

Taxonomic notes on *Pertyella* Mickel, 1952 (Hymenoptera; Mutillidae): Morphological characters rediscussion, new species, new combinations, new records, and species grouping

Notas taxonómicas sobre *Pertyella* Mickel, 1952 (Hymenoptera: Mutillidae): rediscusión de caracteres morfológicos, especie nueva, combinaciones nuevas, registros nuevos y agrupaciones de especies

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Abstract

The species formerly included in the *Pertyella camposseabrai* species-group are reviewed. The following two species are transferred from the genus *Mutilla* to *Pertyella*: *P. angulosa* (Burmeister, 1854) new combination, and *P. carinigena* (Cresson, 1902) new combination. The following new synonymies are proposed: *P. mayri* (Kohl, 1882); *P. paulista* Casal, 1964; *P. viuva* Casal, 1964; *P. itinga* Casal, 1964; *P. camposseabrai* Casal, 1964; *P. uzai* Fritz, 1990 and *P. diasi* Fritz, 1990 are jr. synonyms of *P. angulosa*; *P. lenti* Casal, 1964 is a jr. synonym of *P. carinigena*; *P. aguaz* Fritz, 1990 is a jr. synonym of *P. cordoi* Fritz, 1990. A new species in this group, *Pertyella quirosae* sp. nov., is described. Most characters that were formerly used to define this species-group are not consistent or exclusive to the group. Because the diagnostic features and component species in this species-group were changed, and because an older name is now available, this group of species is now called the *P. angulosa* species-group. Females of this group can be recognized by having the mesosoma with lateral stripes of dense silvery or whitish setae. A key to the species of the *P. angulosa* species-group and new distribution records are provided.

Resumen

Se revisan las especies anteriormente incluidas en el grupo de especies de *Pertyella camposseabrai*. Las siguientes dos especies se transfieren del género *Mutilla* a *Pertyella*: *P. angulosa* (Burmeister, 1854) combinación nueva y *P. carinigena* (Cresson, 1902) combinación nueva. Se proponen las siguientes sinonimias nuevas: *P. mayri* (Kohl, 1882); *P. paulista* Casal, 1964; *P. viuva* Casal, 1964; *P. itinga* Casal, 1964; *P. camposseabrai* Casal, 1964; *P. uzai* Fritz, 1990 y *P. diasi* Fritz, 1990 son jr. sinónimos de *P. angulosa*; *P. lenti* Casal, 1964 es un jr. sinónimo de *P. carinigena*; *P. aguaz* Fritz, 1990 es un jr. sinónimo de *P. cordoi* Fritz, 1990. Se describe una especie nueva en este grupo, *Pertyella quirosae* sp. nov.. La mayoría de los caracteres que se usaban anteriormente para definir este grupo de especies no son consistentes o exclusivos del grupo. En virtud de que se cambiaron las características de diagnóstico y las especies componentes de este grupo de especies, y debido a que en este momento se dispone de un nombre más antiguo, ahora se denomina especies del grupo *P. angulosa*. Las hembras de este grupo pueden ser reconocidas por tener el mesosoma con franjas laterales de densas setas plateadas o blanquecinas. Se proporciona una clave para las especies del grupo *P. angulosa* y nuevos registros de distribución.

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Keywords:

Pseudomethocini, mutillid wasp, Neotropical, distribution, synonymies.

Palabras clave:

Pseudomethocini, avispas mutílidas, neotrópico, distribución, sinonimias.

Introduction

Pertyella Mickel, 1952 is a Neotropical genus of mutillid wasps from the subfamily Sphaerophthalminae, tribe Pseudomethocini Brothers, 1975, with 21 described species, one of these subdivided into two subspecies, distributed from Mexico to Argentina (Mickel 1952; Casal 1959, 1964a, 1964b, 1967; Fritz 1990; Cambra & Quintero 1992; Fritz & Pagliano 1993; Alvarenga et al. 2017; Pagliano et al. 2020). Casal (1964b) erected the *Pertyella camposseabrai* species-group to include five species of *Pertyella* which shared a combination of four color and setae characters as well as two structural characters which will be described below. Fritz (1990) described four species for a total of nine species in this group, five of them occurring in Brazil and the other four occurring in Argentina, Bolivia, and Paraguay. The males of the *Pertyella camposseabrai* species-group are unknown, but some are known for the *P. holmbergi* species-group (Cambra et al. 2020).

Little information is known about the biology of *Pertyella*. They are diurnal and knowledge about their hosts is still incipient. Rocha-Filho et al. (2008), reported that the genus may be a potential parasitic natural enemy of *Epicharis* (*Xanthepicharis*) *bicolor* Smith. In the present paper, known species of the *P. camposseabrai* species-group are reviewed, a new species is described, a key for species, distribution records, and synonymies are presented.

Material and methods

The following abbreviations are used for morphology: T2, T3, S2, S3, etc., to denote the second, third, etc, metasomal terga and sterna, respectively. Acronyms for institutions where specimens examined are deposited are: American Museum of Natural History, New York (AMNH); Academy of Natural Sciences, Philadelphia (ANSP); Carnegie Museum of Natural History, Pittsburgh (CMNH); Departamento de Zoología, Universidade Federal do Paraná, Curitiba, Paraná, Brazil (DZUP); Department of Biology Insect Collection, Utah State University, Logan, Utah, USA (EMUS); Florida State Collection of Arthropods, Gainesville, Florida, USA (FSCA); Instituto Fundación Miguel Lillo, Tucumán, Argentina (IFML); Museu de Biologia Professor Melo Leitão, Instituto Nacional da Mata Atlântica, Santa Teresa, Espírito Santo, Brazil (MBML-INMA); Manfredo A. Fritz collection (MAF); Museo de Invertebrados G. B. Fairchild, Universidad de Panama (MIUP); Martin Luther University of Halle-Wittenberg, Germany (MLU); Museu Paraense Emílio Goeldi, Belém, Pará, Brazil (MPEG); Museu de Zoologia da Universidade de São Paulo, São Paulo (MZUSP); Natural History Museum, Vienna, Austria (NHM); National Museum of Natural History, Washington, D.C., USA (NMNH); Museu de História Natural da Bahia, Salvador, Bahia, Brazil

(MHNBA); Museum für Naturkunde Berlin, Berlin, Germany (ZMB).

In the material examined section abbreviations, acronyms and additional or corrected data by the authors are given in brackets.

Results***Pertyella angulosa* species-group, new combination (=P. *camposseabrai* species-group).**

Because the diagnostic features and component species in *P. camposseabrai* species-group were changed, and because an older name is now available, this group of species is now called the *P. angulosa* species-group.

Diagnosis. Females: presence of longitudinal whitish setal bands along the lateral margins of the mesosomal dorsum. Males are unknown.

Comments. Casal (1964a, b) mentioned that the species of this group are recognized by the fact that they all present a pair of yellow or red integumental spots on T2, lateral bands of dense silvery or whitish pubescence on the mesosoma, the presence of three pubescent patches on T4 (one medial and two laterals, one in each side of T4), along with the absence of a lamella on the basal ventral border of the mandible and the absence of micropunctures interspersed with thick punctation near the lateral felt lines of T2.

The study of specimens of the *Pertyella holmbergi* and *P. angulosa* species-groups indicates that the absence or presence of thick punctures mixed with micropunctures near of the felt lines of T2 is not a valid character to separate these groups as suggested by Casal (1964b). Some species of the *P. holmbergi* species-group also lack a lamella on the basal ventral border of the mandible. The T4 setal markings are also variable among species in the *P. holmbergi* species-group. The new species described below (*P. quirosae* **sp. nov.**) has the cuticular spots present or absent as an intraspecific variation.

Key to females of *Pertyella*

1. Mesonotum with lateral longitudinal stripes of dense silvery or whitish setae, sometimes restricted to propodeum; T2 disc usually with circular or ovate cuticular yellow or orange-reddish spots
2 (*P. angulosa* species-group)

- Mesonotum lacking longitudinal stripes of dense silvery or whitish setae, at most with posterolateral silvery or golden transverse patches; T2 disc without circular cuticular yellow or orange-reddish spots, at most with small triangular patches obscured by dense setae
P. holmbergi species-group
(not treated in this paper; see key in Fritz & Pagliano 1993)

2. T2 disc posterolaterally with oblique dense white setal patches (Figs 7b, 8a), if spots present on T2, then they are partially covered with this

setal patch; mesosomal setal stripes restricted to propodeum

P. quirosae sp. nov.

-. T2 disc always with distinct yellow or reddish sub-circular or ovate cuticular patches, without dense white setal patch between cuticular spot and T2 lateral margin; mesosomal setal stripes usually extending anteriorly onto mesonotum or pronotum **3**

3. T2 pair of integumental spots with dense and semi-confluent punctation, interspaces reduced to fine longitudinal carinae

P. angulosa (Burmeister)

-. T2 pair of integumental spots with scattered and separated punctation, interspaces smooth and shiny or tightly microstriate **4**

4. Interspaces of integumental spots of T2 tightly microstriate; genal carina ventrally raised, but not forming a tooth

P. carinigena (Cresson)

-. Interspaces of integumental spots of T2 smooth; genal carina ventrally raised, forming a strong and sharp tooth *P. cordoi* Fritz

Pertyella angulosa (Burmeister, 1854) New combination

(Figs 1–4, 9)

Mutilla angulosa Burmeister, 1854. Holotype: Lagoa Santa. (MLU). Pagliano et al. (2020) *incertae sedis*.

Mutilla mayri Kohl, 1882. Lectotype: Ceará, designated here. (NHM) (Fig. 2 a-d). Pagliano et al. (2020) *incertae sedis*. **New synonymy.**

Pertyella mayri: Alvarenga et al. (2017) combination under *Pertyella* and record for Mato Grosso.

Pertyella viuva Casal, 1964a. Holotype: Brazil, Paraíba, Santa Luzia, Brandão, vii.1956, A.G.A. Silva. (AMNH). **New synonymy.**

Pertyella itinga Casal, 1964a. Holotype: Brazil, Minas Gerais, Januária, 26.xi.1948. (AMNH). **New synonymy.**

Pertyella camposseabrai Casal, 1964a. Holotype: Brazil, Pará, Mangabeira, Mocajuba, vii. 1953 (Orlando Rêgo). (AMNH). **New synonymy.**

Pertyella paulista Casal, 1964a. Holotype: Brazil, São Paulo, Barueri, iv.1958, K. Lenko. (AMNH) **New synonymy.**

Pertyella uzai, Fritz, 1990. Holotype: Paraguay, San Pedro, Cororó, Río Ypané, xi.79, Fritz. (IFML). **New synonymy.**

Pertyella diasi Fritz, 1990. Holotype: Brazil, Brasília DF, Planaltina, Areial-Estrada, 4.v.73, B. Dias. **New synonymy.**

Additional material examined (54 specimens). Argentina: Corrientes, Ytuzaingo, iii.82, Fritz (1 MIUP). Brazil: S[ão] P[aulo], Campinas, Unicamp, 25.xi-7.xii.1996, L. Generani-Scaramozzino (1 MIUP); São Paulo, Cajuru, Faz[enda] Rio Grande, 18.xii.1999, G.A.R. Melo (1 DZUP); São Paulo, Ribeirão Preto, Campus da USP, 16.vii.1998, G.A.R. Melo (1 DZUP); São Paulo, Jaboticabal, UNESP, 13.ix.2010, I.C.F. Martins (1 DZUP). Santa Catarina, Nova Teutônia, ii.1966, F. Plaumann (1 EMUS). Maranhão, Vila Maranhão, 2.x.1992, R. Cambra (1 MIUP); Maranhão, São Luís, Floresta Sacavém, 30.ix-1.x.1992, R. Cambra (3 MIUP); Maranhão, Chapadinha, 14.iv.2012, J.R. Souza (1 DZUP); Maranhão, Alto Parnaíba, Estação 9, 7.viii.2013, L.P. Amaral-Neto (1 DZUP). Pará, Mocajuba, Mangabeira: i.1953, O.M. Rego (1 MZUSP); 15.viii.1953, O.M. Rego (7 DZUP); Pará, P. de Pedras, 6.iii.1979, M.F. Torres (1 MPEG). Bahia (1 paralectotype NHM); Bahia, Cruz Das Almas, 10.xii.1993, J. Delabie (1 MIUP), 19.iii.1995, M. Smith (1 MIUP); Bahia?, Bom Jesus, Sambaiba, 28.ix.1992, P. Cardoso (1 MIUP); Bahia, Guarajuba, Camaçari, 30.ii.1991, J. Delabie (1 MIUP); Bahia, Amélia Rodrigues, 13.iii.2022, R.L. Ramos (1 MHNBA); Bahia, Tabocas do Brejo Velho, Parque Solar Fotovoltaico Horizonte

MP, III.2022, Pitfall de solo, Silva S.E., MBML-INV 2720 (1 MBML-INMA); Minas Gerais, Uberlândia, ix.2007, R.S.M. Feitosa (1 MZUSP). Ceará, Ubajara, i.1995, Miglioli (1 MIUP). Paraíba, Independência (= Guarabira) (1 NMNH). Espírito Santo, Biriricas, Fazenda Waichert, 4.vii.2010, C. Waichert (1 UFES). Distrito Federal, Brasília, FLONA de Brasília, Gleba 1, xi.2012, D.R. Luz (2 DZUP). Goiás, Campinaçu, Serra da Mesa, 13°52'S 48°23'W, 1.iii.1996, C.I. Yamamoto (1 MZUSP). Paraguay: San Bernardino, 8.i., K. Fiebrig, S. V. (1 ZMB); Parque Nacional Cerro Cora, Amambay, 1-6.ii.2006, B. Garcete (1 MIUP); Concepción, estancia Don Carlos, 23°24' S 56°30' W, 160 m, B. Garcete (4 MIUP); Concepción, Cororo, 25.ii-1.iii.1997, B. Garcete (2 MIUP); Paraguari, P.N. Ybycui, 118 m, 26°02'40" S 56°52'20" W, 9.ii.2007, B. Garcete (1 MIUP); Canindeyu, Reserva Nat. del bosque Mbaracayu, Aguara-ñu, 24°10' S 55°15' W, 24-31.vii.1997, B. Garcete (1 MIUP); Canindeyu, Tava Yopoi, 24°22'S 55°53'W, 26.x-4.xi.2007, U. Dreschel (1 FSCA); Cordillera, Inst. Agr. Nac., 7.ii.1981, R. Cave (1 MIUP); San Pedro, Liberación, 3.i.1994, B. Garcete (1 MIUP); Caaguazu, xii, 77, Fritz (1 paratype AMNH); San Pedro, Cororó, Río Ypané, xi.79, Fritz (1 paratype AMNH); I[nstituto] A[gronómico], Caacupe, 16.ix.1980 (1 AMNH); Instituto Agronómico, Departamento Cordillera, 7.ii.1981, R. Cave (1 NMNH). Itapua, Alto Vera, 9-10. ii.1999, 26°26' S 55°45'W, B. Garcete (2 MIUP).

Comments. The type specimen of *P. angulosa* (Fig. 1 a-e) is labelled as "*rugulosa*" (Fig. 1f). The paralectotype of *P. mayri* from Bahia has $\frac{3}{4}$ of left dorsal area of head not present (Fig. 3b). The other paralectotype (Fig. 3a) lacks locality information. Both specimens are deposited in NHM, including one from Ceará state (Fig. 3c).

Variability in the length of setal stripes or color and size of integumental spots on T2 are common in other genera of Mutillidae, as observed by Bartholomay et al. (2020) in *Traumatomutilla* and also by Williams et al. (2022) in *Cephalomutilla*. Therefore, we consider these as intraspecific morphological variations and synonymize *P. diasi*, *P. viuva*, *P. itinga*, *P. uzai*, *P. mayri* and *P. paulista* under *P. angulosa*.

Distribution (Fig. 9). Argentina, Brazil (Brasília D.F.; states of Ceará; Pará; Paraíba; Minas Gerais; Maranhão; Bahia; Goiás, Mato Grosso; Mato Grosso do Sul (Luz et al. 2017 as *P. camposseabrai*); Espírito Santo; São Paulo; Santa Catarina (Fritz 1990); Paraguay. First record for Maranhão. This species represents the most northeastern distribution for the *P. angulosa* species-group.

Pertyella carinigena (Cresson, 1902) New combination

(Fig. 5)

Mutilla carinigena Cresson, 1902. **Lectotype**, designated here. Chapada/ Nov[ember]/ Type Cress/ *M. carinigena* Cress./ *Pertyella carinigena* (Cresson) Syntype det. D. Quintero '96. (CMNH) (Fig. 5 a-d). Paralectotypes from Chapada: two females collected in April, one female collected in May (CMNH). Pagliano et al. (2020) *incertae sedis*.

Pertyella lenti Casal, 1964b. Holotype: R[epública] A[rgentina], Tucumán, S.[an] P[edro] de Colalao, ii.49, Arnau. (AMNH) **New synonymy.**

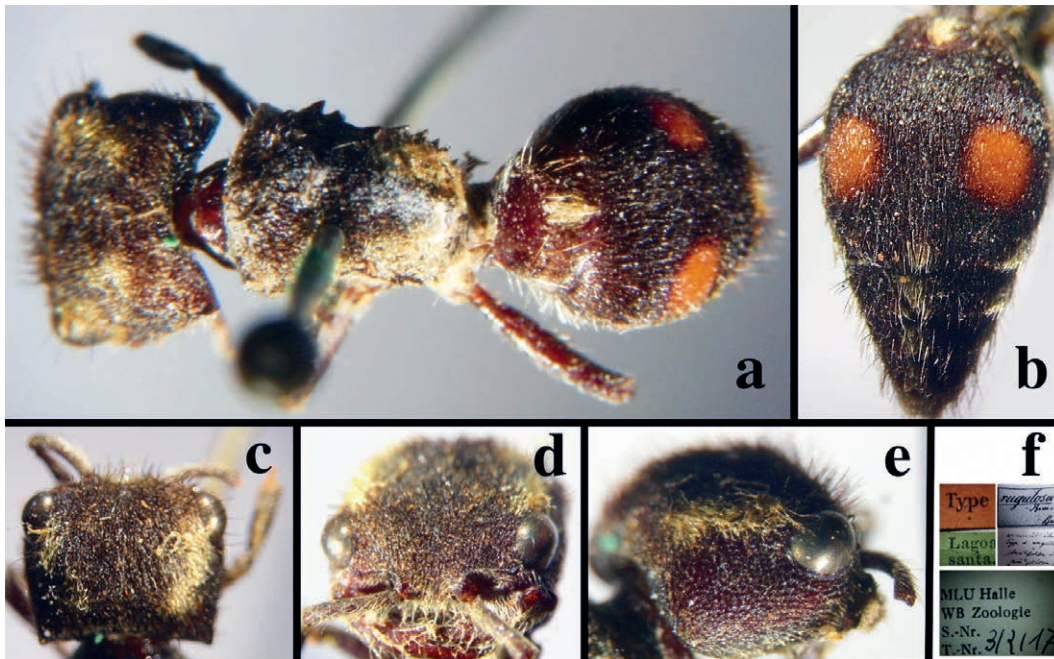


Figure 1. *Pertyella angulosa* (Burmeister, 1854), female holotype. (a) Dorsal, (b) Metasoma, dorsal, (c) Head, dorsal, (d) Head, frontal, (e) Head, lateral, (f) Specimen labels. Deposited at MLU.

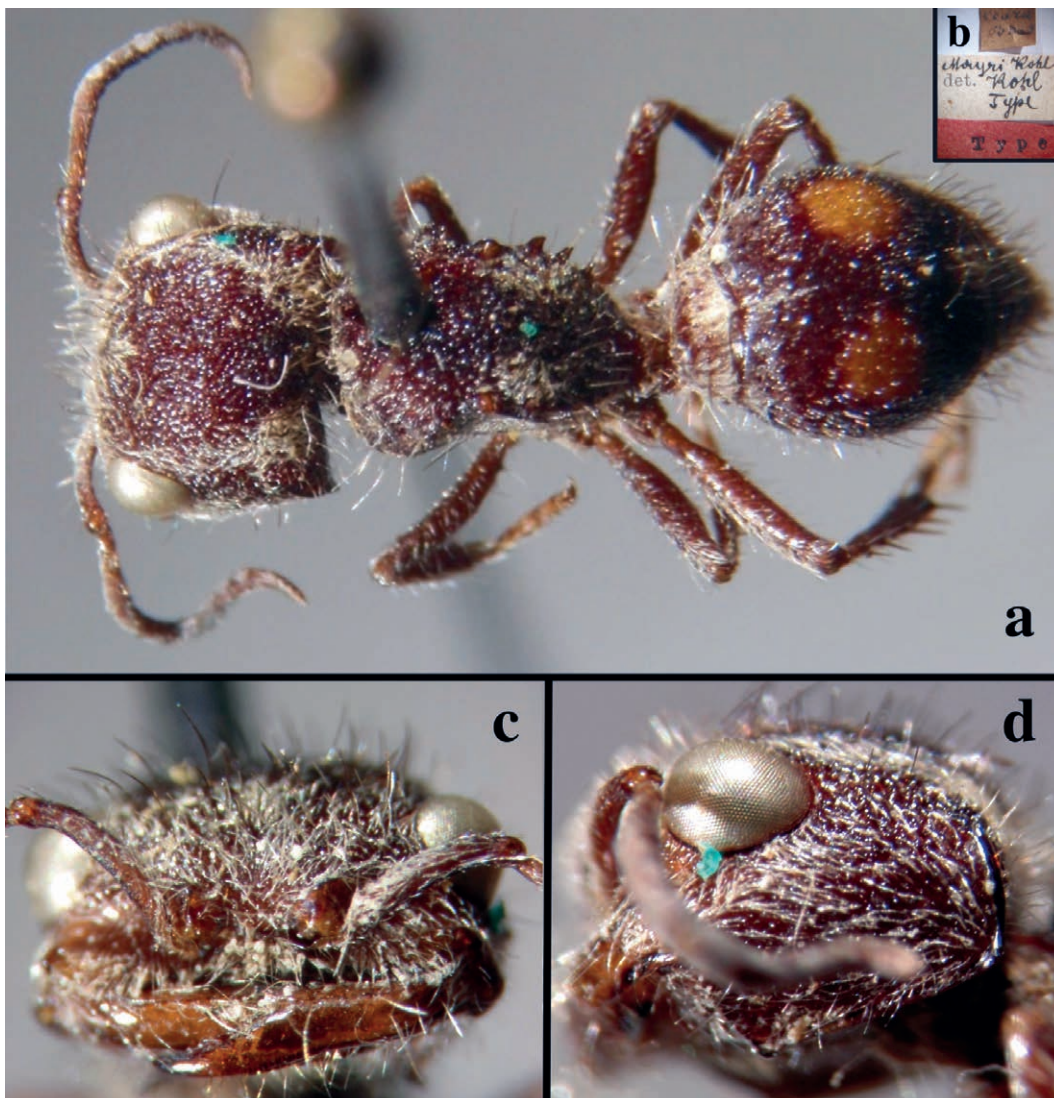


Figure 2. *Pertyella angulosa* (Burmeister, 1854). Female lectotype of *Pertyella mayri*, **syn. nov.** (a) Dorsal, (b) Specimen labels, (c) Head, frontal, (d) Head, lateral. Deposited at NHM.

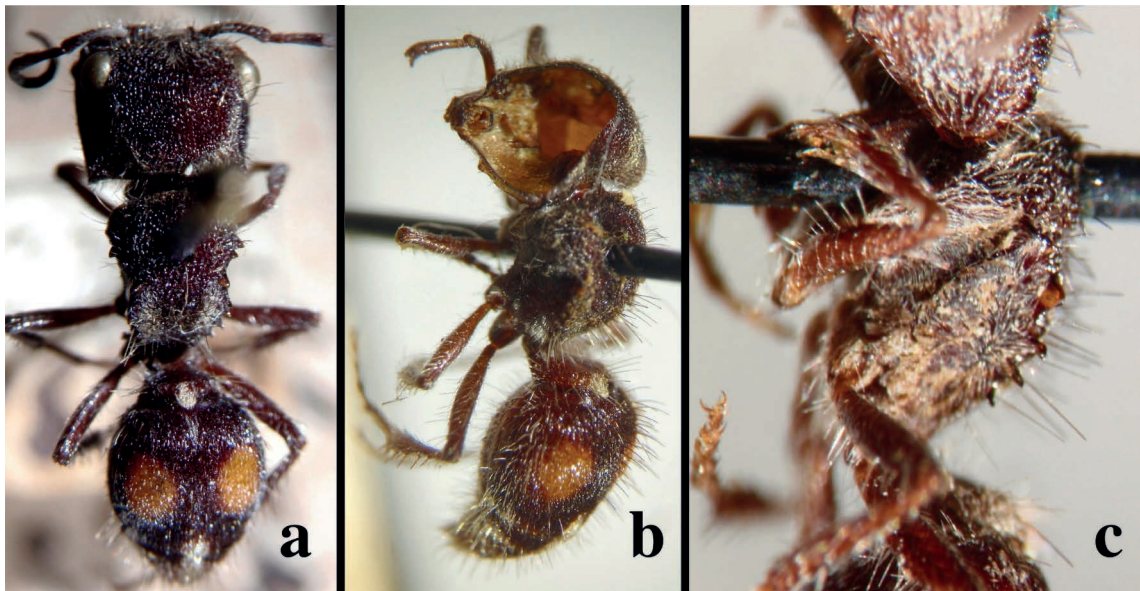


Figure 3. *Pertyella angulosa* (Burmeister, 1854). Female paralectotypes of *Pertyella mayri*, **syn. nov.** (a) Paralectotype without locality, dorsal, (b) Paralectotype from Bahia, Brazil, dorso-lateral, (c) Paralectotype from Ceará, Brazil, lateral view of mesosoma. Deposited at NHM.

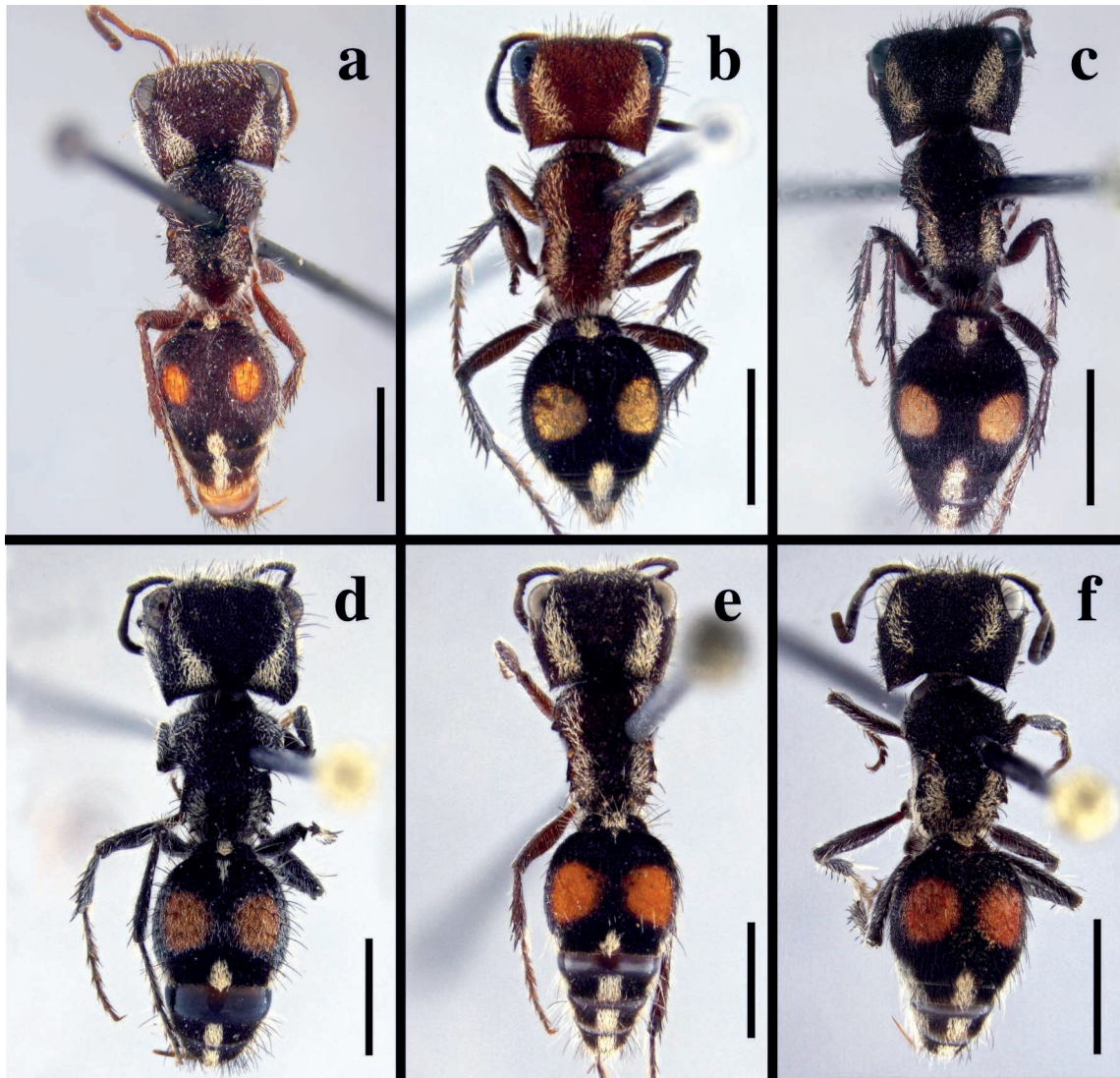


Figure 4. Additional material studied of *Pertyella angulosa* (Burmeister, 1854), female specimens in dorsal view. (a) Formerly *P. viuva* from Paraíba, Brazil. (b) Formerly *P. camposseabrai* from São Paulo, Brazil. (c) Formerly *P. uzai* from Paraguay. (d) Formerly *P. diasi* from Maranhão, Brazil. (e) Formerly *P. camposseabrai* from Pará, Brazil. (f) Formerly *P. paulista* from Espírito Santo, Brazil. Scale = 2 mm.

Additional material examined (2 specimens). Brazil, Chapada, Aug. (1 ANSP), Chapada, Oct. (1 ANSP). Both specimens with the labels: *carinigena*/compared with type; *M. carinigena* Cress. These labels handwritten, probably by C. Mickel.

Comments. The sculpture on the T2 cuticular patches is diagnostic, in that the macropunctures with setae are widely separated, but their intervals are glabrous and microstriate. Superficially, this is similar to *P. angulosa*, but in that species there are numerous small setae designating punctures between the larger punctures with large setae.

Distribution (Fig. 9). Argentina; Bolivia (Fritz 1990); Brazil (state of Mato Grosso).

***Pertyella cordoi* Fritz, 1990**

(Fig. 6)

Pertyella cordoi Fritz, 1990. Holotype: Argentina, Salta, La Viña, XII.83, Fritz (MAF). Not examined.

Pertyella aguaz Fritz, 1990. Holotype: Paraguay, Caaguazú, xii.77, Fritz (MAF). Not examined. **New synonymy.**

Additional Material examined (2 specimens). Paraguay: Parque Nacional Cerro Cora, Departamento Amambay, 23.ii.1981, col. R. Cave, (1 MIUP); 1-6.ii.2006, R. Barrera (1 MIUP).

Comments. *Pertyella cordoi* and *P. aguaz* differ only in the size and color of the integumental spots on T2, and also in the length of the lateral longitudinal mesosomal whitish setal stripes. We consider these as intraspecific morphological variations and synonymize *P. aguaz* under *P. cordoi* (Fig. 6 a-b).

Distribution (Fig. 9). Argentina, Paraguay.

***Pertyella quirosae* Cambra & Williams sp. nov.**

(Figs 7–8)

Diagnosis. FEMALE. This species can be recognized by the following combination of characters: mesosoma with lateral dense whitish setal stripes restricted to propodeum; T2 disc with or without orange or orange-reddish cuticular spots, always with oblique patch of dense whitish setae posterolaterally. MALE. Unknown.

Description. FEMALE (holotype). Body length 8.5 mm. **Coloration and setae:** Body cuticle entirely blackish, except T2 sometimes with lateral subcircular spot of orange or orange-reddish cuticle (Fig 8 b-c); body setae mostly black except with moderately sparse whitish setae on frons, gena, scape, mandible, legs, mesosomal pleura, T1-7 laterally, and S1-7 entirely; and with dense patches of whitish or pale golden setae as follows:

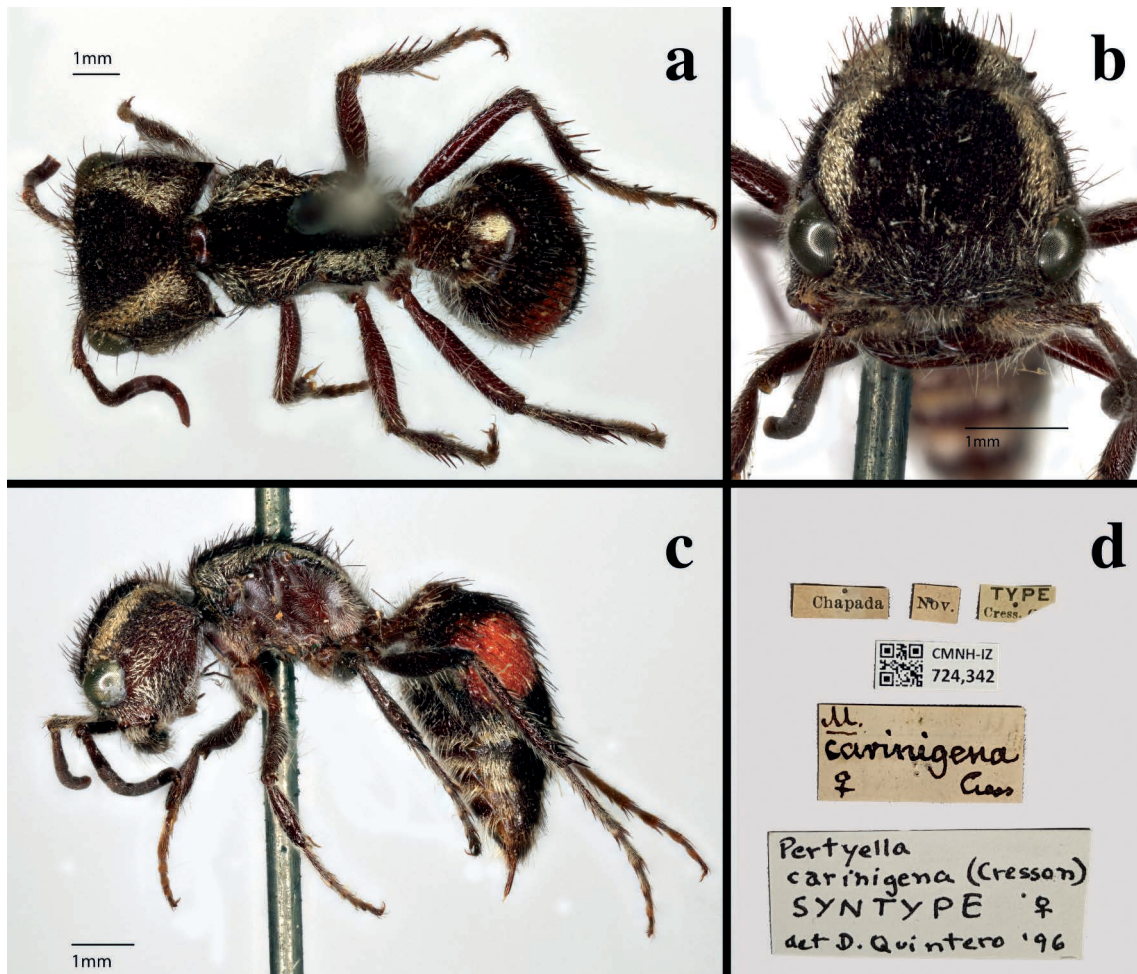


Figure 5. *Pertyella carinigena* (Cresson, 1902). Female lectotype specimen of *Mutilla carinigena* Cresson, 1902 from Chapada, Brazil. (a) Dorsal, (b) Head, dorso-frontal, (c) Lateral, (d) Specimen labels. Deposited at CMNH.



Figure 6. Female additional specimen studied of *Pertyella cordoi* Fritz, 1990 from Paraguay, Amambay. (a) Dorsal, (b) Lateral. Specimen deposited at MIUP.

oblique longitudinal stripe on frons and vertex, propodeum lateral longitudinal stripes; T1-6 posteromesal patch, T2 anteromesal patch (sometimes obliterated), and T2 posterolateral oblique stripe or patch. *Head*: large, subrectangular; with dense small punctures; genal carina robust, extending posteriorly onto vertex, terminating anteriorly in blunt tooth below eye; clypeus anterior margin with blunt tooth directly below antennal tubercle; hypostoma without projections; flagellomere 1 $3.1 \times$ as long as pedicel and $1.9 \times$ as long as flagellomere 2 in dorsal view; mandible apically dilated with large tooth near apical third on inner margin. *Mesosoma*. Mesosomal length (excluding pronotal collar) $1.2 \times$ as long as width; mesonotum laterally bidentate posterior to pronotal spiracle; mesosomal dorsum with small deep punctures, some punctures longitudinally irregular and confluent; mesopleuron, metapleuron and sides of propodeum covered with short setae; humeral margin of pronotum carinate; propodeum with row of irregular spines separating dorsal and lateral faces. *Metasoma*. T1 shape narrowly sessile with T2, basal two-thirds with fine sparse punctures, apical third with fine dense punctures; T2 slightly elevated anteriorly in latero-dorsal area, without elevated, longitudinal carinae, mostly with small, dense, contiguous punctures; T3-T5 with fine dense punctures; T6 convex without pygidial plate; S1 mostly smooth,

with low mesal carina; S2-S6 with small dense punctures. MALE. Unknown.

Type material: HOLOTYPE female (Fig. 7 a-b). Brazil, Minas Gerais/ CCPIU [clube de caça e pesca itororó] - Uberlândia, 28.x. [19]94, Rocha-Filho, L. (MIUP-0080). PARATYPES (Fig. 8 a-c). Brazil: Mato Grosso do Sul, Fazenda Nhumirim, Pantanal, 16.ix.2011, R. Aranda (1 DZUP); São Paulo, Itirapina, ii.1993, M.V. Ferraz (2 MZUSP).

Etymology. This species is named in memory of Dora Quirós, former Professor of Biology at the Universidad de Panamá, who contributed to the knowledge of the Panamanian entomofauna and the mentorship of many students in higher education.

Comments. This new species is highly variable in color; using the previous species-group characters, some populations would fit into the *P. holmbergi*, rather than *P. angulosa*, species-group. The presence of dense white or pale golden longitudinal setal patches on the propodeum confirm its placement in the *P. angulosa* species-group (Figs. 7 a-b, 8 a-c).

Distribution (Fig. 9): Brazil (Minas Gerais, São Paulo, Mato Grosso do Sul).

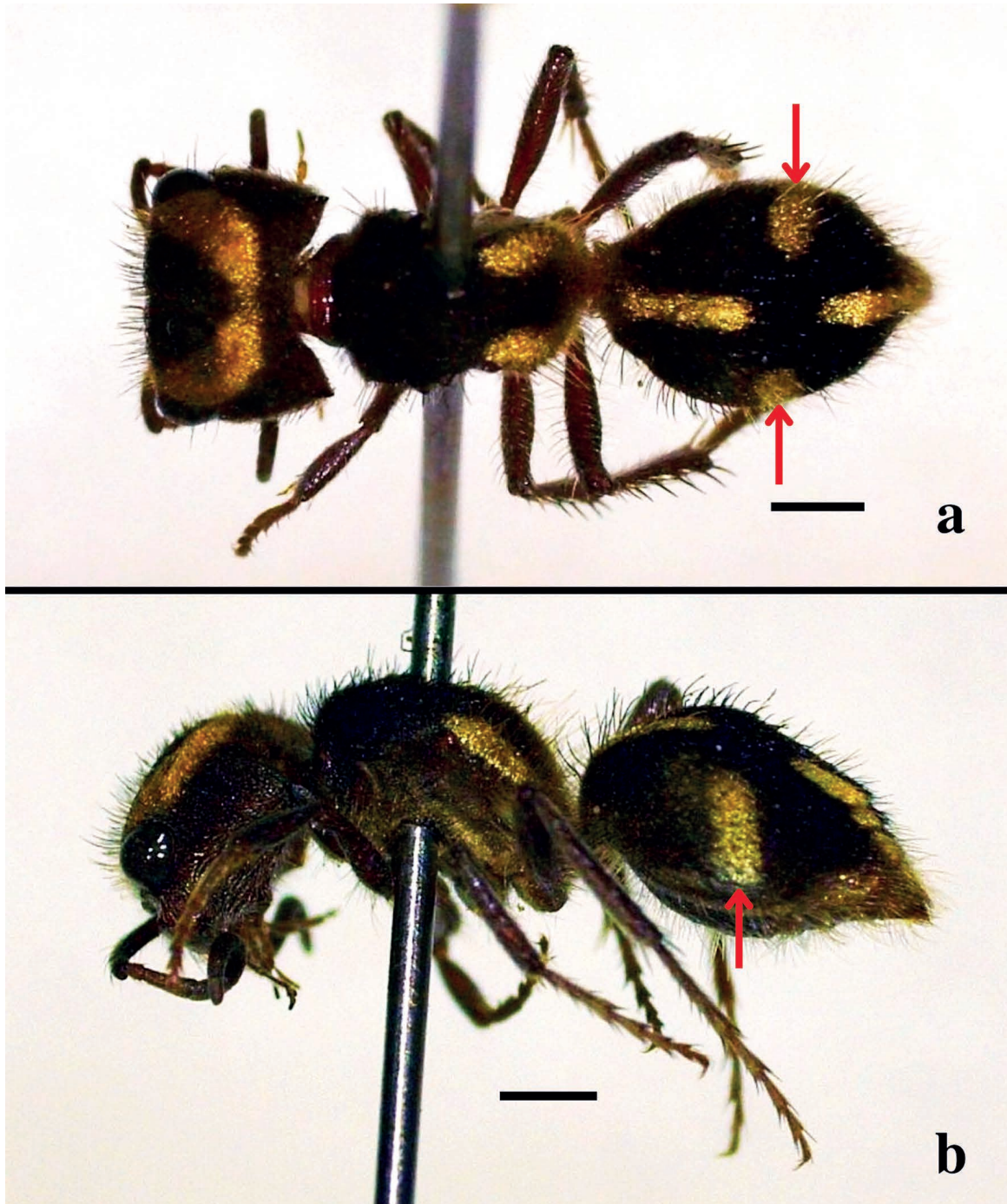


Figure 7. Female holotype of *Pertyella quirosae* sp. nov. from Brazil, Minas Gerais. (a) Dorsal, (b) Lateral. Deposited at MIUP. The arrows indicate the posterolateral oblique setal patches of T2. Scale = 1 mm.

Discussion

The species of the *Pertyella angulosa* group are distributed throughout South America, east of the Andes Mountains range. It is worth mentioning its relationship with the Atlantic Forest Biome and its different phytophysiognomies. One can use as an example the case of *Pertyella angulosa*, collected in Amélia Rodrigues/BA, an ecotone zone between the Caatinga and the Atlantic Forest. The specimen was in an agroecosystem conducted under agroecological bases, which makes it more similar to natural ecosystems, indicating a possible preference for less degraded areas for this species.

Females of the *Pertyella angulosa* species-group do not vary greatly in body length and structural characters. But we have found intraspecific variability in the size and color of the integumental spots on T2, the size and shape of the white pubescent stripes on the vertex, and the lateral longitudinal mesosomal whitish setal stripes vary in length (Fig. 4 a-f). In some individuals, the mesosomal stripes extend anteriorly to just beyond the pronotal spiracles and in others they are limited to the dorsum of the propodeum and posterior portion of the mesonotum. The integumental spots of T2 can vary in color, from yellow to orange-red in specimens of the same species.

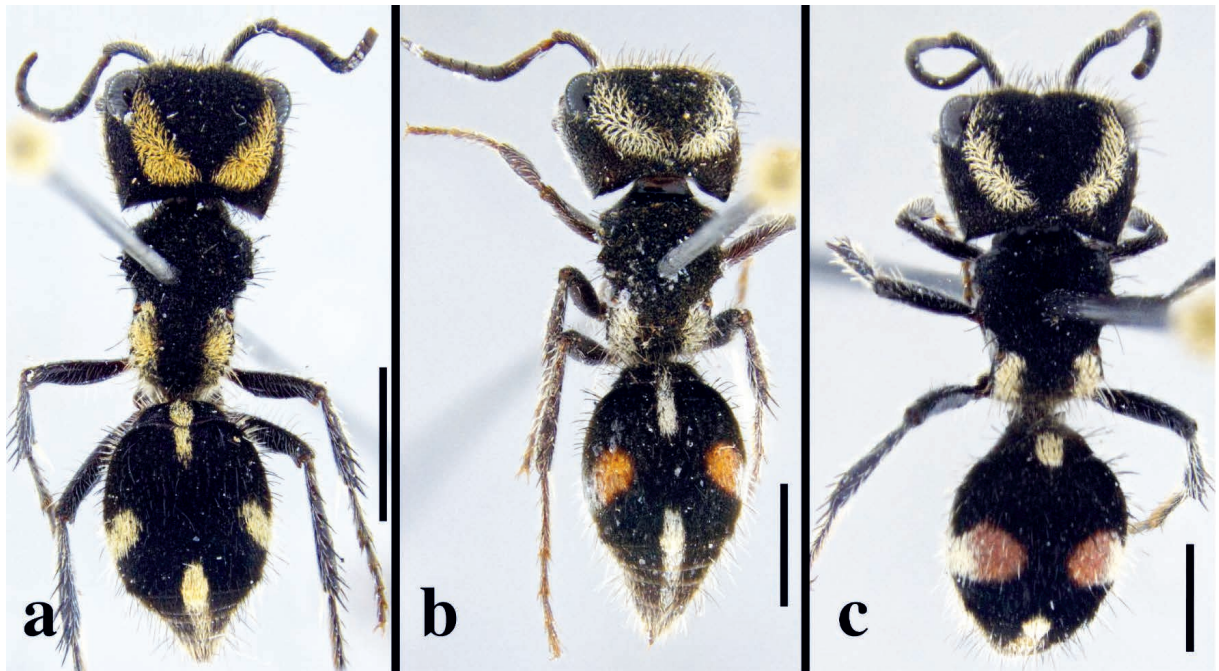


Figure 8. Female paratypes of *Pertyella quirosae* sp. nov. from Brazil. (a) From São Paulo, T2 cuticular spots obliterated. (b) From São Paulo, T2 cuticular spots small, orange. (c) From Mato Grosso do Sul, T2 cuticular spots moderate, reddish. Scale = 2 mm. Deposited at DZUP and MZUSP.

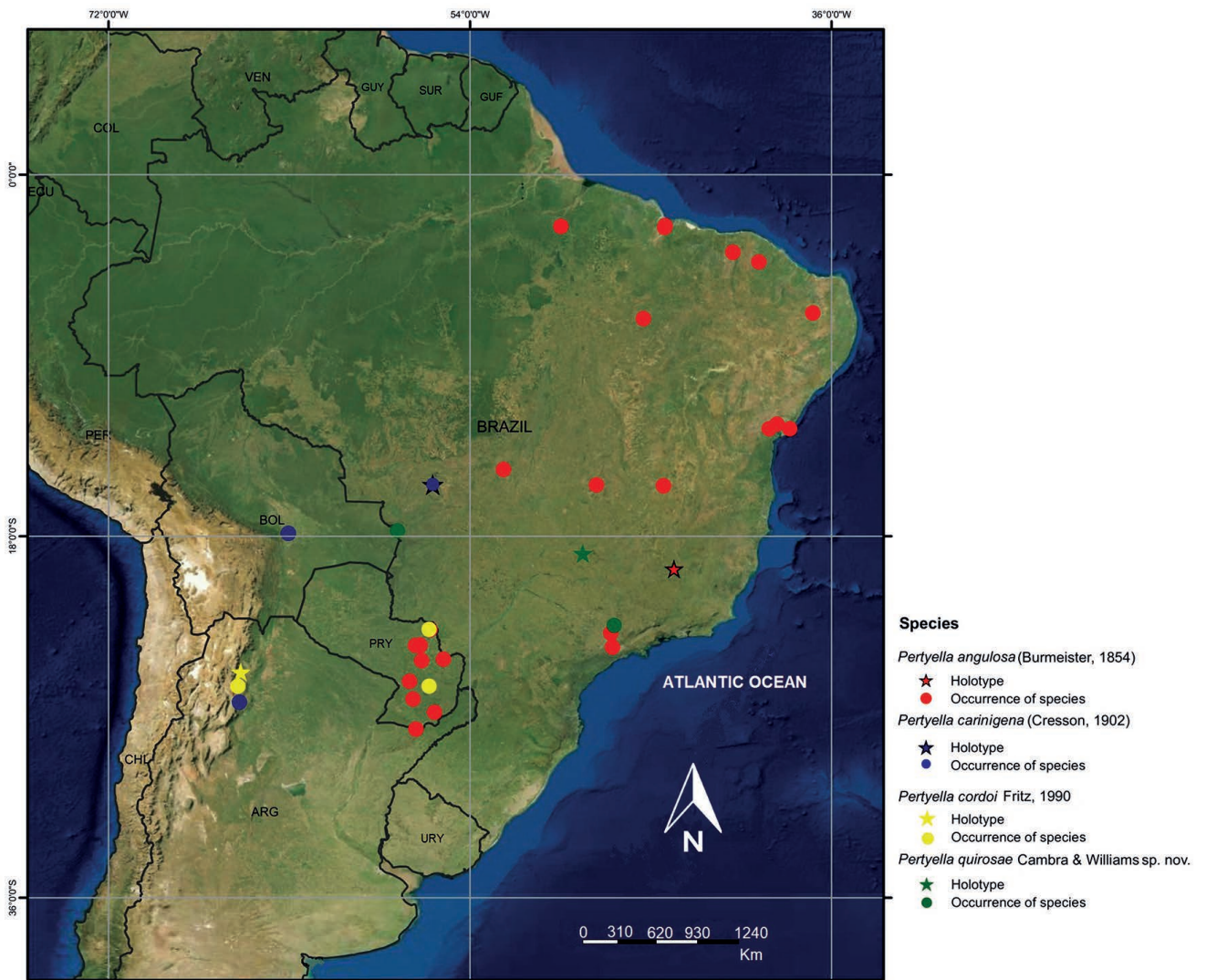


Figure 9. Distribution map for *Pertyella angulosa* species-group.

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Rol de los autores / Authors Roles:

RAC: Design of the proposal, description of species, identification of specimens, data collection, took photographs, wrote, edited and approved the final version of the manuscript.

KAW: Description of species, identification of specimens, data collection, took photographs, review and proofreading of the paper.

RLR: Field trips, data collection, prepared the figure sheets, interpretation, review.

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