR, RJ, RS, SP, SC), Colombia and Venezuela . . . . . *reichenspergeri*

9(2). In dorsal view, mesosomal dorsum with a well-defined metanotal groove (Fig. 3A) 10
- Metanotal groove absent (Fig. 3B) 14

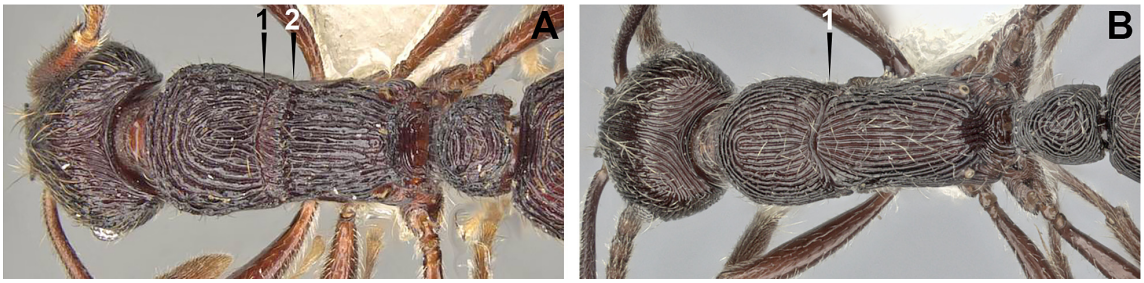

FIGURE 3. Dorsal view of mesosoma, showing: **A)** promesonotal suture (1) and metanotal groove (2) (*G. bisulca*—CASENT0281521); and **B)** only promesonotal suture (1) (*G. moelleri*—CASENT0246692). Photos by Zach Lieberman (A) and Andrea Walker (B) available from www.antweb.org.

10(9). In dorsal view, segments I and II of gaster (abdominal segments III and IV) smooth and shiny. Colombia … *gentryi*
- In dorsal view, segments I and II of gaster (abdominal segments III and IV) longitudinally costulate 11

11(10). In lateral view, subpetiolar process subquadrate, with a posterior angle 12
- In lateral view, subpetiolar process forming an anterior projecting lobe, without a posterior angle 13

12(11). In dorsal view, area between promesonotal suture and metanotal groove narrow and of uniform width; anterior mesonotal margin convex. Belize, Brazil (PA), Colombia, Costa Rica, Ecuador, Mexico and Panama . . . . . *bisulca*
- In dorsal view, area between promesonotal suture and metanotal groove wide and ovaloid; anterior mesonotal margin forms a blunt angle. Colombia . . . . . *dichotoma*

13(11). In frontal view, anterior margin of clypeal lamella bluntly angular; in dorsal view, vertex longitudinally costulate. Colombia . . . . . *brunnea*
- In frontal view, anterior margin of clypeal lamella evenly convex; in dorsal view, vertex with less than five transverse costulae. Colombia and Panama . . . . . *auricula*

14(9). In lateral view, petiolar node erect, the dorsal margin separated from the anterior and posterior margins by blunt angles (Fig. 4A) 15
- In lateral view, petiolar node posteriorly inclined, with a broadly curved anterodorsal margin contrasting with the angle separating the dorsal margin from the posterior margin (Fig. 4B, C) 18

FIGURE 4. Lateral view of petiole, showing: **A)** anterior and dorsal margins of petiole separated by blunt angles (*G. striatula*—CASENT0106042); **B**, **C)** anterodorsal margin of petiole curved, no angle separating dorsal and anterior margins (*G. porcata*—CASENT0281222, *G. strigata*—CASENT0217487). Photos by Michael Branstetter (A), Estella Ortega (B) and Will Ericson (C) available from www.antweb.org.

15(14). In frontal view, scape longer than the total head length, surpassing the vertex margin by almost half its length; in frontal view, lateral margins of the head convex; in lateral view, dorsal face of mesosoma flat, without metanotal impression. Argentina, Bolivia, Brazil (widespread), Colombia, Ecuador, French Guiana, Paraguay, Peru, Suriname and Venezuela. . . . . *moelleri*
- In frontal view, scape never longer than the total head length, surpassing the vertex margin by a third or less of its length; in frontal view, lateral margins of head subparallel to divergent, never convex; in lateral view, dorsal face of mesosoma convex, with or without metanotal impression 16

16(15). In frontal view, eye located in a depression in the head, the outer margin slightly surpassing the lateral margin of the head; scape very short, surpassing the vertex margin by $^{1}/_{6}$ of its length; in lateral view, dorsal face of mesosoma completely convex, without metanotal impression. Brazil (BA, PA, PB, PE, PI, PR, RS, SE) . . . . . *pernambucana*
- In frontal view, eye not located in a depression, the outer margin strongly surpassing the lateral margin of the head; scape length variable, surpassing the vertex margin by at least ¼ of its length; in lateral view, dorsal face of mesosoma convex with a visible metanotal impression 17

17(16). Scape covered by dense decumbent pilosity; in frontal view, several long, erect hairs projecting from the head dorsum, mandible and scape; in lateral view, dorsal meso and metasoma with relatively longer, erect, amber colored hairs; in dorsal view, propodeal declivity with 1-3 transverse costulae; in lateral view, subpetiolar process subquadrate or more often with an anteriorly projected lobe. Argentina, Bolivia, Brazil (widespread), Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guyana, Guatemala, Hispaniola, Honduras, Jamaica, Lesser Antilles, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Suriname, Trinidad and Tobago, Uruguay and Venezuela . . . . . *striatula*
- Scape with sparse decumbent pilosity, not covering the entire structure; in frontal view head dorsum and mandible with short, stout, suberect hairs; in lateral view, dorsal meso and metasoma with relatively sparser, shorter, stout, suberect, white colored hairs; propodeal declivity devoid of transverse costulae; in lateral view, subpetiolar process subquadrate, without an anterior lobe. Brazil (MA), Guyana and Venezuela . . . . . *ammophila*

18(14). In lateral view, petiolar node with blunt or pointed apex overhanging the posterior margin (Fig. 5A); in ventral view, subpetiolar process with edges of mostly uniform width, widening only at the union with sternite 19
- In lateral view, petiolar node apex barely overhanging posterior margin (Fig. 5B); in ventral view, subpetiolar process cuneiform, anteriorly of uniform width, widening posteriorly into a bifurcate process … 26

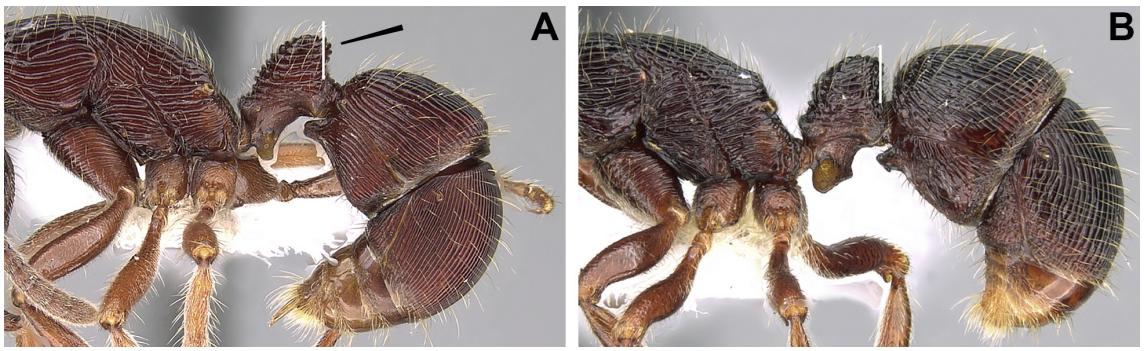

FIGURE 5. Lateral view of petiole, showing: **A)** apex of petiolar node overhanging the posterior margin (*G. porcata*—CASENT0281222); and **B)** petiolar node apex not overhanging the posterior margin (*G. pittieri*—CASENT0281218). Photos by Estella Ortega available from www.antweb.org.

19(18). Petiolar node with an acute apex in lateral view. Bolivia, Brazil (AM), Colombia and Ecuador . . . . . *acuta*
- Petiolar node with a blunt apex in lateral view 20

20(19). In dorsal view, vertex usually with 4–5 transverse costulae next to vertexal carina, extending across the width of the vertex (Fig. 6A); in ventral view, first gastral sternite with a median smooth and shiny area. Brazil (BA, MG), Colombia, French Guiana, Guyana, Suriname and Venezuela ... . *gracilis*
- In dorsal view, vertex usually without transverse costulae (Fig. 6B), or when transverse costulae are present, they are limited to the center of the vertex (Fig. 6C) or are not continuous across the vertex (Fig. 6D); in ventral view, first gastral sternite totally costulate or striate … 21

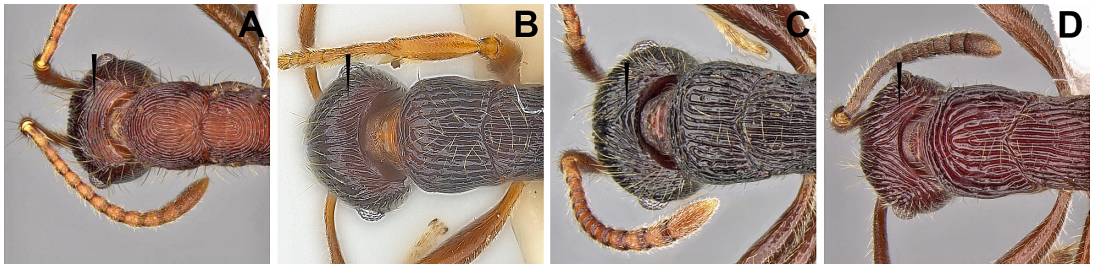

FIGURE 6. Dorsal view of head, showing A) transverse costulae extending across the width of the vertex (*G. gracilis*—CASENT0281525); B) vertex without transverse costulae (*G. illimani*—CASENT0179988); C) transverse costulae limited to the center of the vertex (*G. pittieri*—CASENT0281218); and D) transverse costulae not extending all across the vertex (*G. porcata*—CASENT0281222). Photos by Zach Lieberman (A), Erin Prado (B) and Estella Ortega (C, D), available from www.antweb.org.

21(20). Scape with more than 10 long, erect hairs, not including underlying pubescence... 22
- Scape with fewer than 10 long, erect hairs, not including underlying pubescence 24

22(21). In lateral and dorsal views, body striate, sculpture relatively finer; in lateral view, body with dense pubescence under abundant erect hairs; dorsal margin of femur with erect to suberect hairs. Colombia . . . . . *pilosa*
- In lateral and dorsal views, body costulate or striate, sculpture relatively coarser; in lateral view, body with sparse pubescence under erect hairs; dorsal margin of femur with decumbent to subdecumbent hairs … 23

23(21). In dorsal view, body striate or costulate, with abundant decumbent pubescence; in lateral view, subpetiolar process forming a rounded lobe, without sharp angles; body and legs brown. Colombia ... . *ejuncida*
- In dorsal view, body usually costate, with sparse decumbent pubescence; in lateral view, subpetiolar process usually with a sharp anterior angle, blunt in Central American specimens; body black and legs ferruginous. Bolivia, Brazil (MG, MS, MT), Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Honduras, Mexico, Nicaragua, Peru and Venezuela . . . . . *porcata*

24(21). Scape and tibia with one or no semierect or semidecumbent hairs. Colombia and Ecuador .. . . . . *extra*
- Scape and tibia with five or more erect hairs 25

25(24). In dorsal view, propodeal declivity with transverse costulae; in lateral view, propodeal spiracle distant from the declivitous face of propodeum by at least the length of its opening; petiolar node slightly pedunculate. Bolivia, Brazil (widespread), Colombia, Ecuador, French Guiana, Lesser Antilles, Panama, Peru, Suriname, Trinidad and Tobago and Venezuela ... . *pleurodon*
- In dorsal view, propodeal declivity with longitudinal costulae; in lateral view, propodeal spiracle located closer than the length of its opening to the declivitous face margin; petiolar node sessile. Colombia ... . *nigrivitrea*

26(18). In lateral view, propodeal dorsum depressed below level of mesonotum; dorsal and declivitous propodeal faces separated by a ridge; postpetiolar sternite with weakly-defined rugulae. Ecuador and Venezuela .... *pittieri*
- In lateral view, propodeal dorsum not depressed below level of mesonotum; dorsal and declivitous propodeal faces confluent; postpetiolar sternite with well-defined costulae or striae 27

27(25). Scape with dense white pubescence and 0–2 erect hairs. Bolivia ..... *ilimani*
- Scape with moderate to sparse pubescence and dense decumbent pilosity, with five or more erect hairs 28

28(27). Head with relatively smaller eyes (OI<0.16); in lateral view, dorsum of mesonotum and propodeum continuous, not separated by a metanotal impression; larger species (HW≥0.84 mm, WL≥0.35 mm) 29
- Head with relatively larger eyes (OI ≥ 0.16); in lateral view, dorsum of mesonotum and propodeum separated by a metanotal impression; smaller species (HW<0.84 mm, WL<0.35 mm) 30

29(28). In lateral view, subpetiolar process with a poorly developed fenestra. Bolivia ..... *aspera*
- In lateral view, subpetiolar process with a well-developed fenestra. Colombia and Ecuador. ..... *andina*

30(28). In frontal view, vertex margin concave; in dorsal view, humerus rounded; in lateral view, propodeal dorsum depressed in relation to the mesonotal dorsum. Belize, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama and Suriname .... *strigata*
- In frontal view, vertex margin straight; in dorsal view, humerus angulate; in lateral view, dorsum of propodeum and mesonotum continuous, propodeum not depressed relative to mesonotum. Brazil (BA) ... . *latistriata* **sp. n.**

31(1). In frontal view, scape not reaching the vertex margin (Fig. 7A) 32
- In frontal view, scape surpassing vertex margin by at least one apical width (Fig. 7B) 49

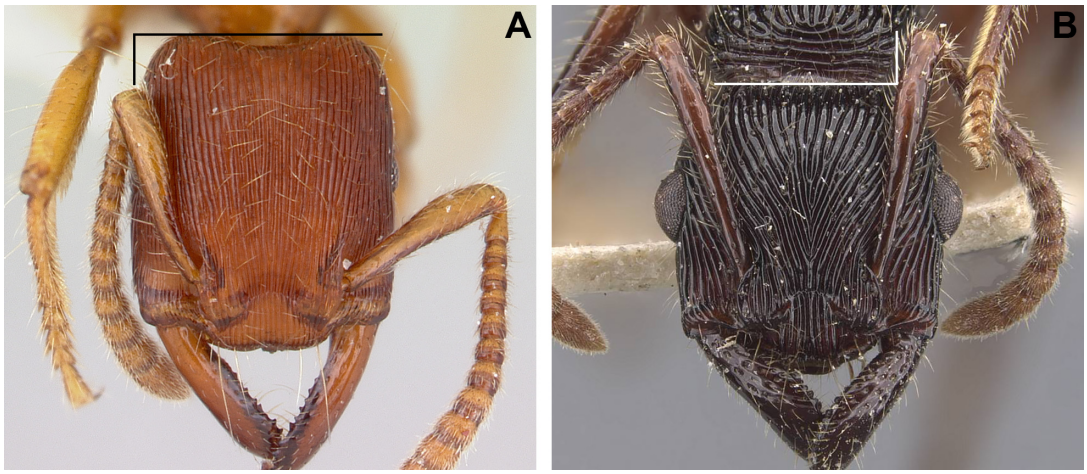

FIGURE 7. Frontal view of head, showing: **A)** scape not reaching vertex margin (*G. interrupta*—CASENT0178679); **B)** scape surpassing vertex margin by at least one apical width (*G. tortuolosa*—CASENT0907192). Photos by April Nobile (A) and Will Ericson (B) available from www.antweb.org.

32(31). Mandibular dorsum with striae, costulae or rugulae on at least ¼ of its length (Fig. 8A) 33
- Mandibular dorsum totally smooth and shiny, with sparse punctuation (Fig. 8B) 35

FIGURE 8. Frontal view of mandibles, showing: **A)** mandibular dorsum striated (*G. haenschi*—CASENT0281527); and **B)** mandibular dorsum smooth and shiny (*G. annulata*—CASENT0281514). Photos by Zach Lieberman available from www.antweb.org.

33(32). In frontal view, mandible falcate; body with irregular costulae. Hispaniola ..... *falcaria*
- In frontal view, mandible triangular or semitriangular; body with regular striae or costulae 34

34(33). Mandibular dorsal surface densely striate; eyes small (OI<0.1); metacoxal dorsum unarmed. Argentina, Bolivia, Brazil (AC, AM, BA, GO, MG, MT, PA, RO, SP), Colombia, Costa Rica, Ecuador, French Guiana, Nicaragua, Panama, Peru and Venezuela ..... *haenschi* (in part)
- In frontal view, mandibular dorsal surface costulate on basal fourth or less, the rest smooth and shiny; large eyes (OI>0.2); metacoxal dorsum with a lobe. Argentina, Brazil (BA, PA), Colombia, Costa Rica, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, USA (TX, LA) and Venezuela ..... *hartmani* (in part)

35(32). In dorsal view, propodeal dorsum mostly transversely striate (Fig. 9A) 36
- In dorsal view, propodeal dorsum mostly longitudinally striate or costulate (Fig. 9B) 38

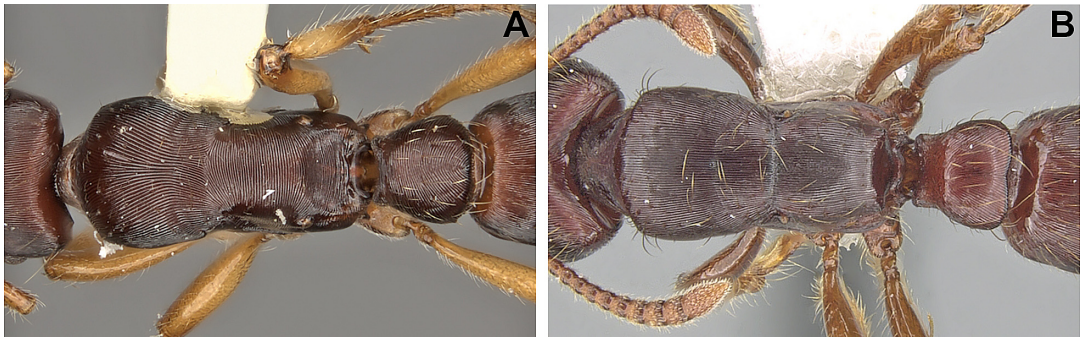

FIGURE 9. Dorsal view of mesosoma, showing: **A)** propodeum dorsum transversely striate (*G. annulata*—CASENT0217480); and **B)** propodeum dorsum longitudinally striate (*G. stellae*—CASENT0281227). Photos by Will Ericson (A) and Estella Ortega (B) available from www.antweb.org.

36(35). Head less elongate (CI>0.78); body brown to dark brown 37
- Head more elongate (CI<0.78); body black. Colombia, Costa Rica, Ecuador, Nicaragua and Panama ..... *alfaroi*

37(36). In dorsal view, mesosoma and petiole costulate; both propodeum and metacoxal dorsum edentate. Brazil (AM, PA, MT), Colombia, Ecuador and Peru ..... *kempfi*
- In dorsal view, mesosoma and petiole finely striate; both propodeum and metacoxal dorsum dentate. Bolivia, Brazil (AC, AM, AP, BA, MT, PA, PR, RJ, RO, RR, SP), Colombia, Costa Rica, French Guiana, Ecuador, Guyana, Honduras, Nicaragua, Panama, Peru, Suriname and Venezuela ..... *annulata*

38(35). In frontal view, clypeal lamella laterally rounded, never angular (Fig. 10A); in lateral view, subpetiolar process usually rounded, rarely with a posterior tooth 39
- In frontal view, clypeal lamella with sharp lateral angles (Fig. 10B); in lateral view, subpetiolar process with a posterior tooth 46

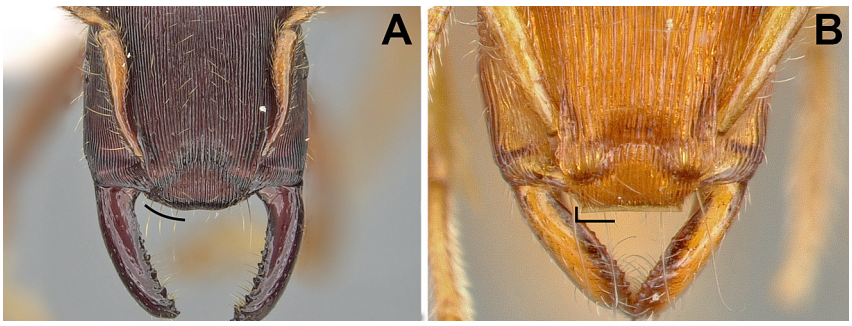

FIGURE 10. Frontal view of head, showing: **A)** clypeal lamella laterally rounded (*G. stellae*—CASENT0281227); and **B)** clypeal lamella with sharp lateral angles (*G. regularis*—CASTYPE00616). Photos by Estella Ortega (A) and April Nobile (B) available from www.antweb.org.

39(38). In frontal view, mandible triangular; in lateral view, metanotal groove absent. Argentina and Brazil (GO, PA, SP) ..... *nana*
- In frontal view, mandible semitriangular to semifalcate; in lateral view, metanotal groove well-defined 40

40(39). Metacoxal dorsum unarmed, at most with a low tubercle or swelling. 41
- Metacoxal dorsum with a lobe or tooth 43

41(40). In frontal view, clypeal lamella with a broad median concavity and laterally rounded; in ventral view, second gastral sternite sculptured; body costulate. Brazil (PR), Colombia, Costa Rica, French Guiana, Guatemala, Honduras, Jamaica, Mexico, Panama, Suriname and Venezuela . . . . . *interrupta*

- In frontal view, clypeal lamella projecting medially, with a small median concavity, and laterally with blunt angles; in ventral view, second gastral sternite smooth and shiny, body striate or costulate 42

42(41). In frontal view, head with fewer than 20 striae between frontal carina; in lateral view, base of pro, meso and metapleuron smooth and shiny; body costulate. Colombia, Costa Rica and Panama. . . . . *andersoni*

- In frontal view, head with more than 30 striae between frontal carina; in lateral view, base of pro, meso and metapleuron with longitudinal striae; body striate. Colombia and Costa Rica . . . . . *stellae*

43(40). Metacoxal dorsum with a slender and parallel-sided lobe or tooth; HW>1.12 mm, WL>1.81 mm. Argentina, Brazil (AM, ES, GO, PA, PE, RJ, SP), Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, Trinidad and Tobago and Venezuela . . . . . *mordax*

- Metacoxal dorsum with a low triangular lobe; HW<1.12 mm, WL<1.81 mm 44

44(43). In lateral view, propodeal spiracle separated from declivity by less than its diameter. Brazil (BA) . . . . . *wilsoni*

- In lateral view, propodeal spiracle separated from declivity by more than its diameter 45

45(44). In frontal view, head dorsum striate (Fig. 11A). Bolivia and Peru . . . . . *boliviensis*

- In frontal view, head dorsum costulate (Fig. 11B). Belize, Bolivia, Brazil (AM, BA, MG, PR, RJ, RR, SC, SE, SP), Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Honduras, Mexico, Panama, Paraguay, Peru, Suriname and Venezuela . . . . . *continua*

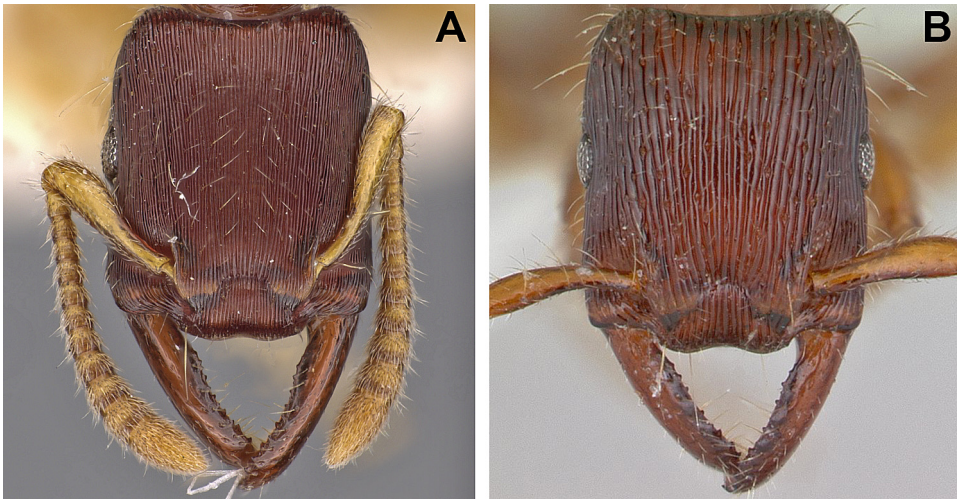

FIGURE 11. Frontal view of head, showing: **A)** head dorsum striate (*G. boliviensis*— CASENT0900556); and **B)** head dorsum costulate (*G. continua*—CASENT0178676). Photos by Ryan Perry (A) and April Nobile (B) available from www.antweb.org.

46(38). Metanotal groove well-defined, visible in any angle; subpetiolar process without a posterior tooth 47

- Metanotal groove weakly defined, visible only in limited angles; subpetiolar process with posterior tooth 48

47(46). In frontal view, anterior margin of clypeal lamella straight; metacoxal dorsum with a lobe. Brazil (BA, RJ, SC) . . . *rimulosa*

- In frontal view, anterior margin of clypeal lamella with a bluntly angular concavity; metacoxal dorsum unarmed. Panama . . . *biquetra*

48(46). In dorsal view, propodeal declivity with longitudinal costulae that converge posteriorly; anterior face of petiolar node transversely costulate; mesometapleural suture absent or weakly impressed. Argentina, Bolivia, Brazil (widespread), Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Lesser Antilles, Panama, Peru, Suriname, Trinidad and Tobago and Venezuela . . . . . *horni*

- In dorsal view, propodeal declivity with parallel longitudinal costulae; most of anterior face of petiolar node longitudinally costulate, but frequently with a basal strip of transverse costulae that occasionally covers all of anterior face; mesometapleural suture well-impressed. Argentina, Brazil (widespread), Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname and Venezuela . . . . . *regularis*

49(31). In frontal view, mandible falcate or semifalcate, with just the apex touching or overlapping the opposite mandible when totally closed (Fig. 12A) 50
- In frontal view, mandible triangular to elongate, with a fourth or more of the masticatory border overlapping the opposite mandible when closed (Fig. 12B) 54

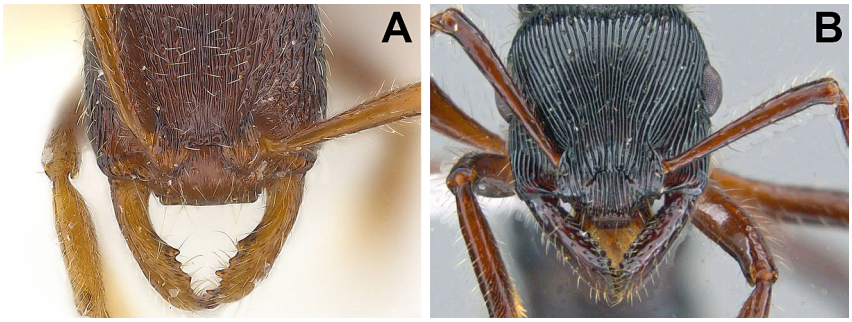

FIGURE 12. Frontal view of head, showing: **A)** falcate mandible (*G. rumba*—CASENT0179954); and **B)** semitriangular mandible (*G. tortuolosa*—ECOFOG-IT14-0450-23). Photos by Erin Prado (A) and Marta Soltysiak (B) available from www.antweb.org.

50(49). In lateral view, propodeal declivity with teeth or denticles; metacoxal dorsum with tooth; mostly continental species 51
- In lateral view, propodeal declivity rounded, without teeth or denticles; metacoxal dorsum unarmed; endemic to Hispaniola (see also third lug) 53
- In lateral view, propodeal declivity with teeth or denticles; metacoxal dorsum unarmed; endemic to Cuba . . . . . *rumba*

51(50). In frontal view, mandible with short triangular tooth on basal internal margin 52
- In frontal view, mandible with a lobe or broad convexity on basal internal margin. Brazil (AC, AL, AM, BA, CE, MG, PA, RJ) and Ecuador . . . . . *mediatrix*

52(51). In frontal view, clypeus with a lobe anterior to each antennal fossa, each lobe partially covering the clypeal lamella; in lateral view, mesonotal spiracle in depression below level of surrounding integument. Ecuador . . . . . *laticephala*
- In frontal view, clypeus without lobes between antennal fossae and lamella; in lateral view, mesonotal spiracle at same level as surrounding integument. Colombia, Costa Rica, Ecuador, Panama and Nicaragua .. . . . . *banksi*

53(50). In frontal view, mandible elongate and slender; propodeal dorsal surface with smooth transverse costulae. Hispaniola . . . . . … *schmitti*
- In frontal view, mandible shorter and thicker; propodeal dorsal surface with vermiculate longitudinal costulae. Hispaniola … . . . . . *semiferox*

54(49). In frontal view, mandibular dorsal surface mostly smooth and shiny, sometimes with striae or costulae extending to basal third; mesosomal dorsum usually without transverse sutures, if otherwise, then the ant is ferruginous and finely striate … 55
- n frontal view, mandibular dorsal surface mostly striate or rugulose; metanotal groove well-impressed … 68

55(54). Very large species (HW≥1.4 mm; WL≥2.3 mm) … 56
- Smaller species (HW<1.4 mm; WL<2.3 mm) … 57

56(55). In dorsal view, mesosoma costulate; metacoxa with dorsal tooth; in lateral view, apex of petiolar node ending in a blunt angle; body black. Brazil (AC, AM, PA, RO, RR), Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela . . . . . … *tortuolosa*
- In dorsal view, mesosoma striate; metacoxal dorsum unarmed; in lateral view, apex of petiolar node ending in a blunt point; body ferruginous. Bolivia, Brazil (AC, AM, AP, BA, MT, PA, RO), Colombia, Costa Rica, Ecuador, French Guiana, Panama, Peru and Venezuela … . . . . . *concinna*

57(55). In dorsal view, mesosoma striate; transverse crest, distinct from mesosomal striae, separating the propodeal dorsum from the propodeal declivity (Fig. 13A) 58
- In dorsal view, mesosoma costulate; propodeal declivity and propodeal dorsum not separated by crest distinct from mesosomal striae (Fig. 13B) … 59

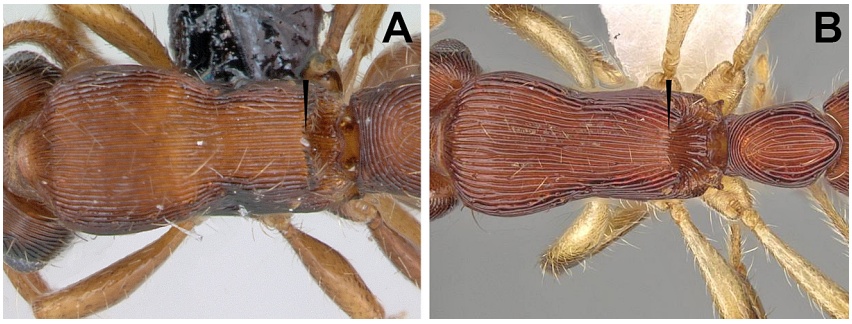

FIGURE 13. Dorsal view of mesosoma, showing: **A)** propodeal dorsum separated from propodeal declivity by a transverse crest (*G. bruchi*—CASENT0173382); and **B)** propodeal dorsum and declivity without crest (*G. acuminata*—CASENT0281511). Photos by April Nobile (A) and Zach Lieberman (B) available from www.antweb.org.

58(57). Posterior face of petiolar node longitudinally costulate. Argentina, Brazil (BA, PA), Colombia, Costa Rica, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, USA (TX, LA) and Venezuela … . . . . . *hartmani* (in part)
- Posterior face of petiolar node transversely costulate. Argentina, Brazil (BA, RR, RS, SP) and Paraguay … . . . . . *bruchi*

59(57). Posterior face of petiolar node longitudinally costulate … 60
- Posterior face of petiolar node transversely costulate … 64

60(59). In frontal view, clypeal lamella laterally angular; mandible elongate, the basal and masticatory margins separated by a broad convexity … 61
- In frontal view, clypeal lamella laterally rounded; mandible triangular, the basal and masticatory margins separated by an angle 63

61(60). In lateral view, petiolar node with a pointed apex; propodeal declivity longitudinally costulate; body uniformly brown. Bolivia, Brazil (widespread), Colombia, Costa Rica, French Guiana, Ecuador, Guyana, Panama, Peru, Suriname and Venezuela . . . . . *acuminata*
- In lateral view, petiolar node sometimes with a posterior projection but never pointed; propodeal declivity usually transversely costulate, rarely longitudinal; color variable, usually with both brown and ferruginous parts, rarely totally brown 62

62(61). Metacoxal teeth absent or vestigial; in lateral view, propodeal declivity without lateral lobes; body dark brown to bicolored. Argentina, Belize, Bolivia, Brazil (widespread), Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname and Venezuela . . . . . *sulcata*
- Small metacoxal teeth present; in lateral view, propodeum with small lateral lobes; body yellow. Bolivia . . . . . *flava*

63(60). In frontal view, clypeal lamella with two convexities; metacoxal dorsum with a lobe; in lateral view, petiolar node with dorsal and posterior margins forming approximately a right angle. Panama . . . . . *transversa*
- In frontal view, clypeal lamella with a single convexity; metacoxal dorsum unarmed; in lateral view, petiolar node with an apical point that overhangs the posterior margin. Brazil (AM, PA), Colombia, Ecuador, Peru and Venezuela . . . . . *fernandezi*

64(59). In frontal view, clypeal lamella laterally sharply angular 65
- In frontal view, clypeal lamella laterally rounded or obtusely angular 66

65(64). HW<1.1 mm; WL<1.7 mm; in frontal view, clypeal lamella with a straight anterior margin. Bolivia, Brazil (AC, RO, MG), Colombia, French Guiana, Guyana and Venezuela . . . . . *ericae*
- HW>1.1 mm; WL>1.7 mm; in frontal view, clypeal lamella medially convex, laterally concave. Brazil (AM, RR), Colombia, Panama and Venezuela . . . . . *curvoclypeata*

66(64). In frontal view, clypeal lamella straight medially and rounded laterally; mandible semitriangular, the basal and masticatory margins separated by a broad convexity; propodeal declivity longitudinally costulate 67
- In frontal view, clypeal lamella medially concave and convex laterally; mandible triangular, the basal and masticatory margins separated by an angle; propodeal declivity transversely costulate. Costa Rica . . . . . *volcano*

67(66). In lateral view, petiolar node with a more or less convex dorsal margin; metacoxal dorsum with an acute tooth; subpetiolar process with sharp angles. Brazil (BA, MG, PR, RJ, SC, SP) . . . . . *lucaris*
- In lateral view, petiolar node with a straight dorsal margin; metacoxal dorsum with a triangular tooth; subpetiolar process with blunt angles. Venezuela . . . . . *siapensis*

68(54). Scape usually smooth and shiny with sparse punctulae (Fig. 14A) 69
- Scape rugulose or striate (sculpture sometimes attenuated) (Fig. 14B) 75

FIGURE 14. Frontal view of head, showing: **A)** scape smooth and shiny (*G. rastrata*—CASENT0281223); and **B)** scape with sparse sculpture (*G. haenschi*—CASENT0179994). Photos by Estella Ortega (A) and Erin Prado (B) available from www.antweb.org.

69(68). Mandibular dorsal surface striate or rugulose; metacoxal dorsum toothed 70
- Mandibular dorsal surface smooth and shiny; metacoxal dorsum unarmed. Hispaniola . . . . . *insularis*

70(69). Masticatory margin of mandible with distinct denticles 71
- Masticatory margin of mandible edentate or with indistinct denticulation 72

71(70). In lateral view, propodeum unarmed; body striate. Brazil (AM, CE, RR), Hispaniola and Lesser Antilles . . . . . *lineolata*
- In lateral view, propodeum with denticles; body costulate. Colombia . . . . . *ingeborgae*

72(70). In frontal view, scape surpasses vertex by at least twice apical width of scape; HW>1.1 mm; WL>1.6 mm 73
- In frontal view, scape surpasses vertex by not more than apical width of scape; HW<1.1 mm; WL<1.6 mm. Argentina, Bolivia, Brazil (AL, BA, PR, RJ, RS, SC, SP), Paraguay and Peru . . . . . *rastrata*

73(72). In dorsal view, petiolar node shorter than wide. Brazil (AP, PA), Colombia and Ecuador . . . . . *lanei*
- In dorsal view, petiolar node longer than wide 74

74(73). In lateral view, propodeal tooth longer than diameter of propodeal spiracle; subpetiolar process projecting anteriorly as a triangular lobe. Brazil (PA), Colombia and French Guiana . . . . . *enodis* (in part)
- In lateral view, propodeal tooth shorter than diameter of propodeal spiracle; subpetiolar process subquadrate. Brazil (BA, ES, MG, PA, PR, RJ, RS, SP) and Colombia . . . . . *menozzii*

75(68). Propodeal teeth absent. Argentina, Bolivia, Brazil (AC, AM, BA, GO, MG, MS, PA, RO, SP), Colombia, Costa Rica, Ecuador, French Guiana, Nicaragua, Panama, Peru and Venezuela . . . . . *haenschi* (in part)
- Propodeal teeth present 76

76(75). In frontal view, eyes not prominent nor protruding, relatively flat; in dorsal view, anterior pronotal margin with longitudinal costulae. Argentina, Bolivia, Brazil (AC, AM, ES, GO, MT, PA, PR, SC, SP), Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Peru, Suriname, Uruguay, USA (exotic in FL, AL, MS, TX) and Venezuela . . . . . *triangularis*
- In frontal view, eyes prominent and protruding; in dorsal view, anterior pronotal margin with at least 5 transverse rugulae or costulae 77

77(76). In dorsal view, vertex with 4–5 transverse costulae; anterior half of first gastral tergite rugose 78
- In dorsal view, vertex longitudinally costulate; anterior half of first gastral tergite longitudinally costulate 79

78(77). In lateral view, propodeal teeth at least as long as the distance between their bases; body ferruginous. Colombia, Costa Rica and Panama . . . . . *bispinosa*
- In lateral view, propodeal teeth short; body black. Brazil (PA), Colombia and Ecuador . . . . . *perspicax*

79(77). Dorsal face of propodeum transversely costulate. Costa Rica and Panama . . . . . *cuneiforma*
- Dorsal face of propodeum longitudinally costulate 80

80(79). In dorsal view, pronotum longitudinally costulate; in lateral view, subpetiolar process rectangular. Bolivia, Brazil (AM, PA), Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Nicaragua and Panama . . . . . *mecotyle*
- In dorsal view, pronotum with anterior strip of transverse costulae; in lateral view, subpetiolar process a modest lobe, without angles. Brazil (PA), Colombia and French Guiana . . . . . *enodis* (in part)

81(1). Propodeum with a pair of denticles 82

- Propodeum unarmed 87

82(81). Integument mostly opaque, sculpturing predominantly granulose with variable degrees of areolae/foveolae (Fig. 15A) . . . 83
- Integument mostly shiny or silky, sculpturing can be finely striolate or smooth with variable degrees of areolae/foveolae (Fig. 15B) 85

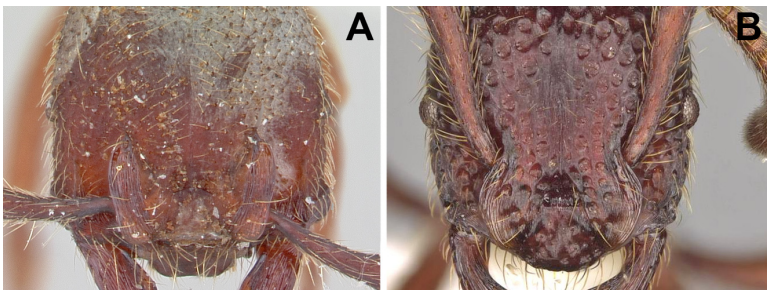

FIGURE 15. Frontal view of head, showing: **A)** integument opaque with granulose sculpturing (*G. fieldi*—CASENT0178675); and **B)** integument smooth and shiny, foveolate (*G. simulans*—CASENT0281522). Photos by April Nobile (A) and Zach Lieberman (B) available from www.antweb.org.

83(81). In frontal view, mandible falcate, masticatory margin edentate and concave. Venezuela . . . . . *fieldi*
- In frontal view, mandible triangular, masticatory margin fairly straight and denticulate or crenulate 84

84(83). In lateral view, metanotal groove well-impressed; propodeum and petiole spiracles shiny and conspicuous. Venezuela . . . . . *petiscapa*
- In lateral view, metanotal groove absent; propodeum and petiole spiracles opaque and not conspicuous. Belize, Bolivia, Brazil (widespread), Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Mexico, Nicaragua, Panama, Peru, Suriname and Venezuela . . . . . *minuta*

85(82). Mandible falcate. Brazil (AC), Colombia, Ecuador, Peru and Venezuela . . . . . *falcifera*
- Mandible triangular 86

86(85). In frontal view, eyes not prominent, broadly convex; anterior clypeal margin broadly convex; occipital lobe rounded. Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Nicaragua and Panama . . . . . *simulans*
- In frontal view, eyes prominent, semispherical; anterior clypeal margin medially concave; occipital lobe sub-angular. Brazil (MT) and Ecuador . . . . . *vriesi*

87(81). Meso and metatibial spurs absent. Argentina, Brazil (MA, MG, PA, PR, RO), Colombia, Paraguay and Venezuela . . . *caelata*
- Meso and metatibial spurs present 88

88(87). In frontal view, clypeal lamella present; clypeus with a median tooth. Brazil (BA, MG, SC) . . . . . *striolata*
- In frontal view, clypeal lamella absent; clypeus with a median lobe. Brazil (RJ) . . . . . *piei*

Species accounts

Gnamptogenys avus **new species**
(Figure 16)

Holotype: **GUYANA:** Mt. Ayanganna cloud forest, 1300 m, 5°22.483’N, 59°57.969’W, 13.x.2002, litter sample, T. Schultz, J. LaPolla, C. Marshall, R. Williams col. (1 worker) [CSBD—USNM00413910].

Paratype: GUYANA: Mt. Ayanganna Falls Camp, 1134 m, 5°22.332’N, 59°57.563’W, 11.x.2002, 1° forest, litter sample, T. Schultz, J. LaPolla, C. Marshall, R. Williams col. (1 worker) [NMNH—USNM00413360].

Diagnosis: Size comparatively small (TL 2.57−2.75). Mandible smooth and shiny on their dorsal face. Small eyes, with five ommatidia on their largest diameter (Fig. 16A). Scape surpassing vertex margin at least by the same length as its apical width. Dorsal profile of mesosoma flat, metanotal impression absent. Propodeal spiracle positioned at the propodeum lateral margins, turned posteriorly and forming a tubuliform projection, its opening above the level of integument. Propodeum without any lobes, in lateral view (Fig. 16C). Metacoxal spine present. Segments I and II of gaster completely costulate (Fig. 16B).

Description

Worker: HL 0.60–0.62; HW 0.47–0.50; ML 0.24–0.27; SL 0.45–0.50; EL 0.1–0.08; WL 0.91–0.83; PL 0.25–0.23; GL 0.84–0.80; TL 2.57–2.75; CI 78.33–80.64; SI 95.74−100; OI 21.27−16 (n=2). Small size. Brown-coppery color, with appendages and gaster the same color. Body predominantly covered by thin, long, suberect hairs. Mandible smooth and shiny, without rugulae or striations on the dorsal surface. Head dorsum covered by long longitudinal costulae, deep and slightly irregular, semiparallel from the anterior margin of clypeus to vertex margin; vertex smooth and shiny, without hairs; surface of costulae covered by punctuation, giving them a rough appearance; intervals between costulae smooth and shiny. Mesosoma completely covered by wide costulae, approximately 0.035 mm in width, with straight margins on the dorsal surface; pronotum with transverse costulae anteriorly and several subparallel costulae on the dorsal surface. Declivitous face of propodeum covered by costulae, the same width and appearance as on mesosoma. Petiole with same sculpture as mesosoma. Coxae always covered by transverse costulae, narrower than on mesosoma. Segments I and II of gaster with same sculpture as mesosoma. Anterior face of first gastral segment bare, smooth with sparse rugulae.

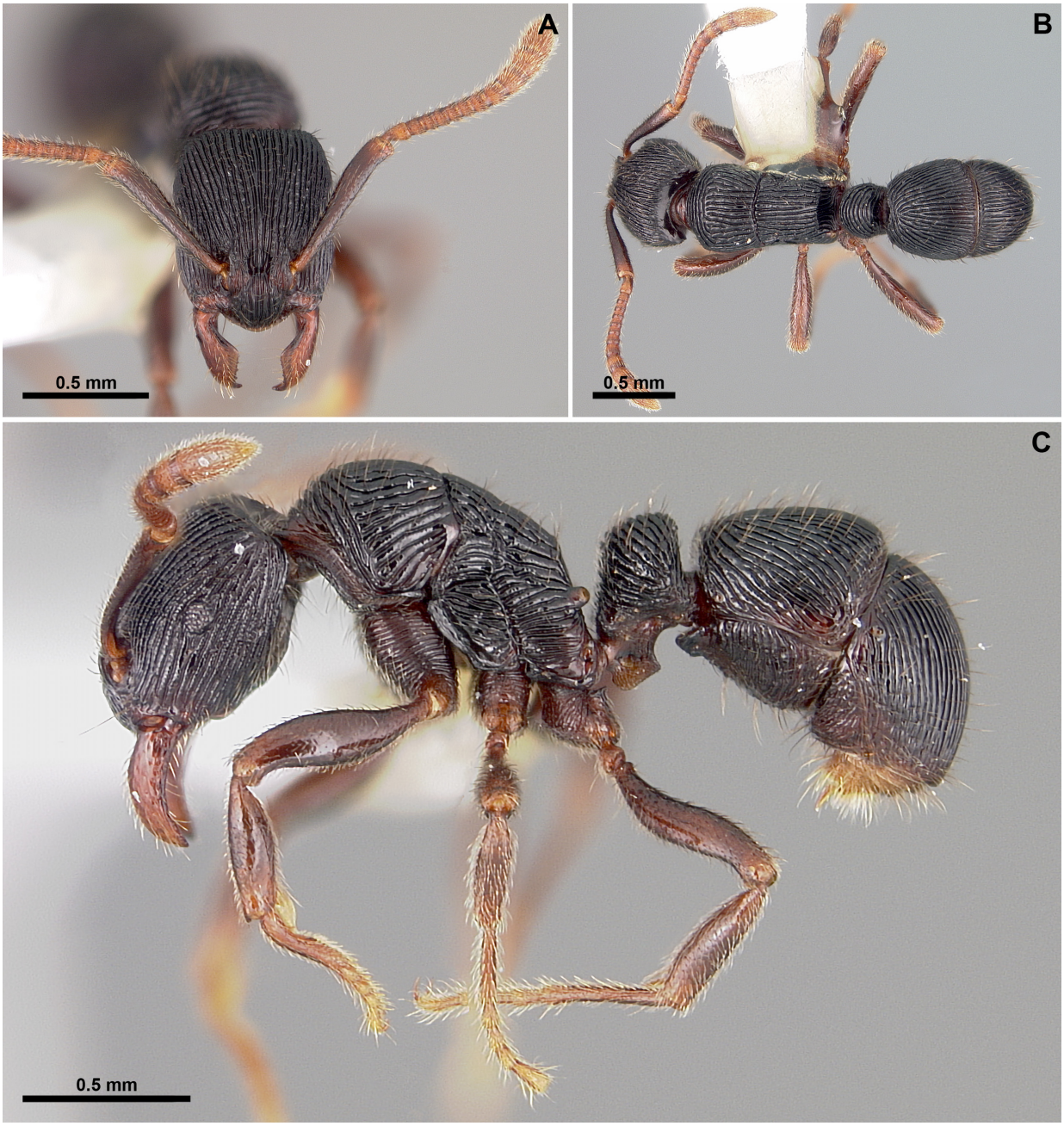

FIGURE 16. Worker of *Gnamptogenys avus* in A) frontal view; B) dorsal view; and C) lateral view. Images by Jeffrey Sosa-Calvo (USNMENT00413910) available from www.antweb.org.

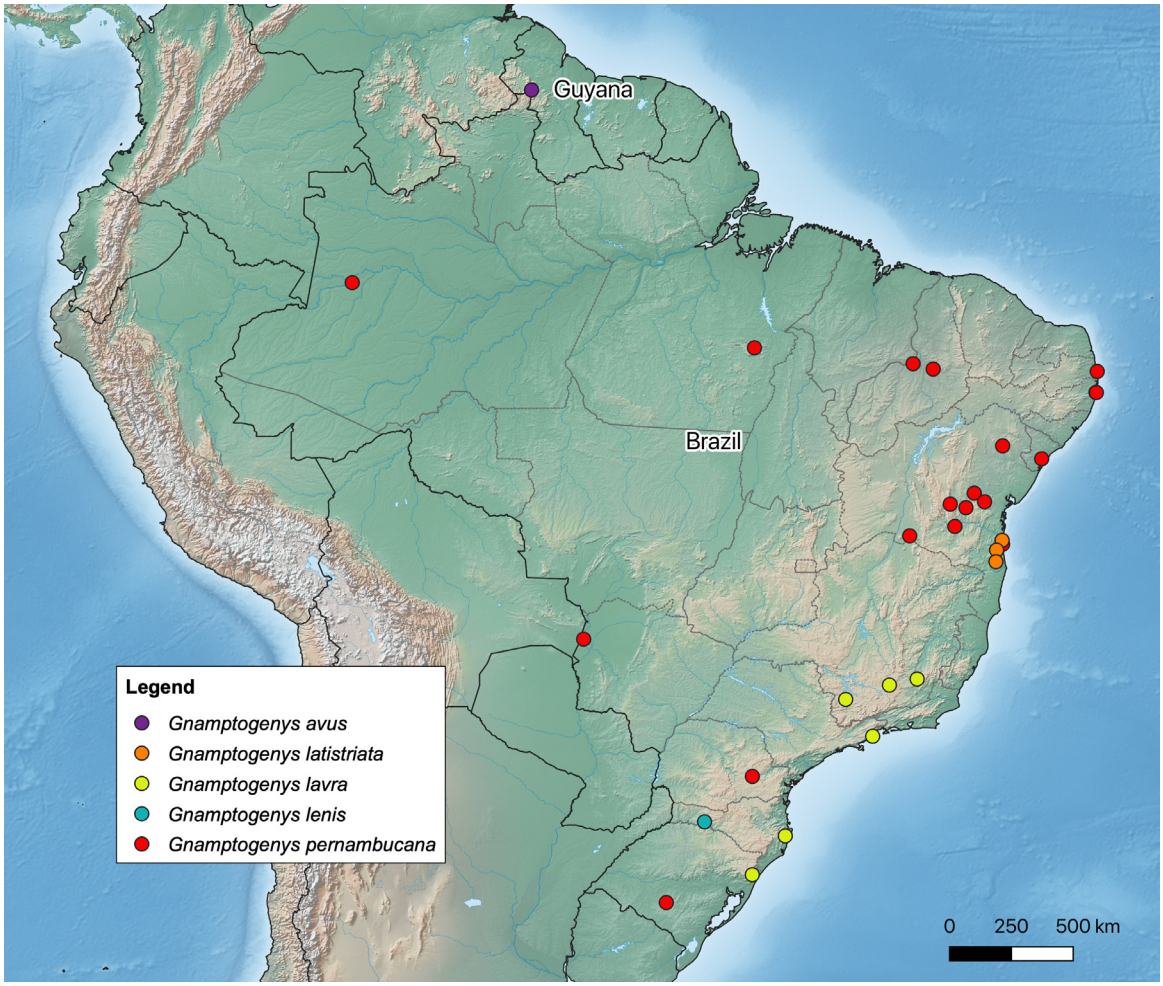

FIGURE 17. Distribution records of the new and revived species of *Gnamptogenys*.

Mandible triangular. Anterior margin of clypeus strongly convex in frontal view. Lateral margins of head straight and subparallel, slightly tapered anteriorly. Occipital corners extend ventrally, forming a small ridge. Antennal scape narrow, almost twice as wide apically than at its base; scape surpassing the vertex margin by the length of the apical width of scape. Eyes with at least five ommatidia, located slightly behind the anterior half of the head in frontal view. Vertex margin straight.

Dorsal profile of mesosoma compact and flat in lateral view, without mesonotal impression. Lateral margins of declivitous face of propodeum parallel; dorsal and declivitous face of propodeum differentiated, forming a light ridge between the two; propodeal spiracle positioned at the propodeum lateral margins, turned posteriorly and forming a tubuliform projection, its opening above the level of integument. Propodeum without lobes or projections. Metacoxal spine acute and relatively large.

Anterior and posterior margins of petiole subparallel in lateral view; petiole not pedunculated. Subpetiolar process predominantly opaque and subquadrate, very large, occupying more than half of the ventral surface of the petiole; subpetiolar process with a fenestra positioned centrally. Prora large and visible in lateral view.

Etymology: From Latin *avus*=ancestor/grandfather, in reference to the species basal position within its clade, according to phylogenomic data. Fittingly, the name also honors the first author's grandfather, whose love for nature was always a source of admiration and inspiration. The name is applied here as a noun in apposition.

Distribution: *Gnamptogenys avus* is known only from the type locality, Mt. Ayanganna, Guyana (Fig. 17).

Natural History: The specimens were collected in litter samples from primary montane forest, suggesting this species likely lives and/or forages in the leaflitter. *Gnamptogenys avus* is only found in this locality, which might indicate a preference for montane, preserved forest areas.

Comments: *Gnamptogenys avus* is similar to *G. mina* (Brown). *Gnamptogenys avus* has compound eyes (only one ommatidium in *G. mina*), the scape surpasses the vertex margin (not reaching the vertex margin in *G. mina*), and the propodeal spiracle is protruding (less protruding in *G. mina*). Despite the morphological similarities between *G. mina* and *G. avus*, both species do not appear to be closely related, according to phylogenomic analysis of *Gnamptogenys* species relationships (Camacho *et al.*, in prep).

Gnamptogenys latistriata **new species**
(Figure 18)

Holotype: BRAZIL: Bahia: Ilhéus / Repartimento, 09.viii.1999, Santos, J.R.M. col. (1 worker) [CPDC—DZUP549798].

Paratypes: BRAZIL: Bahia: Ilhéus / Repartimento, 09.viii.1999, Santos, J.R.M. col. (2 workers) [DZUP]; São José da Vitória, 15°34'2''S, 39°20'39''W, 22.v.2000, Santos, J.R.M col. (3 workers) [MZSP]; São José de Buerarema, 15°03'06''S, 39°18'48''W, 14.ix.2000, Santos, J.R.M. col. (2 workers) [CPDC—DZUP549799].

Diagnosis: Medium size (TL 3.75−4.75). Scape surpassing the vertex margin by at least two times the width of the scape apex (Fig. 18A). Vertex margin straight. Compact mesosoma, with a slight metanotal impression; mesonotal dorsum not higher than propodeal dorsum in lateral view. Propodeal spiracle located directly on the declivitous face of propodeum margin (Fig. 18C). Mesosoma covered by wide costulae, at least 0.03 mm wide. Five longitudinal costulae on the dorsal surface of mesosoma (Fig. 18B). Petiolar node posteriorly inclined (Fig. 18C).

Description

Worker: HL 0.86−1.05; HW 0.69−0.85; ML 0.39−0.51; SL 0.80−1.05; EL 0.13−0.19; WL 1.15−1.44; PL 0.30−0.46; GL 1.03−1.29; TL 3.75−4.75; CI 79.71−82.86; SI 114.04−123.03; OI 16.05−22.06 (n=8). Reddish to reddish-brown, with lighter appendages, coppery. Body predominantly covered by thin, long and medium, erect and suberect hairs. Scape covered by many decumbent hairs and some medium suberect hairs.

Mandible striated on its dorsal face. Head dorsum covered with long, slightly irregular longitudinal costulae, semiparallel from the anterior margin of clypeus to the occipital margin of the head; head costulae wider than in other species of the genus, at least 0.03 mm wide; wide intervals between costulae, at least 0.0125mm. Mesosoma glossy and completely covered by wide costulae with a width ranging from 0.03 to 0.06 mm and slightly irregular margins. Pronotum with transverse costulae anteriorly and subparallel costulae on the dorsal surface. Dorsal surface of mesonotum, metanotum and propodeum with semiparallel and longitudinal costulae. Declivitous face of propodeum with longitudinal costulae throughout its length. Coxae always covered by transverse costulae; on procoxae, costulae not as wide as on mesosoma and head. Petiole with sculpture similar to mesosoma, very wide, concentric in dorsal view. Segments I and II of gaster entirely covered by longitudinal costulae, not as wide as the rest of the body. First gastral segment without transverse costulae on anterior face.

Mandible triangular. Anterior margin of clypeus strongly convex, giving it a rounded shape in frontal view. Clypeal lamella prominent, translucent and extending across the entire width of the anterior margin. Lateral margins of the head straight and subparallel. Antennal scape narrow, slightly wider apically, surpassing vertex margin by about one fifth of its length. Well-developed compound eyes, rounded and convex, located just behind the anterior half of the head in frontal view and with about seven ommatidia at larger diameter. Vertex margin straight; occipital corners prominent and rounded in lateral view.

Mesosoma compact, with a slight metanotal impression, but with mesonotal dorsum at the same level as propodeal dorsum in lateral view. Propodeal spiracle elevated above the sculpture, with very narrow opening; propodeal spiracle located directly on the margin of declivitous face of propodeum. Propodeum without spines or projections. Metacoxa with conspicuous spine.

In lateral view, posterior margin of petiole slightly concave; dorsal margin of petiole slightly convex; petiole not pedunculated. Subpetiolar process predominantly opaque, subquadrate and large, occupying nearly half of ventral surface of the petiole; subpetiolar process with a fenestra next to its posterior limit. Prora very prominent, V-shaped; its central angle with a keel; angled lateral margins in ventral view.

Etymology: From Latin: *latus*=wide and *striatus*=striated, referring to the wide costulae on the dorsal surface of the mesosoma. The species name is a feminine adjective in the nominative singular.

Distribution: All known specimens for Brazil have so far been collected in the coastal region of Bahia (Fig. 17).

Natural History: There are no data on the biology of this species, since there is no additional information associated with the labels.

Comments: The width and number of costulae on mesosoma and the propodeal spiracle positioned at the lateral margins of the propodeum are enough to distinguish *Gnamptogenys latistriata* from any other of its closely related species. The species is very similar to *G. strigata*, a commonly collected species of wet montane transandean forests, that occurs throughout Central America, from Mexico to Colombia. Although Antmaps.org (Janicki et al. 2016) lists Kempf (1972) as a reference for the occurrence of *G. strigata* in Brazil and Paraguay, Kempf (1972) does not record the species for those countries. *G. strigata* was not found to occur in Brazil during this revision or previous revisions (Brown 1958; Lattke 1995). *Gnamptogenys latistriata* differs from *G. strigata* by its flat vertex margin and propodeum dorsum not depressed in relation to mesonotal dorsum. Aside from these differences and to the great geographic distance between the records of both forms, phylogenomic analysis revealed that *G. latistriata* represents a distinct lineage within *Gnamptogenys*, not closely related to *G. strigata* (Camacho *et al*., in prep).

FIGURE 18. Holotype worker of *Gnamptogenys latistriata* (DZUP549798) in A) frontal view; B) dorsal view; and C) lateral view.

Gnamptogenys lavra **Lattke**
(Figures 19 and 20)

Gnamptogenys lavra Lattke 2002: 141, fig. 6 (w.) BRAZIL (Minas Gerais).

Holotype: BRAZIL: Minas Gerais: Lavras, 30-iii-1975, W.D. Fronk. Berlese funnel (1 worker) [MCZC] [examined].

Diagnosis: Comparatively small size (TL 3.16−3.44). Dorsal face of mandible smooth and shiny. Eye with a single ommatidium. Scape not reaching vertex margin (Fig. 19A and 20A, D). Dorsal face of mesosoma flat in lateral view, without metanotal impression. Propodeum with lobes on the angle between the dorsal and declivitous faces. Propodeal spiracle separate from the side of the propodeum declivity by three times the width of the opening. Superior third of declivous face of propodeum with longitudinal costulae gradually becoming transverse on the inferior portion (Fig. 19B and 20B, E). Metacoxal spine absent. Segments I and II of gaster covered by small ridges extending from the base of the hairs; anterior face of gaster shiny, with inconspicuous rugulae (Fig. 19B, C and 20C, F).

Redescription

Worker: HL 0.74−0.79; HW 0.65−0.70; ML 0.38−0.44; SL 0.50−0.55; EL 0.04−0.05; WL 0.81−1.01; PL 0.25−0.28; GL 0.94−1.00; TL 3.16−3.44; CI 85.71−90.32; SI 75.93−79.63; OI 5.77−7.41 (n=8). Body brown-copper to reddish-brown to black, with slightly lighter appendages, coppery-brown to coppery. Body predominantly covered by medium length, medium thickness and erect hairs. Scape covered by many short suberect hairs.

Mandible smooth and shiny without rugulae or striae on the dorsal surface. Head dorsum covered by long longitudinal costulae, shallow and subparallel; vertex with rugulae and inconspicuous striae. Pronotal dorsum longitudinally costulae. Dorsal surface of mesonotum, metanotum and propodeum covered by longitudinal and subparallel costulae, without smooth and shiny areas. Superior third of declivous face of propodeum with longitudinal costulae gradually becoming transverse on the inferior portion. Procoxae covered by transverse rugulae; mesocoxa and metacoxa covered by irregular striations and heavily punctuated. Petiole covered by inconspicuous rugulae on dorsal and lateral surfaces, with smooth regions and punctuated regions. Segments I and II of gaster smooth and shiny, covered by rugulae and irregular striations at the base of hairs. Anterior face of the first gastral segment bare, smooth and shiny and with some inconspicuous rugulae.

Mandible triangular. Anterior margin of clypeus strongly projected anteriorly, giving it a triangular appearance in frontal view. Lateral margins of head straight and subparallel, slightly tapered anteriorly. Antennal scape does not reach vertex margin; scape ranging from brown to yellowish-copper from the base to the apex. Eye with a single ommatidium located slightly behind the anterior half of the head in frontal view. Vertex margin slightly concave in its central region, giving vertex corners a slightly angled aspect.

Dorsal profile of mesosoma compact and flat in lateral view, without metanotal impression. Lateral margins of the declivity of propodeum distinguishable by the presence of two subparallel carinae; dorsal surface and declivity of propodeum distinguishable by a weak arcuate carina at the junction between them; propodeal spiracle at the same level of the integument; propodeal spiracle distant from declivity margin by a distance three times larger than its opening; opening of propodeal spiracle very wide and facing sideways. Propodeum armed with denticles. Metacoxal spine absent.

In lateral view, anterior and posterior faces of petiole slightly convergent, giving petiole a slightly triangular shape; petiole not pedunculated. Subpetiolar process predominantly opaque and subquadrate, very large, occupying more than half of the ventral surface of the petiole; subpetiolar process with a translucent fenestration which occupies about 2/3 of its area. Dorsal surface of gaster covered by small striae at the base of each hair, with smooth and shiny areas in between; posterior margin of the first tergite of gaster without leathery sculpture; in dorsal view, the first segment of gaster trapezoidal, anterior angles rounded, but differentiated. Prora prominent.

Intercaste (first description): HL 0.76; HW 0.66; ML 0.38; SL 0.48; EL 0.12; WL 0.96; PL 0.28; GL 1.00; TL 3.38; CI 84.61; SI 72.73; OI 18.18 (n=1). Differing from workers by the presence of three ocelli well-developed and arranged in triangle on the head dorsum; compound eye slightly convex, with about eight ommatidia in its largest diameter; body more robust with the presence of scutum and scutellum.

Dealate queen (first description): HL 0.80; HW 0.66; ML 0.40 SL 0,52; EL 0,14; WL 1.04; PL 0.3; GL 1.00; TL 3.54; CI 82.5; SI 78.79; OI 21.21 (n=1). Color, pilosity and sculpture as the workers. Head dorsum with three

ocelli well-developed and arranged in triangle; compound eye slightly convex, with about eight ommatidia in its largest diameter; scape failing to reach the vertex margin. Scutum flat in lateral view; notauli not distinguishable; indistinguishable parapsidal lines through the sculpture; parapsides obsolete; tegulae wide, rounded, yellow and translucent; suture between anepisternum and katepisternum lightly marked and transverse, forming an impression that is not enough to completely stop the sculpture. Very narrow pre-scutellum; axillae laterally rounded; scutum-scutellum sulcus poorly marked. Scutellum sculptured, with a smooth and shiny region in the center. Dorsal surface of propodeum slightly convex below the level of the scutellum, covered by transverse costulae.

Etymology: The species name is derived from the name of the type locality, Lavras, Minas Gerais, Brazil.

Distribution: This species was recorded in the South of Brazil (Fig. 17), usually collected in rainforests.

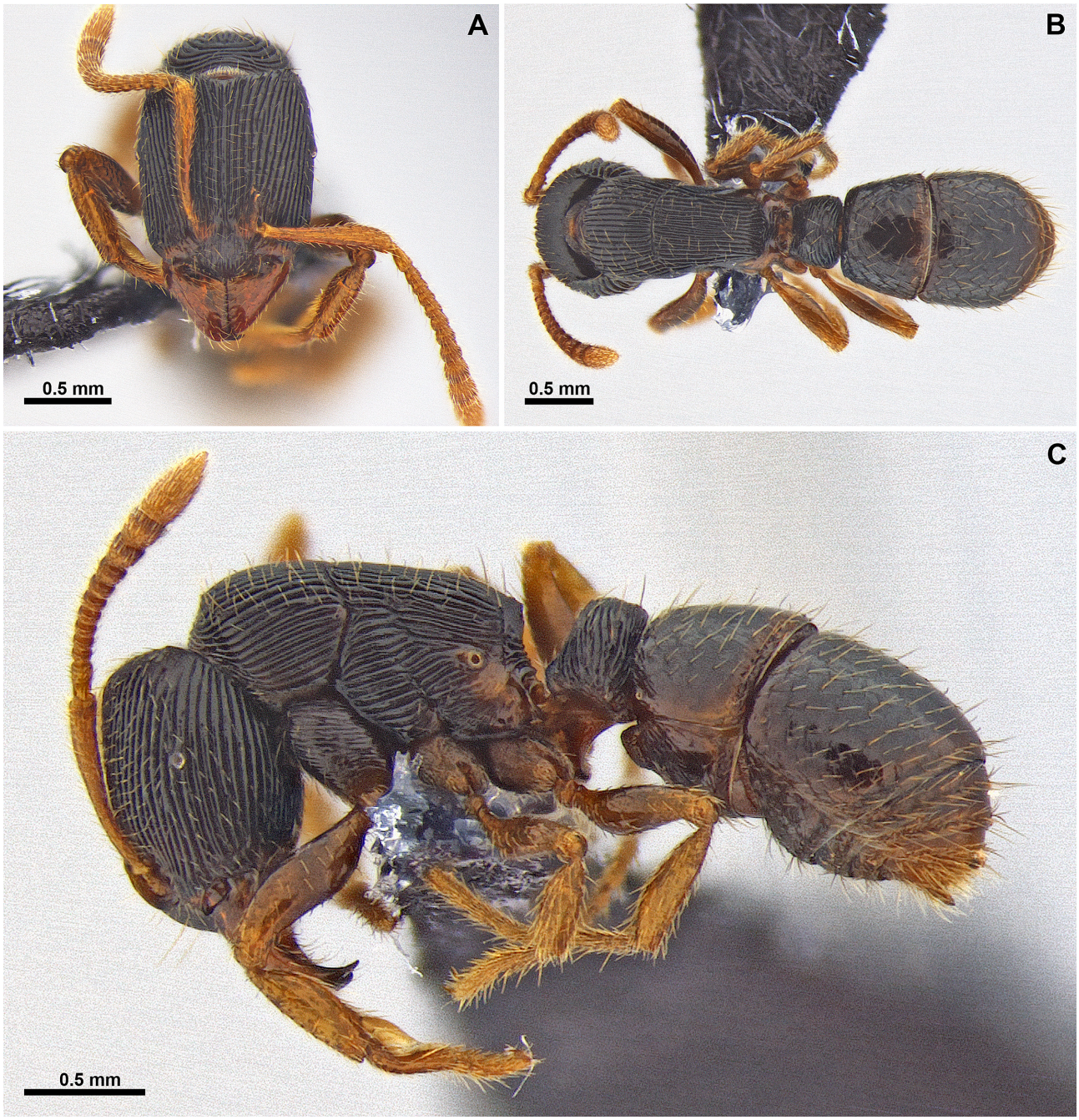

FIGURE 19. Worker of *Gnamptogenys lavra* (UFV-LABECOL-005814) in A) frontal view; B) dorsal view; and C) lateral view.

Natural history: Data on the natural history of this species is based on information from labels and reports of collectors. The species is usually found in the leaf litter of Atlantic Forest regions. Two of the specimens examined

were collected in coffee plantations in Minas Gerais, but there is no information on whether the plantations were conventional or agroforestry. The latter is common in the area where the specimens were collected and would provide a more sheltered environment than conventional production. Two records were recently made for the species, one in a Winkler extraction of a layer of five centimeters deep bare soil, also in Minas Gerais, and in a sample from a rotten tree trunk on the forest ground (Júlio Chaul, personal communication). Another collection in the same region revealed individuals of the species in hypogaeic pitfall traps, 25 cm deep (Rodrigo Jesus, personal communication). These records and the small eyes suggest a partially hypogaeic habit. *Gnamptogenys lavra* was also recorded by one of the authors (RMF) in submontane forests in Rio Grande do Sul during a cold snap, suggesting these ants can tolerate lower temperatures.

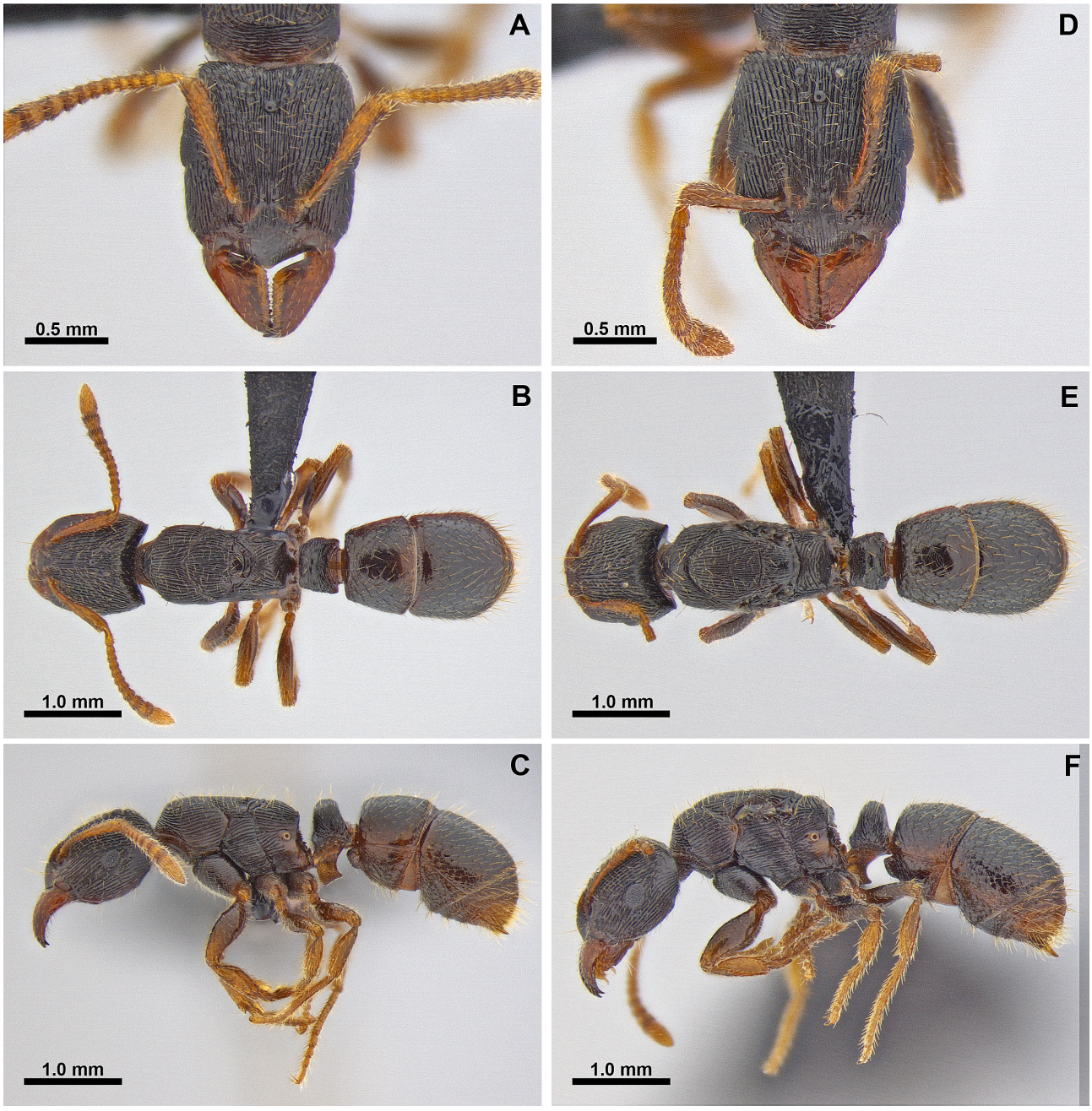

FIGURE 20. Intercaste specimen of *Gnamptogenys lavra* (UFV-LABECOL-005813) in A) frontal view; B) dorsal view; C) lateral view; and queen of *Gnamptogenys lavra* (UFV-LABECOL-005812) in D) frontal view; E) dorsal view; F) lateral view.

Comments: This species is morphologically related to *G. reichenspergeri* (Santschi) and can be differentiated by the abundant and conspicuous sculpture on the mesosoma, without smooth and shiny areas, and also by the smooth and shiny mandible surface. Additionally, the frontal sculpture of the head is more uniform than in *G.*

reichenspergeri, with parallel costulae. *Gnamptogenys lenis*, described here, has similar features, but differs from *G. lavra* by the gaster being completely smooth and shiny and the scape surpassing the vertex margin.

Examined material: BRAZIL: Minas Gerais: Viçosa, i.1988, M.V.B. Queiroz col. (2 workers) [MZSP]; Viçosa, 20° 46' 36.70"S, 42° 50' 32.95"W, 20.iv.2013, J. Chaul col., n. P7 (1 queen/1 intercaste) (UFV-LABECOL-005812/005813) [DZUP]; Machado, 21º40'54.56"S 46º0'56.91"W (1 worker) (UFV-LABECOL-005814) [DZUP]. Rio Grande do Sul: Itati, 29°27'54''S, 50°09'49''W, 24-30. viii.2009, R.R. Silva & R. M. Feitosa col. (1 worker) [MZSP]. Santa Catarina: Palhoça, 27°44'28''S, 48°41'50''W, 02-10.vi.2003, R.R. Silva, B.H. Dietz & A. Tavares col., n. 25 (2 workers) [MZSP]. São Paulo: Ubatuba, 23°19'S, 44°49'W, 18.i.2006, Scott-Santos, C.P. & Santos, E.F. col., n. 9 (1 worker) [CPDC].

Gnamptogenys lenis **new species**
(Figure 21)

Holotype: **BRAZIL:** Santa Catarina: Seara, 24°07'S, 52°18'W, 6.vii.1999, R.R. Silva col. (1 worker) [MZSP—DZUP549800].

Diagnosis: Size comparatively small (TL 3.61). Dorsal surface of mandible smooth and shiny. Eye with a single ommatidium (Fig. 21A). Scape, legs and gaster yellow, much lighter than the rest of the body. Dorsal profile of mesosoma flat, with a shallow metanotal impression. Propodeal spiracle with wide opening, turned slightly posteriorly and at the same level of integument. Propodeum with lobes on the angle of contact between the dorsal and declivitous faces, in lateral view (Fig. 21C). Declivitous face of propodeum with some poorly marked rugulae. Metacoxal spine absent. Segments I and II of gaster completely smooth and shiny, without striae forming from the base of the hairs (Fig. 21B); anterior face of the gaster smooth and hairless.

Description

Worker: HL 0.80; HW 0.71; ML 0.45; SL 0.61; EL 0.06; WL 1.04; PL 0.29; GL 1.01; TL 3.61; CI 86.36; SI 85.96; OI 8.77 (n=1). Small size. Body brown-coppery, with appendages and gaster lighter, coppery to yellowish. Body predominantly covered by thin, long, decumbent to suberect hairs.

Mandible smooth and shiny, without rugulae or striations on the dorsal surface. Head dorsum covered by long longitudinal costulae, deep and slightly irregular, semiparallel from the anterior margin of clypeus to the vertex margin; vertex with rugulae and inconspicuous striae and 10 to 12 hairs aligned transversely and directed above; surface of costulae covered by punctuation, giving them a rough appearance; intervals between costulae smooth and shiny. Mesosoma completely covered by narrow costulae, approximately 0.025 mm in width and slightly irregular margins on the dorsal surface; pronotum with transverse costulae anteriorly and several subparallel costulae on the dorsal surface. Declivitous face of propodeum smooth and shiny, with only a few lightly marked rugulae crosscutting at the base of the slope. Coxae always covered by transverse costulae; in procoxa, costulae narrower than those on the rest of the body. Petiole with different sculpture from mesosoma, smooth and shiny, with inconspicuous rugulae on the dorsal and lateral surfaces. Segments I and II of gaster smooth and shiny; posterior margin of gastral tergite I with a leathery pattern centrally. Anterior face of the first gastral segment bare; dorsal surface of gaster without rugulae or striae.

Mandible triangular and massive. Anterior margin of clypeus strongly convex, and clypeal lamellae strongly projected centrally, giving it a triangular appearance in frontal view. Lateral margins of head straight and subparallel, slightly tapered anteriorly. Occipital corners extend ventrally, forming two longitudinal keels that do not reach the median suture of the ventral surface of the head. Antennal scape narrow, almost twice as wide apically as at its base; scape slightly surpassing the vertex margin. Eye with a single ommatidium, located slightly behind the anterior half of the head in frontal view. Vertex margin strongly concave medially, giving vertex corners a heavily angled aspect.

Dorsal profile of mesosoma compact and flat in lateral view, with a light mesonotal impression. Dorsal surface of mesonotum, metanotum and propodeum with semiparallel and longitudinal costulae. Lateral margins of declivitous face of propodeum parallel; dorsal and declivitous face of propodeum undifferentiated, without a carina between the two; propodeal spiracle at the same level as the integument; propodeal spiracle with very wide opening. Propodeum with small lobes projecting from the angle formed between the dorsal and declivitous faces. Metacoxal projection absent.

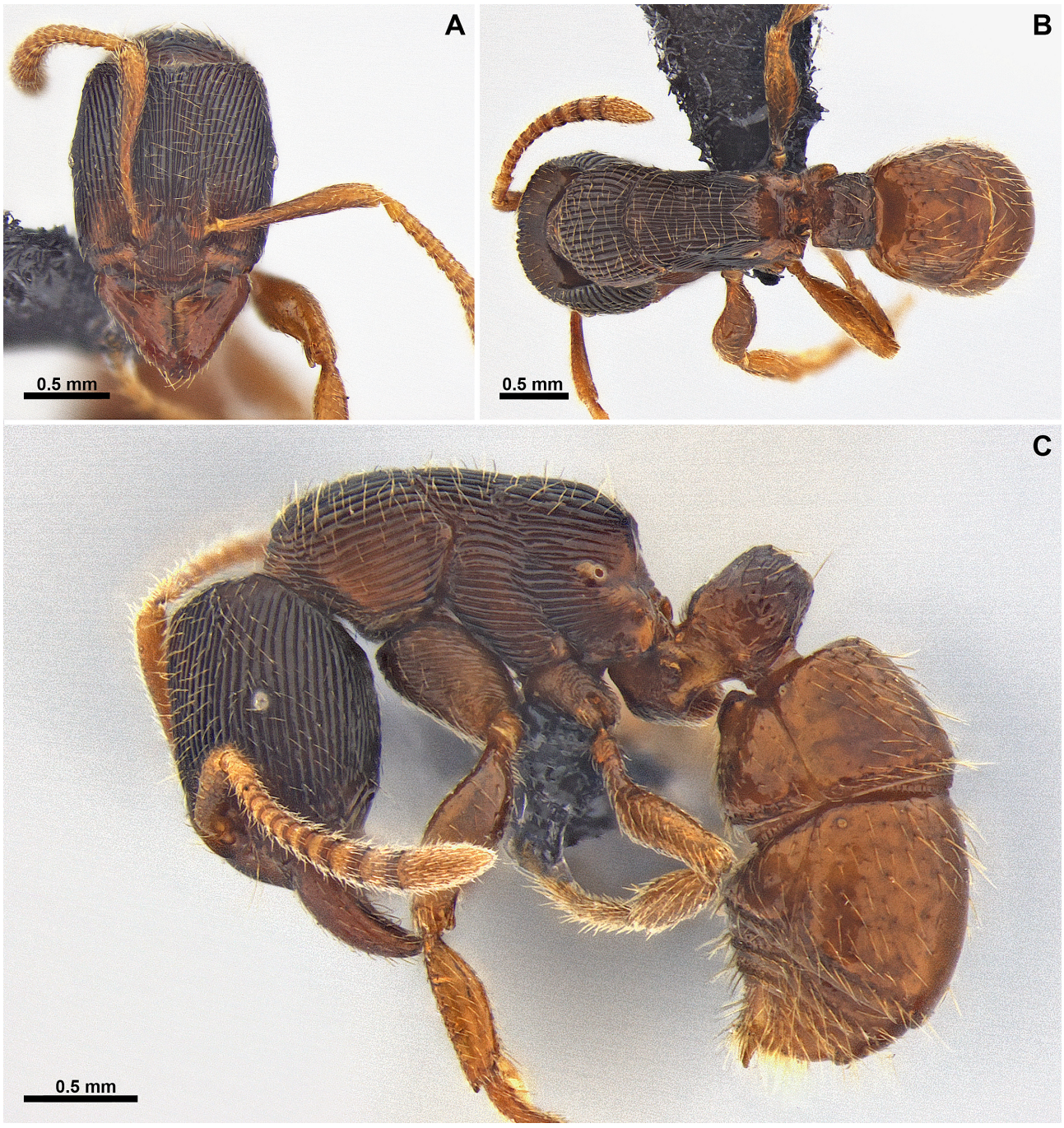

FIGURE 21. Holotype worker of *Gnamptogenys lenis* (DZUP549800) in A) frontal view; B) dorsal view; and C) lateral view.

Anterior and posterior margins of petiole subparallel in lateral view; petiole not pedunculated. Subpetiolar process predominantly opaque and subquadrate, very large, occupying more than half of the ventral surface of the petiole; subpetiolar process with a fenestra next to its posterior limit. In dorsal view, the first gastral segment trapezoidal, and the angles of its anterior margin rounded but differentiated. Prora reduced.

Etymology: From Latin *lenis*=smooth, in reference to the species smooth and shiny gaster, a characteristic that is key to distinguishing *G. lenis* from its closely related species, *G. lavra*. The species name is a feminine adjective in the nominative singular.

Distribution: *Gnamptogenys lenis* is known only from its type locality, in Seara, Santa Catarina (Fig. 17).

Natural History: The specimen was collected in an area at the southern distribution of Atlantic Forest, one of the most biodiverse biomes in the world. Since the specimen was collected during an expedition focused on the forest areas of the biome, it was likely collected in this vegetation type.

Comments: Although *G. lenis* is known from a single specimen, it can be clearly distinguished from its closest relatives, *G. lavra* and *G. reichenspergeri*. *Gnamptogenys lenis* has completely smooth and shiny mandible and gaster (shortly striate in *G. lavra* and *G. reichenspergeri*), and the scape surpasses the vertex margin (barely reaching the vertex margin in the other two species).

Gnamptogenys pernambucana (Santschi) species revived, new status

(Figure 22 and 23)

Holcoponera brasiliensis var. pernambucana Santschi 1929: 452, fig. 27 (w.) BRAZIL (Pernambuco) (attributed to Borgmeier). Junior synonym of *G. striatula*: Brown 1958: 229; Kempf 1972: 115; Bolton 1995: 210; Lattke 1995: 186.

Syntype: BRAZIL: Pernambuco: B. Pickel. 8°3'0.00"S, 34°53'60.00"W. ANTC40090 (1 worker) (CASENT0915125) [NHMB] [examined by images].

Diagnosis: Medium size (TL 4.15−4.71). Eye in a depression on the side of the head, the outer rim extending slightly beyond the lateral margin of the head in frontal view. Scape very short, always shorter than 0.8 mm (Fig. 22A, 23A). In lateral view, mesosoma strongly convex without a metanotal impression (Fig. 22C). Tibiae completely punctuated.

Redescription

Worker: HL 0.91−1.03; HW 0.75−0.85; ML 0.41−0.49; SL 0.72−0.85; EL 0.15−0.19; WL 1.21−1.38; PL 0.35−0.40; GL 1.25−1.49; TL 4.15−4.71; CI 80.50−85.00; SI 95.60−100.00; OI 19.10−24.20 (n=19). Body brown to black with lighter appendages, coppery to yellowish. Body predominantly covered by thin, long, erect and suberect hairs; hairs predominantly white to light beige; appendages densely covered by short to medium, decumbent hairs, directed apically, with some long suberect hairs sparsely distributed; 10 to 15 hairs at the anterior margin of clypeus, surpassing the basal margins of the mandible. Lateral portion of clypeus with a distinctively long hair directed anteriorly; two long hairs on the central portion of clypeus, just below the antennal insertions; two long hairs on the frontal lobes, close to the lateral margins. Scape covered with many decumbent hairs. Pygidium and hypopygium with abundant thick hairs on the entire surface.

Mandible with some conspicuous striae. Clypeus covered by longitudinal costulae. Head dorsum covered with long, slightly irregular longitudinal costulae from the anterior margin of clypeus to the occipital margin of the head. Ventral surface of head covered by costulae, in a converging pattern toward the ventral midline suture; occipital corner margin extends ventrally, not reaching the median suture of the ventral surface of the head. Mesosoma glossy and covered by narrow costulae, approximately 0.025 mm in width and slightly irregular margins, forming variable patterns on the dorsal surface. Pronotum with transverse costulae anteriorly, and longitudinal costulae on the dorsal surface. Dorsal surface of mesonotum, metanotum and propodeum with longitudinal costulae. Costulae of mesopleuron interrupted at posterior edge, delimiting the boundary between mesopleuron and metapleuron. Declivitous face of propodeum with longitudinal costulae, diverging towards the posterior margin of the propodeum. Petiole covered by narrow costulae, concentric in dorsal view, with transverse costulae throughout its length in frontal view. Coxae always covered by transverse costulae; on procoxa, costulae as wide as on the rest of the body. Segments I and II of gaster covered with longitudinal costulae. First gastral segment with at least five transverse costulae on anterior face.

Lateral margins of head straight and subparallel, slightly tapered anteriorly; triangular mandible; masticatory margins with many denticles, often looking inconspicuous; external margins of mandible slightly concave at half length. Anterior margin of clypeus strongly convex, clypeal lamella strongly projected in the central region, giving it a slightly pointed appearance in frontal view. Antennal scape narrow, slightly wider apically, surpassing vertex margin by about a sixth of the length. Compound eye small, rounded and convex, located slightly behind the anterior half of the head in frontal view and about seven ommatidia at larger diameter; eye inserted in a concavity, and, in frontal view, the outer rim of the eye does not extend beyond the side of the head; in lateral view, eye located behind the anterior half of the head. Vertex margin slightly concave medially; occipital corners prominent and rounded in lateral view.

Pronotum with angled humeral corners, giving it a slightly trapezoidal shape in dorsal view. Mesosoma compact and convex in lateral view, without a mesonotal impression. In dorsal view, lateral margins of declivitous face of propodeum divergent, the angle between the dorsal and declivitous face of propodeum apparent; propodeal

spiracle not high, at the same level as the sculpture; propodeal spiracle distant from the declivitous margin by a distance equal to or greater than its opening and near the upper limit of the metapleural gland bulla; propodeal spiracle with wide opening. Propodeum without spines or projections. Mesepisternal suture wide, forming a large space between the posterior margin of propleuron and anterior of mesopleuron. Metacoxal spine very prominent, upright and long.

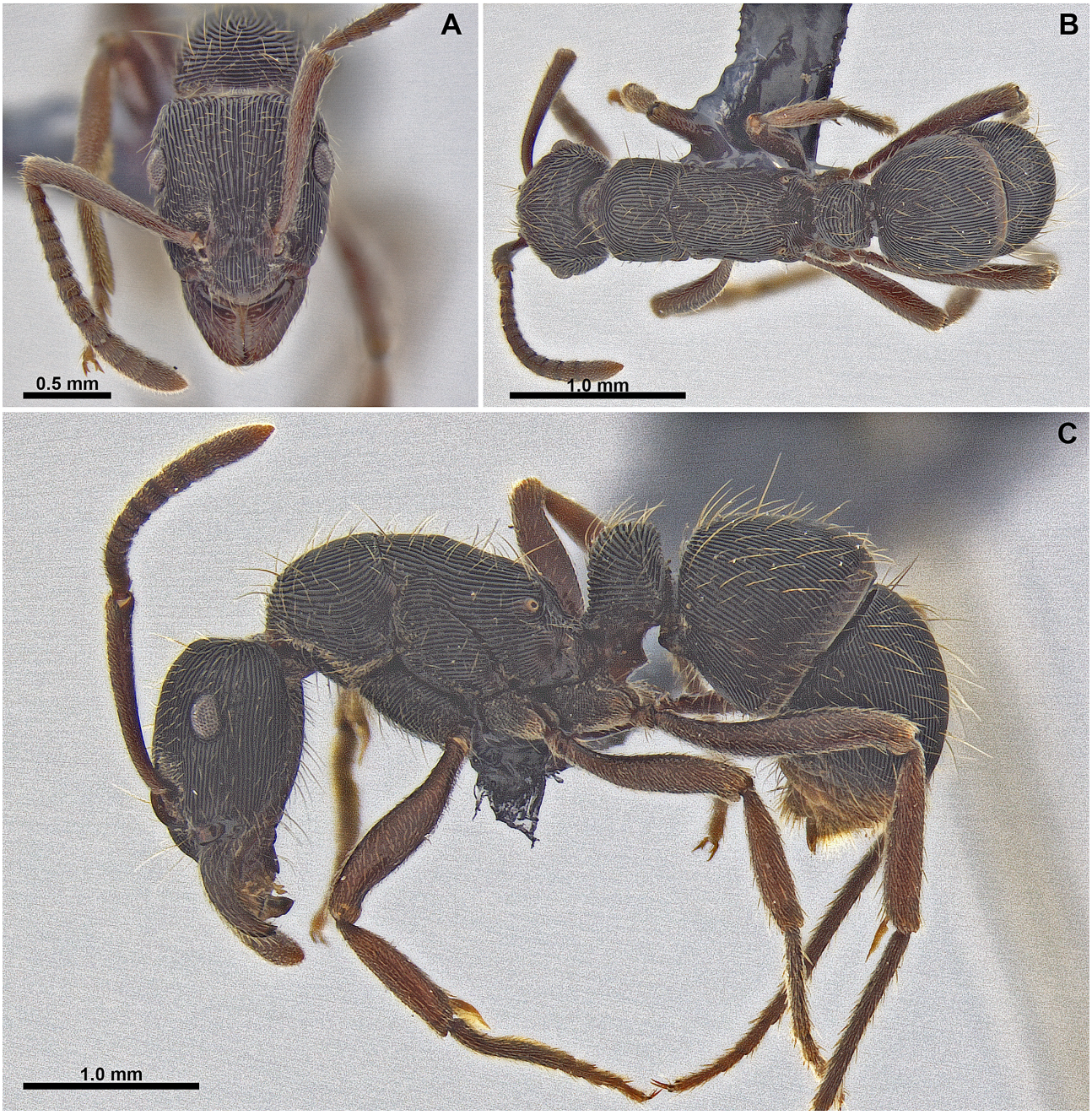

FIGURE 22. Worker of *Gnamptogenys pernambucana* (DZUP549823) in A) frontal view; B) dorsal view; and C) lateral view.

Petiole sessile; in lateral view, anterior and posterior margins of petiole subparallel; dorsal margin of petiole straight, slightly raised posteriorly. In dorsal view, petiole oval; in frontal view, petiole slightly pointed apically; subpetiolar process predominantly opaque, subquadrate, with a fenestra close to its posterior limit. Prora very prominent, V-shaped in ventral view. Second gastral tergite distinctly longer than the second sternite, giving the gaster an arched aspect in lateral view.

Dealate queen: HL 1.07; HW 0.91; ML 0.52; SL 0.96; EL 0.20; WL 1.57; PL 0.41; GL 1.82; TL 5.39; CI 85.04;

SI 105.49; OI 21.97 (n=1). Color, pilosity and sculpture as the workers. Head dorsum with one ocellus (Fig. 23A); compound eye larger than on workers. Scutum flat in lateral view (Fig. 23C); notaulices not distinguishable; indistinguishable parapsidal lines through the sculpture; parapsides obsolete; tegulae wide, rounded, dark color and translucent; suture between anepisternum and katepisternum absent. Axillae laterally rounded; scutum-scutellum sulcus poorly marked. Scutellum rounded in lateral view. Dorsal surface of propodeum slightly convex below the level of the scutellum, with well-defined lateral margins.

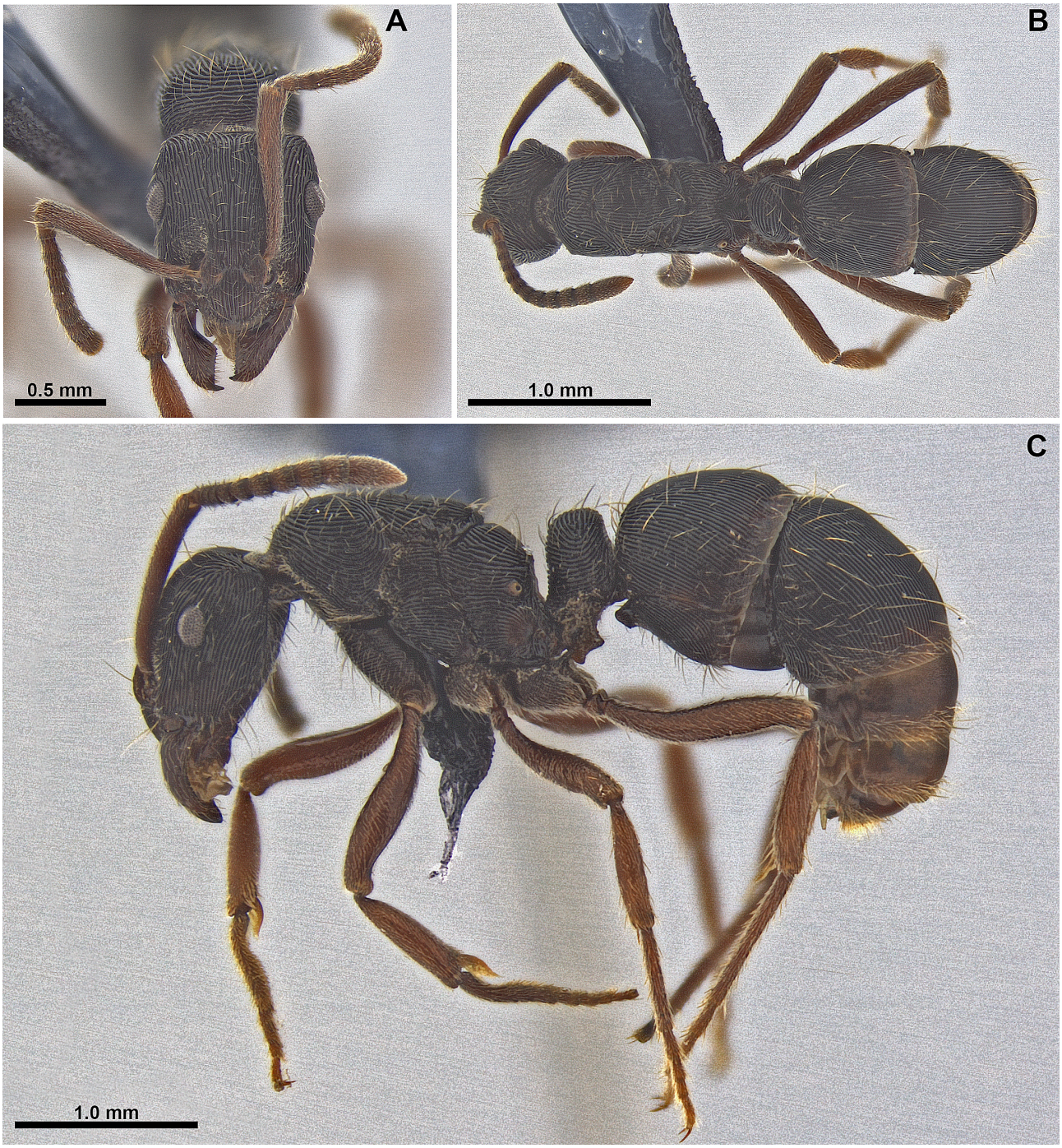

FIGURE 23. Queen of *Gnamptogenys pernambucana* (DZUP549824) in A) frontal view; B) dorsal view; and C) lateral view.

Etymology: Santschi (1929) likely named this species after the state of the type locality, Pernambuco, Brazil. The name is a feminine noun in the genitive case.

Distribution: *Gnamptogenys pernambucana* is widely distributed in Brazil, occurring in the states of Bahia, Mato Grosso do Sul, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio Grande do Sul and Sergipe (Fig. 17). The wide and patchy distribution might suggest that many records can still be found. In fact, since the species was synony-

mized under *G. striatula* by Brown (1958), many records of *G. striatula* might actually be *G. pernambucana*.

Natural History: Little is known about the biology of *G. pernambucana*, but label information shows that this species is usually collected in areas of open vegetation such as the arboreal Caatinga, Canga and open grasslands, with at least one record also in the wetlands of Pantanal. Most of the collected specimens were sampled with soil baits of sardine and honey and, sometimes, with pitfall traps, suggesting that the species usually forages on the ground.

Comments: This species, previously synonymized with *G. striatula*, is distinguishable from the latter by the aforementioned diagnostic characters. However, measurements and proportions of the scape in relation to the head are the principal means of distinguishing between the two species. Although the differences between this species and *G. striatula* are not striking, they seem consistent enough to define different species, especially since they occur in sympatry. During this revision, we were able to identify both *G. striatula* and *G. pernambucana* in the same area of the Parque Estadual de Vila Velha, Paraná, Brazil, the first one occurring in forest areas and the second one only in open field areas, with clear morphological differences. Additionally, a phylogenomic analysis of 2,500 ultra-conserved elements across 322 *Gnamptogenys* species supports our hypothesis that this is a separate lineage, recovering *G. pernambucana* as sister to *G. moelleri* (Camacho *et al*., in prep).

Examined material: BRAZIL: Amazonas: Santo Antônio do Içа, 3.17862°S, 67.92742°W, 15.ix.2003, J.M.S. Vilhena col., n. PLOT 8—Isca# 2 (1 worker) (DZUP549823) [INPA]. Bahia: Contendas do Sincorá—F. N. C. Sincorá, 14º00'S, 41º10'W, iii-iv-2014, G., Santos-Silva col. (2 workers) [DZUP]; Entre Vitória da Conquista e Anagês, 12.xi.1990, Diniz e Brandão col. (2 workers) [MZSP]; Euclides, 10°25.395'S, 39°02.648'W, 14.xi.2010, A. M. Medina; E. M. Campos; P. L. Paixão; P.L.O. Rebouças col., n. 4 (1 worker) [MZSP]; Ilheús—Faz. Primavera, VI.1997, M. F. S., Santos col. (2 workers) [CPDC]; Itaberaba—Faz. Riacho do uruçu, 15.xii.1990, Brandão, Diniz e Oliveira col. (1 worker) [MZSP]; Marcionilio Souza, 24.vii.1993, Lacan S. col., n. 4664 (6 workers) [CPDC]; Milagres, 12°54.411'S, 39°50.863'W, 09.xi.2010, M.A. Ulysséa; A. M. Medina; E. M. Campos col., n. 3 (1 worker) [MZSP]; Milagres, 12°54.411'S, 39°50.863'W, 13.xii.2010, M.A. Ulysséa; A. M. Medina; E. M. Campos col., n. 2 (1 worker) [MZSP]; Milagres, 12°54.411'S, 39°50.863'W, 17.i.2011, M.A. Ulysséa; A. M. Medina; E. M. Campos col., n. 5 and 6 (2 workers) [MZSP]; Mucugê, 6-12.xii.1990, Brandão, Diniz e Oliveira col. (4 workers) [MZSP]. Mato Grosso do Sul: Corumbá—Faz. Nhumirim—Embrapa Pantanal, 13-14.i.2015, Reis Filho, W. et. al. col. (1 worker) [DZUP]. Pará: Serra Norte—Carajás, vii/viii.1985, Brandão e Benson col. (96 workers) [MZSP]; Serra Norte—N1, 25.vii.1985, col., n. 14 (2 workers) [MZSP]; Serra Norte—N1 Canga, 28.i.1985, (1 worker) [MPEG]. Paraná: Ponta Grossa—PE Vila Velha, 2015, W. Franco and R. Feitosa col. (1 worker) [DZUP]. Paraíba: João Pessoa UFPB, 02-05.iv.1995, M. F. S. Santos col., n. 4921 (1 worker) [CPDC]. Pernambuco: Recife, 1939, L. Lima Castro col., n. 1913 (3 workers) [MZSP]. Piauí: Floriano—Buriti, 5–12.xi.1991, Brandão e Moutinho col. (25 queens) (DZUP549824) [MZSP]; Oeiras—Faz. Talhada, 13–17.xi.1991, Brandão e Moutinho col. (1 worker) [MZSP]. Rio Grande do Sul: Lavras do Sul, 30º42'02"S, 53º58'53"W, xii.2012, PL1941, PELD CSUL col. (1 worker) [DZUP]; Lavras do Sul, 30º42'02"S, 53º58'53"W, xii.2012, PL1724, PELD CSUL col. (1 worker). Sergipe: Itaporanga da ajuda, 6-8.ix.1993, CRF Brandão col. (3 workers) [MZSP].

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