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A Revision Of The New World Ants Of The Genus Platythyrea Roger 1863 (hymenoptera: Formicidae)

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A REVISION OF THE NEW WORLD ANTS OF THE GENUS *PLATYTHYREA* ROGER 1863
(HYMENOPTERA: FORMICIDAE)

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A REVISION OF THE NEW WORLD ANTS OF THE GENUS *PLATYTHYREA*
ROGER 1863 (HYMENOPTERA: FORMICIDAE)

by

MAYRA J. LEYVA, BSc.

THESIS

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ABSTRACT

The genus *Platythyrea* consists of arboreal ants that are rarely collected. The genus was last partially revised in 1975 by Brown. Since that revision two additional species have been described. The New World genus *Platythyrea* now includes nine species: *P. angusta* Forel, *P. exigua* Kempf, *P. lenca* De Andrade, *P. pilosula* (Smith), *P. prizo* Kugler, *P. punctata* (Smith), *P. sinuata* (Roger), *P. strenua* Wheeler and *P. zodion* Brown. A new key, illustrations, diagnoses and distributions of the ants are provided.

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INTRODUCTION

Ants are considered to be important members in the environment and play a keystone role in terrestrial ecosystems (Seal et al., 2011). Ants are one of the primary invertebrate predators in most ecosystems and are also prominent herbivores in the tropics (Brady et al., 2006). The family Formicidae is a diverse taxon under the order Hymenoptera. The family is thought to be derived from the superfamily Vespoidea (Grimaldi et al. 1997; Brothers 1999; Moreau et al. 2006), whose species are all eusocial (Hölldobler and Wilson 1990, Kaspari 2000).

The genus *Platythyrea* has a pantropic-subtropic distribution. Bolton (1995) listed 38 species worldwide, nine of which occur in the New World (Zheng-hui et al., 2000).

Systematics. There are currently 20 subfamilies of ants. The genus *Platythyrea* was described by Roger in (1863) as a member of Ponerinae and the only genus in the Platythyreinti tribe. Roger (1863) erected *Platythyrea* to house four species formerly placed in *Pachycondyla* or *Ponera*. A type species was not cited species, but Bingham (1903) eventually designated *P. punctata* as the type species (Schmidt, 2009). Several early authors placed *Platythyrea* in Ponerini, Forel, (1899); Wheeler, (1910), and even in Ectatommini Ashmead (1905), however, Emery (1911) moved it to its own tribe, Platythyreini (Schmidt, 2009). Brown (1952) recognized 4 genera of *Platythyreini*: *Platythyrea*, *Eubohroponera*, *Probolomyrmex* and *Escherichia* (now synonym of *Probolomyrmex*), later (1975) he synonymized *Eubotroponera* under *Platythyrea* based on similarities of workers and larvae (Schmidt, 2009). *Probolomyrmex* differentiates from *Platythyrea* because of the lack of frontal lobes and eyes, presence of a single metapleural spur, a simple tarsal claw and its lack of stridulitrum, therefore, it was placed in the monogeneric tribe Probolomyrmecini (Bolton, 2003; Schmidt, 2009). Schmidt (2009) conducted a molecular phylogeny by of the Ponerinae subfamily and found that *Platythyrea turneri* Forel (previously *Eubohroponera*) is nested within *Platythyrea*: the study also confirmed that *Platythyrea* and *Probolomyrmex* are not closely related and the extensive morphological similarities the two genera

exhibit are probably due to convergence (Schmidt, 2009). Members of the genus *Platythyrea* are considered to be predators and have well developed stings. These ants can be separated from other subfamilies by the following characteristics: pruinose sculpturing, broad insertions of the clypeus between the frontal lobes and widely spread frontal lobes and antennal insertions, sub-petiololar lobe developed, postpetiole fused with gaster, stinger well developed, toothed tarsal claws, pygidium never surrounded by teeth, projection of helcium and large well developed eyes (Creighton, 1950; Schmidt, 2009).

Natural History. Little is known about the biology of the species of *Platythyrea*. *Platythyrea* is commonly nesting in rotten wood in beetle burrows to hollow twigs, or cavities in living or dead trees, and is frequently found on low vegetation (Bluthgen et al., 2000, Brown, 1975). Throughout its range *Platythyrea* is found in relatively undisturbed areas (Seal et al., 2011).

Colony size. Colonies consist of between 14 and 50 workers (Heinze et al., 1995).

Colony composition. Most ant species have different castes. In *Platythyrea* there are regular gynes, regular workers, and intercastes. Males are rarely collected (Schilder et al., 1999).

Reproduction. Heinze et al. (1995) noticed that in some species of *Platythyrea punctata* (Smith), gamergates (reproductive individuals with worker morphology) appear to have completely replaced morphological queens while in others, queens and gamergates co-occur. Typically, ant societies are characterized by a division of labor between two castes: queens, which are responsible for reproduction, and workers which have a variety of responsibilities from foraging, to defending and maintaining the nest and nursing the brood (Schilder et al., 1999). The occurrence of thelytokous parthenogenesis (production of a diploid daughter from an unfertilized egg) practiced by *Platythyrea punctata* is not known to occur in any other Ponerinae (Schmidt, 2009). Schmidt (2009) found phylogenetic evidence support the hypothesis that the absence of gamergates is a plesiomorphic condition in ants and in the Ponerinae specifically. Gamergates apparently evolved half a dozen times in the ancestor of

Platythyrea inferring that selection pressure favors worker reproduction. In *Platythyrea punctata*, gynes have occasionally been found, but are not regularly present in all colonies. In queenless colonies where gamergates occur, unmated workers produce new workers, queens and males by parthenogenesis. Workers may also be inseminated and reproduce sexually. Workers exhibit agonistic interactions and dominance hierarchies, and usually one individual, often an unmated worker, is reproductively dominant (Longino, 1999).

Foraging and feeding. Little is known about the diet of the New World *Platythyrea*. Djîéto-Lordon (2001) found that the African *Platythyrea modesta* Emery exhibited arboreal foraging habits, similar to their New World relatives. When foraging, single workers captured large prey, but were unable to retrieve them. They recruited nestmates that dismembered the prey, and then individually retrieved pieces of prey, or consumed a part of the prey directly. In most cases, the entire prey was consumed on the spot by recruited workers that even transported larvae from the nest to the prey Djîéto-Lordon et al., 2001).

Thesis Research Project.

The purpose of this study is to do a taxonomic revision of the New World *Platythyrea* including a key, illustrations, diagnoses and distribution maps of the ants. *Platythyrea* was last revised by William Brown (1975), but the identification key is difficult to use and the species are not individually characterized. Therefore, a complete revision of the genus is long overdue. Since the genus was last revised there have been two additional species that have been described. This study will attempt to answer several questions; among them does the current taxonomy reflect the species richness of *Platythyrea*? This study will help understand the interrelationship among the species.

METHODS AND MATERIALS

A total of 256 workers, 9 females and 6 males of *Platythyrea*, including type specimens for *P. exigua*, *P. lenca*, *P. prizo*, *P. strenua* and *P. zodion* were examined. Type material for *P. angusta*, *P. punctata*, *P. pilosula* and *P. sinuata* was requested but not received, however, type specimens were observed on www.AntWeb.org. In the material examined section for each species workers are designated with a “w”, gyne specimens with a “f” and male specimens with a “m” following the number of specimens for each.

Specimen Acquisition. Major collections were contacted to borrow determined and undetermined specimens as well as types. Museums that were contacted for specimens are:

AMNH	American Museum of Natural History, USA
BMNH	British Museum of Natural History, United Kingdom
CASC	California Academy of Science, USA
USNM	United States National Museum, USA
FSCA	Florida State Collection of Arthropods, USA
MCZC	Museum of Comparative Zoology, USA
MHNC	Musée d'Histoire Naturelle, La Chaux-de-Fonds, Switzerland
MHNG	Musée d'Histoire Naturelle, Geneva, Switzerland
MUCR	Museo de Insectos, Costa Rica
LACM	Los Angeles Country Museum of Natural History, USA
CWEM	William and Emma Mackay Collection, USA
STDC	Shawn T. Dash Personal Collection

Worker, gyne and male specimens (when available) of *Platythyrea angusta*, *P. exigua*, *P. lenca*, *P. pilosula*, *P. prizo*, *P. punctata*, *P. sinuata*, *P. strenua* and *P. zodion*, were drawn at 24X with a Wild

Heerbrugg microscope using a grid and micrometer to measure sizes of structures and document difference in sculpturing. All measurements were recorded in millimeters.

Measurements:

TL Total length: combined head length in full face view (closed mandibles included), Weber's length of mesosoma, petiole length (in profile), and length of gaster (in profile).

HL Head length: measured from the posterior border of the head to the clypeus.

HW Head width: maximum head width behind the eyes.

FIW Frontal lobe width: the widest distance between the frontal lobes.

SL Scape length: measured from the beginning of the scape to the end of the antennal segment, excluding the condyle.

EL Eye length: maximum length of the compound eye.

EW Eye width: maximum width of compound eye.

CI Cephalic index: ratio of HW divided by HL multiplied by 100.

SI Scape index: ratio of the length of the scape divided by the head length multiplied by 100.

WL- Weber's length: diagonal length of the mesosoma from the anterior pronotal border (excluding neck) to the distal edge of the propodeal lamellae.

DpH Dorsal petiole height: total height of the petiole in dorsal view excluding petiole lobes.

DpW dorsal petiole width: total width of petiole at widest point in dorsal view excluding petiole lobes.

FW Femur width: measured at the widest point.

FL Femur length: maximum length of fore femur.

RESULTS

Genus Description: Worker. Mandibles triangular, generally without teeth, except for poorly defined apical angle (depending on species); anterior border of clypeus convex or straight (depending on species); posterior border of clypeus and frontal area defined; antenna 12 segmented without well defined club; antennal insertions remote and hidden under frontal lobes; antennal scape extends nearly to or slightly past posterior lateral corner of head (depending on species); compound eyes large, maximum diameter greater than distance from anterior margin of eye to insertion of antenna; head nearly rectangular, sides of head slightly convex (degree depending on species); posterior border of head straight or concave (depending on species); body slender.

Promesonotal suture well developed; dorsum of mesosoma flat; notopropodeal suture well defined; propodeal spiracle nearly circular; propodeal angles often developed.

Petiole elongated with well defined dorsal and posterior faces; usually with one dorsal and two lateral poorly developed posterior lobes; sternopetiole process developed into well defined lobe; posterior ventral surface of petiole with well developed posteriorly directed lobe; postpetiole fused with gaster; third abdominal tergum much longer than postpetiole; stridulatory file present on second pretergite.

Tarsal claw with internal tooth; middle and hind tibia each with two pectinated spurs.

Mandibles with fine erect and suberect hairs, remainder of body usually without erect or suberect hairs; pubescence on most surfaces and together with sculpture produce pruinose appearance.

Mandibles and dorsal surface of face finely punctate, somewhat finely granulose; surface of face dull; sides of head with coarse punctures; pronotum finely granulated with coarse punctures on lateropronotum; mesopluron finely striated; propodeum, petiole, and postpetiole finely granulated with wavy striae on propodeum; gaster with wavy transverse striae with poorly defined coarse punctures laterally.

Adult color ranges between yellow, brown or black.

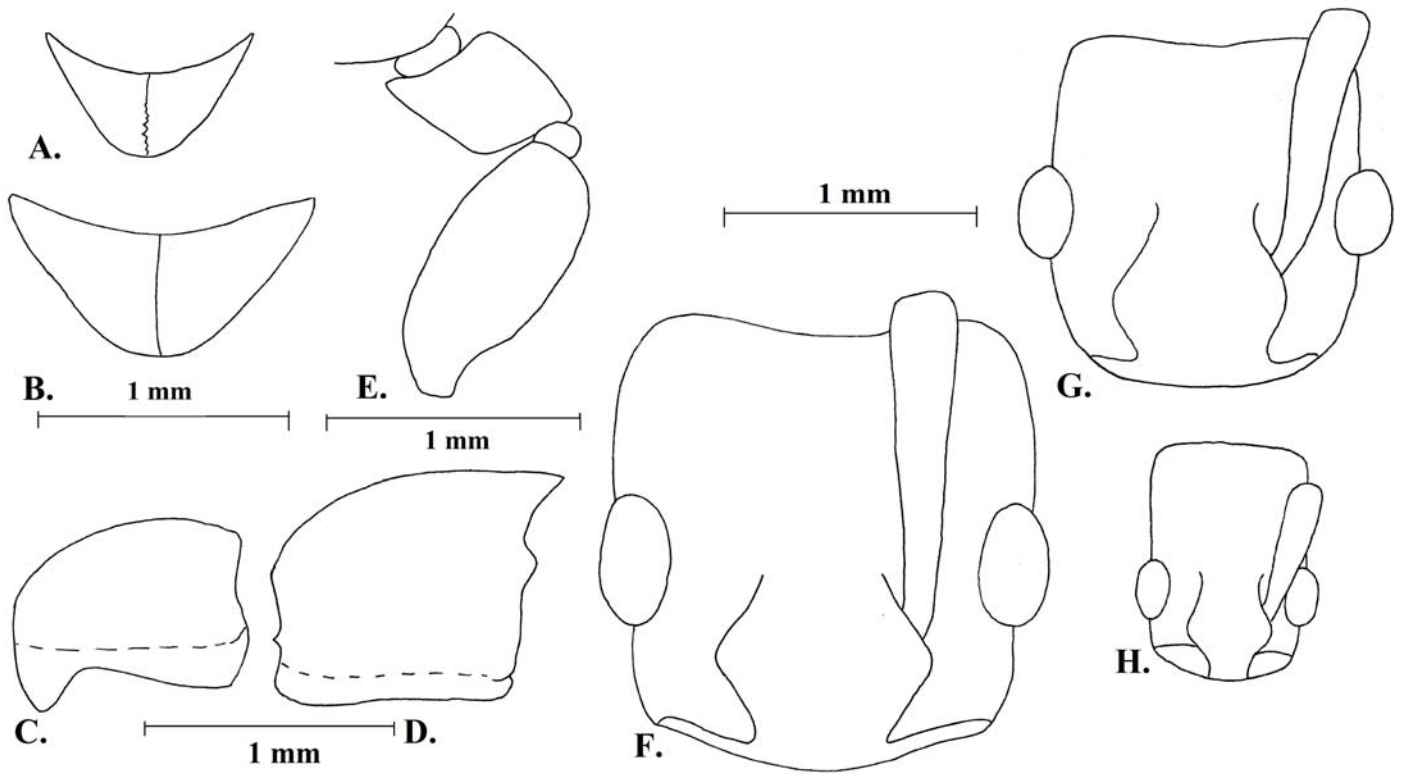


Figure 1. Features of *Platythyrea* workers. A. *P. lenca*: mandible with teeth present. B. *P. strenua*: mandibles with apical tooth and without additional teeth. C. *P. angusta*: lateral view of petiole with poorly defined medial lobulate angular process. D. *P. sinuata*: lateral view of petiole with well-defined medial lobulate angular process. E. *P. angusta*: thick prothoracic femur. F-H Frontal width distance in frontal view. F. *P. strenua*; G. *P. sinuata*; H. *P. exigua*.

Key to the workers of *Platythyrea*

- 1 Mandibles with teeth present (6-11 teeth) Fig. 1 A.....2
 - _ Mandibles with apical tooth and without additional teeth present Fig. 1 B.....4
- 2 (1) Head width less than 0.80 mm (0.70-0.80 mm).....*exigua* Kempf
 - _ Head width greater than 1.00 mm (1.15-1.35 mm).....3
- 3 (2') Erect hairs on petiole, postpetiole and gaster long (0.05 mm); eyes small (0.25 mm)
 - longer antennal scape (1.50-1.55)*lenca* De Andrade
 - _ Erect hairs on petiole, postpetiole and gaster short (0.02 mm); eyes large (0.30 mm)
 - antennal scape short (1.35-1.40).....*prizo* Kugler
- 4 (1) Prothoracic femur thickened, femur index greater than 40% (41%-43%) Fig. 1 E.....5
 - _ Prothoracic femur not thickened, index less than 38% (23%-38%).....6
- 5 (4) Larger species; head width greater than 1.00 mm (1.0-1.20), frontal lobe width greater
 - than 0.70 mm (0.70-0.73 mm).....*angusta* Forel
 - _ Smaller species; head width less than 0.90 mm (0.86mm), frontal lobe width less than
 - 0.50 mm (0.48 mm).....*zodion* Brown
- 6 (4') Petiole length in dorsal view greater than 0.90 mm (0.90-1.10 mm).....7
 - _ Petiole length in dorsal view less than 0.80 mm (0.78-0.80 mm).....*punctata* (Smith)
- 7 (6) Frontal lobe width greater than 0.80 mm (0.80-0.95 mm) Fig. 1 F.; petiole with poorly defined
 - medial lobulate angular process (in dorsal view) Fig. 1 C.....8
 - _ Frontal lobe width less than 0.75 mm (0.70-0.75) Fig. 1 G.; petiole with sharp medial lobulate
 - angular process (in dorsal view) Fig. 1 D.....*sinuata* (Roger)
- 8 (7) Head width greater than 1.4 mm (1.56-1.73 mm); petiole almost as long (0.90- 0.93 mm)
 - as broad (0.87-0.93 mm).....*strenua* Wheeler
 - _ Head width less than 1.30 mm (1.30-1.33); petiole longer (1.00-1.10 mm) than broad

(0.70-0.80 mm).....*pilosula* Brown

Character Matrix

A collection of 16 morphological characters utilized to generate a character matrix (Table 1).

Character scoring is unordered. All specimens were scored based on the material available.

Head.

1. *Head length*: (0) Small (HL 1.00-1.50 mm), (1) Large (HL 1.60-2.50 mm).
2. *Head width*: (0) Small (HW 0.65-1.35 mm), (1) Large (HW 1.60-2.0 mm).
3. *Frontal lobe width*: (0) Narrow (FIW 0.30-0.75 mm), (1) Wide (FIW 0.80-1.0 mm).
4. *Scape length*: (0) Short (SL 0.50-0.70 mm), (1) Long (SL 1.00-1.60mm).

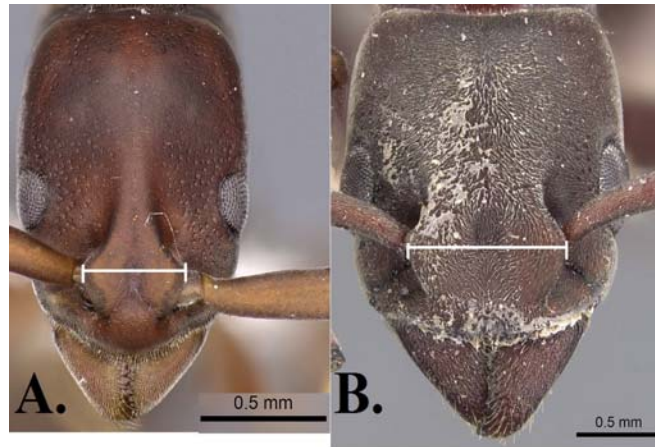


Figure 2. Frontal lobe width variation in *Platythyrea*. **A.** *P. prizo*: the frontal lobes are narrow (0) and **B.** *P. strenua*: the frontal lobes are wide (1). Photographers: Ryan Perry and Will Ericson, from www.AntWeb.org.

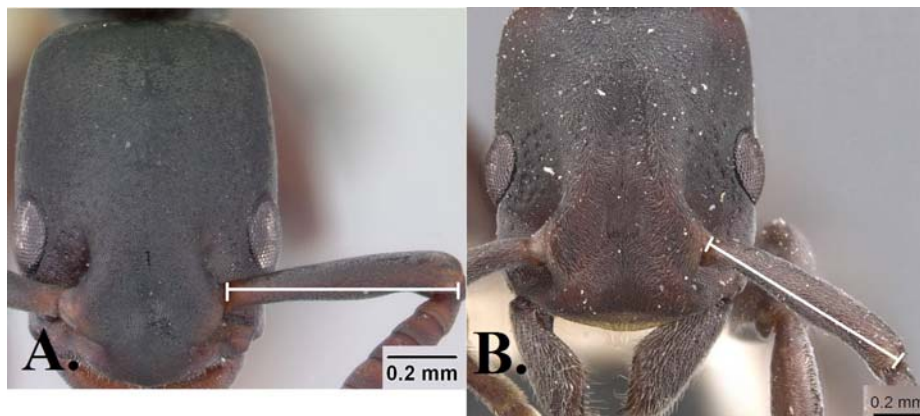


Figure 3. Scape length variation in *Platythyrea*. **A.** *P. exigua*: the antennal scape is short (0) and **B.** *P. angusta*: antennal scape is long (1). Photographers: Will Ericson and April Nobile, from www.AntWeb.org.

5. *Eye length*: (0) Small (EL 0.15-0.35 mm), (1) Large (EL 0.45-0.55 mm).
6. *Total length*: (0) Small (TL 4.65-4.90 mm), (1) Medium (TL 6.70-8.05 mm), (2) Large (TL 9.40-9.10).
7. *Eye width*: (0) Small (EW 0.15-0.27 mm), (1) Large (EW 0.30-0.40 mm).
8. *Mandibular sulcus*: (0) Poorly developed or completely absent, (1) Present.
9. *Mandibular teeth*: (0) Mandibles with apical tooth and without additional teeth present, (1) mandibles with 6-11 teeth.
10. *Anterior border of clypeus*: (0) Anterior border of clypeus is straight, (1) anterior border of clypeus distinctly convex.

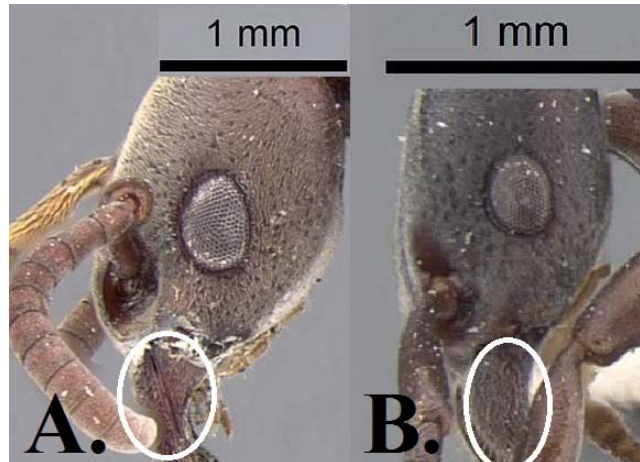


Figure 4. Mandibular sulcus variation in *Platythyrea*. **A.** *P. strenua*: the mandibular sulcus is present and well defined (1) and **B.** *P. angusta*: the mandibular sulcus is poorly defined (0).
Photographer: Will Ericson, from www.AntWeb.org.

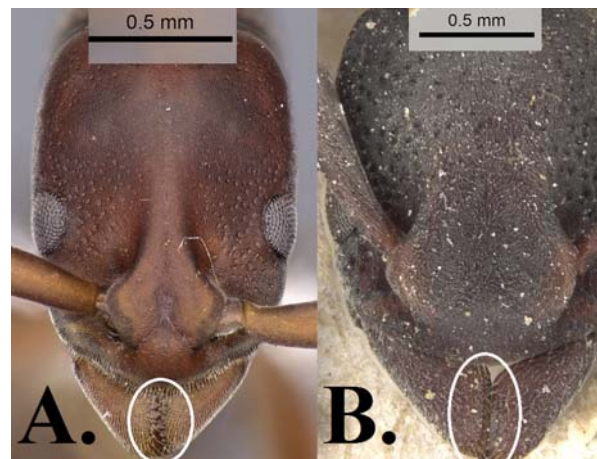


Figure 5. Mandibular teeth variation in *Platythyrea*. **A.** *P. prizo*: the mandibular teeth are present (1), **B.** *P. punctata*: the mandibular teeth are absent (0). Photographers: Ryan Perry and Will Ericson, from www.AntWeb.org.

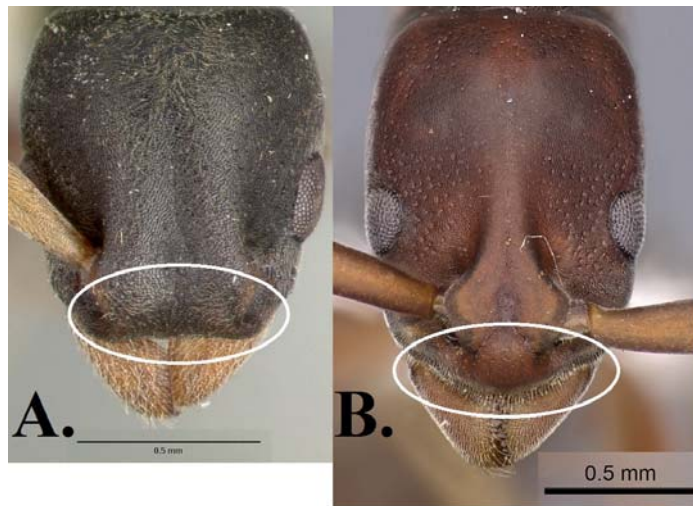


Figure 6. Anterior border of the clypeus variation in *Platythyrea*. **A.** *P. zodion*; the anterior border of the clypeus is flat (0), **B.** *P. prizo*; the anterior border of the clypeus is convex (1). Photographer: Ryan Perry, from www.AntWeb.org.

Body

11. *Dorsal petiole length*: (0) Small (DpL 0.55-0.65 mm), (1) Large (0.80-1.50 mm).
12. *Dorsal petiole width*: (0) Small (DpW 0.45-0.75 mm), (1) Large (0.85-1.00 mm).
13. *Femur index*: (0) Small (FI 20-38%), (1) Large (FI 41-45%).
14. *Propodeal angles*: (0) Propodeal angles absent or poorly developed, (1) Propodeal angles present and well defined.
15. *Dorsal lobe on petiole*: (0) Poorly developed or absent dorsal lobe on petiole, (1) Well developed dorsal lobe on petiole.
16. *Lateral posterior lobes on petiole*: (0) Poorly developed or completely missing lateral posterior lobes, (1) Well developed lateral posterior lobes.

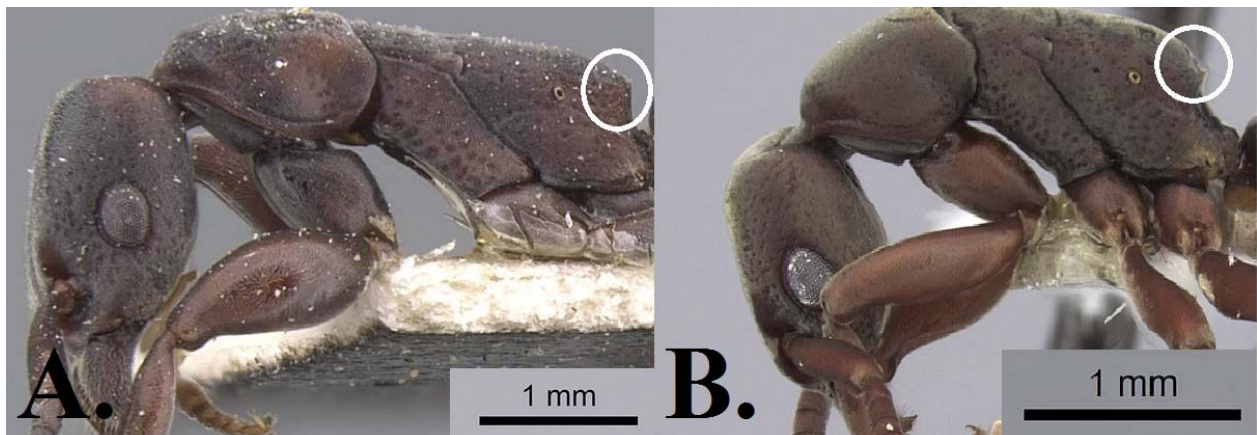


Figure 7. Propodeal angle variation in *Platythyrea*. **A.** *P. angusta*: propodeal angles are poorly defined (0), **B.** *P. sinuata*: the propodeal angles are well defined (1). Photographer: Will Ericson, from www.AntWeb.org.

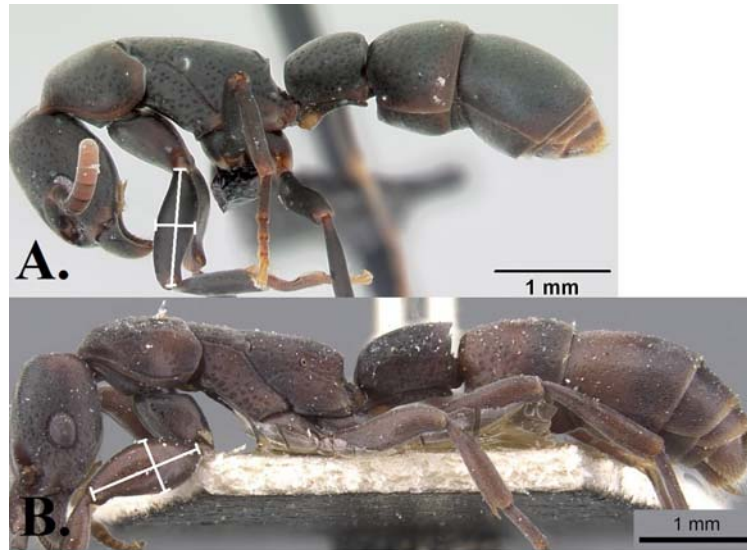


Figure 8. Femur index variation in *Platythyrea*. **A.** *P. punctata*: the femur index is less than 33% (0). **B.** *P. angusta*: femur index is greater than 40% (1). Photographer: Will Ericson, from www.AntWeb.org.



Figure 9. Dorsal lobe variation in *Platythyrea*. **A.** *P. zodion*: the dorsal lobe is poorly developed on petiole, **B.** *P. sinuata*: has a well-developed dorsal lobe on petiole. Photographer: Will Ericson, from www.AntWeb.org.

Table 1. Character matrix for New World *Platythyrea* based on a suite of 16 characters. Outgroup taxa were selected from by phylogenetic studies by sister groups suggested by Moreau et al. (2006), Brady et al. (2006), Schmidt (2009) and Seal et al. (2011).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>Platythyrea angusta</i>	0	0	0	1	0	1	0	1	0	0	1	0	1	0	0	0
<i>Platythyrea exigua</i>	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1
<i>Platythyrea lenca</i>	1	0	0	1	0	1	0	1	1	1	1	0	0	1	1	0
<i>Platythyrea pilosula</i>	1	0	1	1	0	1	1	1	0	1	1	0	0	0	0	0
<i>Platythyrea prizo</i>	1	0	0	1	0	1	0	0	1	1	1	0	0	1	1	0
<i>Platythyrea punctata</i>	0	0	0	1	0	1	0	1	0	1	1	0	0	1	0	0
<i>Platythyrea sinuata</i>	0	0	0	1	0	1	1	1	0	0	1	0	0	1	1	1
<i>Platythyrea strenua</i>	1	1	1	1	1	2	1	1	0	1	1	1	0	0	0	0
<i>Platythyrea zodion</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Hypoconera sakalava</i>	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
<i>Leptogenys diminuta</i>	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
<i>Pachycondyla stigma</i>	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0

***Platythyrea angusta* Forel**

Platythyrea angusta Forel, 1901: 336 (w) TRINIDAD.

Type series not available.

Material Examined: BOLIVIA: Dept. Beni, Rurrenabaque, xii- 1921-1922, W. Mann (2 w); Dept. Beni, Cavinass, i-1921-1922, W. Mann (2 w); Dept. Beni, Cavinass, M. Lopez (10 w); Dept. Beni, ii-1921-1922, W. Mann (3 w); Provincia Vaca Diez, 2.5 k NW. of Rumichucua, 10-vii-1990, P. Parrillo (1 w LACM). BRAZIL: Maranhão, Imperatriz, 4-viii-1989 (1 w CWEM); Puerto Velho, Rio Madeira, 1954, M. Baker (2 w); Rio Taruma Mirimigapo, 22-iii-1976, J. Adis (2 w LACM); Pto. America, Aug.

30- Sep 2 '20, R. Putumayo (1 w CASC). BRITISH GUYANA: Walker EXP. 36, 18.vii.14, F. M. Gaige (3 w LACM). PERU: Chanchamayo, 10-vii-1948, J. Shunke (1 w); Colonia Perene (10°53'0" S; Long: 75°13'0" W), 21-vi-1920 (1 w); Colonia Perena, Rio Perene, 18 mi NE of La Merced, Junin, 1-iii-1955 (1 w CASC); Dept. Loreto, Amazon Camp, Rio Momon 97.5 near Iquitos, 1-10-xii-1982, E. Ross (CASC); Madre de Dios, 180 m, Sachavacayoc Centre, 34.39 k SW Puerto Maldonado, 21-vii-2012, W&E Mackay (1 w CWEM); 10 km of Pucallpa, 11-xii-1854, E. Schilinger & E. Ross (1 w CASC); Reserva Nacional Tambopata, Sachavacayoc Centre, 210m 12° 51' 21"S 69° 21' 43"W, 19-31-vii-2012, curso de hormigas (3 w CWEM); Yurac, 67 mi E. of Tingo Maria, 11-xii-1954, E. Schilinger & E. Ross (1 w CASC). SURINAM: Paramaribo, A. Reyna (1 w). TRINIDAD and TOBAGO; Arima, Aripo Valley, 10-vi-1977, E. Grissell (1 w FSCA); Nariva swamp, 22-iv-35, N. Weber (1 w); St. George, Co. Arima Valley, Wright Nature Centre, ix- 1989, S. Edgerly (2 w MCZC); St. Paul Ward, Delaford, 3-vii-1999, G. Edwards (2 w FSCA); Tucker Valley, II-13-ii-1942, G. R. Campbell (1 w). VENEZUELA: Delta Amacuro, Mariusa, 140 km NE of Barranca Cano, 28-vii-1958, A. Monice (1 w LACM).

Natural History: *Platythyrea angusta* occurs in Bolivia, Brazil, British Guyana, French Guiana, Ecuador, Peru, Surinam, Trinidad, Tobago and Venezuela (Fig. 11).

Diagnosis: Worker. The head is elongate, slightly longer than broad with parallel sides. The posterior border of the head is concave. The frontal lobes are wide and broadly rounded. The anterior border of the clypeus is weakly rounded, clypeus with a flat surface. The posterior border of the clypeus and frontal area are defined. The eyes are large, about ¼ of the head length. The mandibles are triangular without teeth except for a poorly defined apical angle; the mandibular sulcus is poorly developed. The antennal scape slightly passes the posterior lateral border of the head. The mesosoma in profile is elongate and the dorsum of the mesosoma is flat. The pronotal suture is impressed, the propodeal spiracle is almost circular. The propodeal angles are somewhat developed. The petiole is long, with a dorsal poorly developed lobe; the two lateral posterior lobes are poorly developed. The sternopetiolar

process is developed into a well-defined lobe. The postpetiole is fused with gaster. The third abdominal tergum is much longer than the postpetiole. The prothoracic femur is swollen. The mandibles have fine erect and suberect hairs. The remainder of the body is without such erect or suberect hairs. The mandibles are finely punctate and the sides of the face have aggregated punctures. The surface of the face is dull. The mesosoma, petiole and postpetiole have coarse punctures; the gaster has wavy transverse striae with poorly defined punctures (Fig. 10 A. & B.).

Measurements in mm and indices (n=3). TL 7.07-7.17; HL 1.28-1.33; HW 1.03-1.11; FIW 0.70-0.73; SL 0.92-0.93; EL 0.25-0.33; EW 0.19-0.23; WL 2.13-2.23; DpL 0.95-1.00; DpW 0.61-0.73; FW 0.48-0.50; FL 1.13-1.20; CI 80-84.7; SI 69.9-72.6; FI 42.3-42.6.

The female and male are unknown.

Comparison: *Platythyrea angusta* can be confused with *P. pilosula* as they both lack the two lateral posterior lobes, but can be separated because the posterior border of the head is concave in *P. angusta* (Fig. 10 A.), not straight as it is in *P. pilosula* (Fig. 16 A.). *Platythyrea angusta* also has a swollen prothoracic femur (Fig 10 B.), which is not swollen in *P. pilosula* (Fig. 16 B.).

Aside from *Platythyrea angusta*, the presence of a swollen prothoracic femur is only found in *P. zodion*. *Platythyrea angusta* can be separated from this species because it is much larger in size (TL 7.07-7.17 mm).

Platythyrea angusta can be distinguished from *P. punctata* by the lack of a well defined mandibular sulcus. *Platythyrea punctata* has a distinct curved sulcus that originates at the base of the mandible and passes completely across the surface. The main character to differentiate *P. angusta* from *P. punctata* is the presence of the swollen prothoracic femur, the femur index range extends from 41.6-42.5% in *P. angusta* contrastingly, *P. punctata* has a femur index range of 32.2-33.3%.

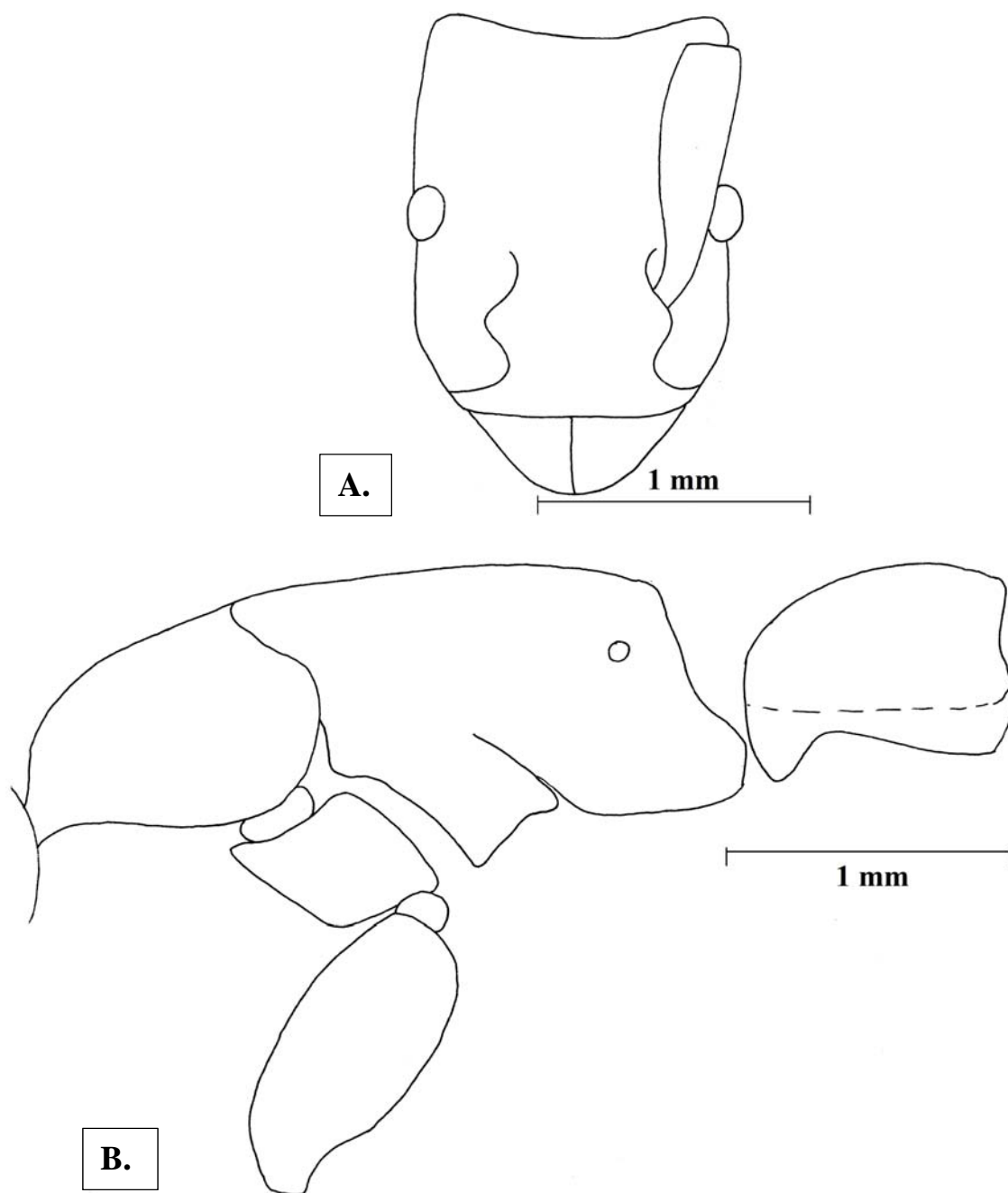


Figure 10. A. Frontal view of head of worker of *P. angusta* from Trinidad and Tobago. **B.** Lateral view of worker of *P. angusta* from Trinidad and Tobago.

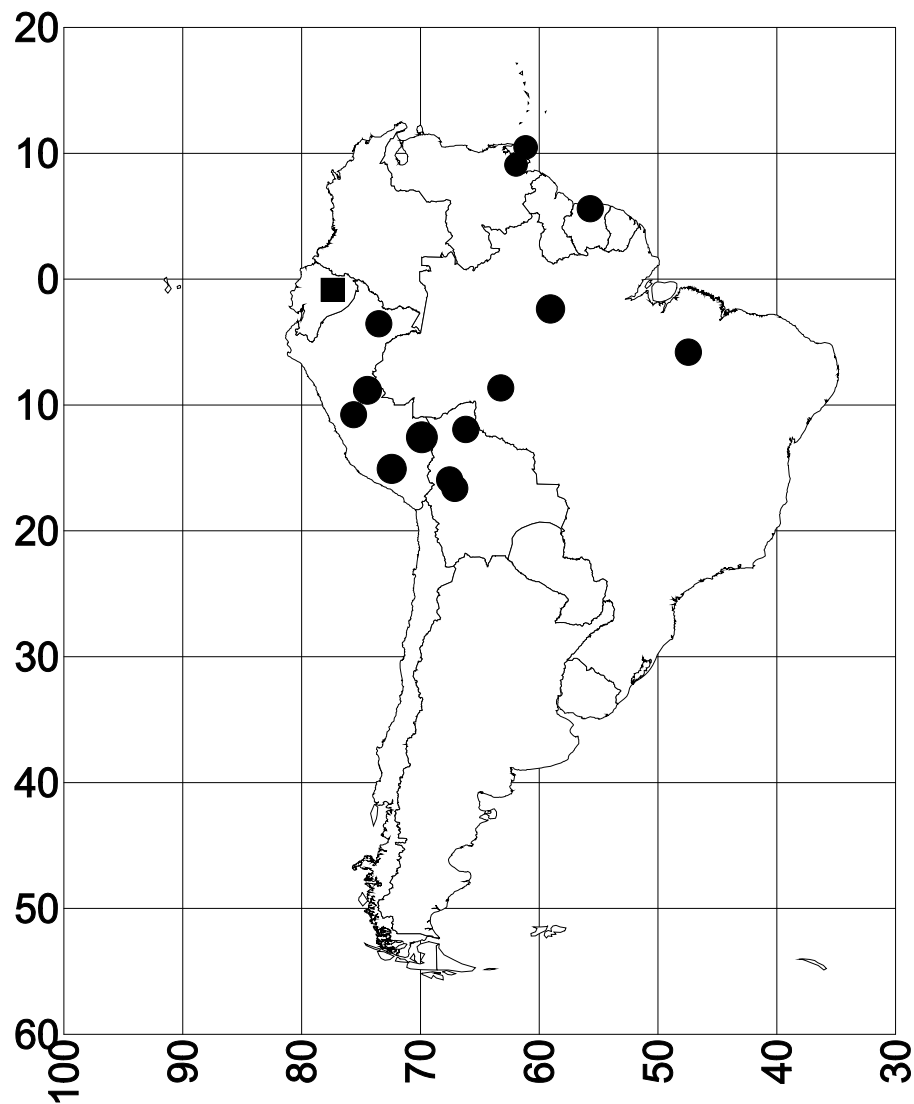


Figure 11. Distribution of *Platythyrea angusta*. The dots are records added by this study. The square represents information obtained from www.AntWeb.org.

***Platythyrea exigua* Kempf**

Platythyrea exigua Kempf, 1964a: 142, figs. 1-3 (w.q.) BRAZIL.

Type series examined

Two paratype workers (MCZC) from BRAZIL; Utiari, MT Rio Papagaio, VII-1961, K. Lenko 1659.

Material Examined: type series.

Natural History: *Platythyrea exigua* occurs in Brazil and Paraguay (Fig. 13).

Diagnosis: Worker. The head is elongate, slightly more than 1/3 longer than broad with parallel sides. The posterior border of the head is straight (full face view). The distance between the frontal lobes is narrow and rounded. The anterior border of the clypeus is concave; the clypeus has a swollen surface. The posterior border of the clypeus is well defined. The eyes are large, slightly more than ¼ larger than the head length. The mandibles are triangular with 6-7 teeth and the mandibular sulcus is absent. The anterior border of the clypeus is rounded with a swollen surface. The posterior border of the clypeus and frontal area are well defined. The antennal scape fails to reach the posterior lateral corner of the head by approximately the first two funicular segments. The mesosoma in profile is elongate; the dorsum of the mesosoma is flat. The propodeal angles are developed and the propodeal spiracle is small and almost circular. The petiole is elongated with a poorly developed or completely missing dorsal lobe. The two lateral lobes are well developed. The sternopetiolar process is developed into a well developed lobe. The postpetiole fused with the gaster. The third abdominal tergum is slightly longer than the postpetiole. The prothoracic femur is swollen. The mandibles have fine erect short hairs; the remainder of the body is without such hairs. The sides of the face are finely punctate. The surface of the face and the body are dull. The mesosoma, petiole and postpetiole have fine punctures. The gaster has wavy transverse striae and scattered punctures (Fig. 12 A. & B).

Measurements in mm and indices (n=2). TL 4.70-8.84; HL 1.01-1.04; HW 0.73-0.75; FIW 0.38-0.39; SL 0.63-0.65; EL 0.20-0.22; EW 0.17-0.18; WL 1.56-1.61; DpH 0.61; DpW 0.49-0.51, FW 0.23; FL 0.57-0.58; CI 71.7-72.1; SI 61.9-62.5; FI 38.5-39.3.

The female and male are unknown.

Comparison: *Platythyrea exigua* can be confused with *Platythyrea prizo* and *Platythyrea lenca* because of the presence of mandibular teeth in all three species (Fig 12 A., 14 A. and 18 A.). It can also be confused with *Platythyrea zodion* due to their small size (Fig. 29 A. & B.). *Platythyrea exigua* (TL 4.70-4.84mm) can be separated from *P. prizo* (TL 7.98mm) and *P. lenca* (TL 7.22 mm) due to its smaller

size. *Platythyrea exigua* has an antennal scape that fails to reach the posterior lateral corner of the head by approximately two funicular segments (Fig. 12 A.). In *P. prizo* the antennal scape extends past the posterior lateral corner by approximately one funicular segment (Fig. 18 A.). The petiole of *P. exigua* has a poorly developed or completely missing dorsal lobe (Fig. 12 B.). The two lateral lobes are well developed. The petiole in *P. prizo* has one dorsal poorly developed lobe; the two lateral posterior lobes are not developed (Fig. 18 B.).

Platythyrea exigua can be separated from *P. zodion* by the presence of the 6-7 mandibular teeth which are absent in *P. zodion*. The anterior border of the clypeus is rounded with a swollen surface in *P. exigua*. In *P. zodion* the anterior border of the clypeus is straight and the clypeus has a flat surface. The shape of the head is also a key characteristic for separating the two species. *Platythyrea exigua* has a long head with parallel sides. The head of *P. zodion* is almost as wide as it is long.

Platythyrea exigua can be distinguished from *P. punctata* because of the presence of mandibular teeth, and lack of a mandibular sulcus. *Platythyrea exigua* is also smaller in size than *P. punctata* (TL 1.05-1.11 mm). Aside from *P. prizo* and *P. lenca* it is the only species in the New World to have serrated mandibular teeth.

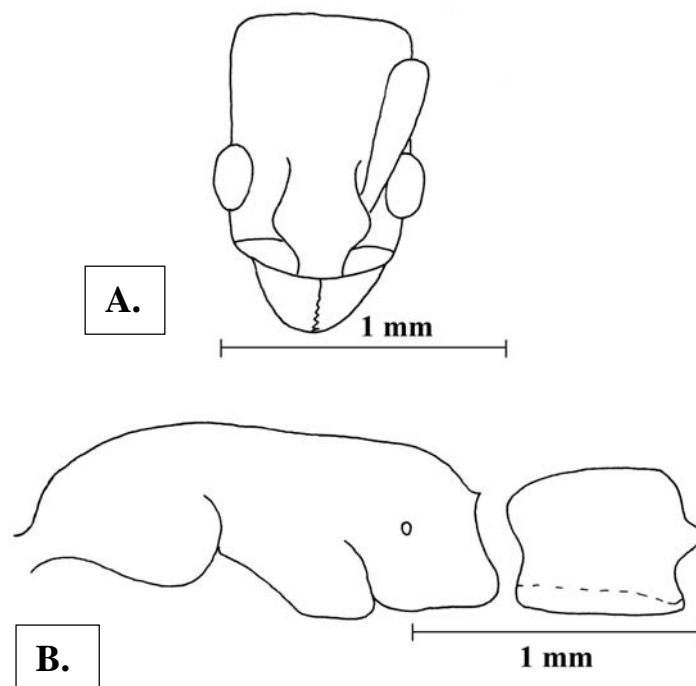


Figure 12. A. Frontal view of paratype worker of *P. exigua* (MCZC). B. Lateral view of paratype worker of *P. exigua* (MCZC).

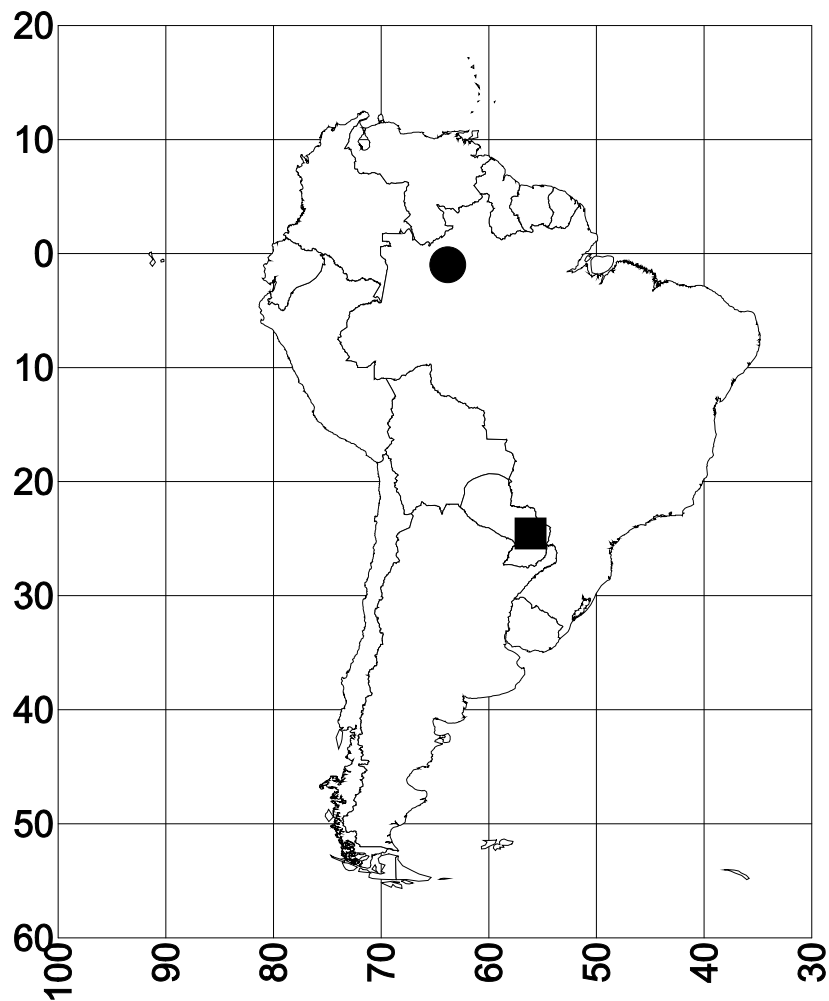


Figure 13. Distribution of *Platythyrea exigua*. The dot is from this study; the square is information obtained from www.AntWeb.org.

***Platythyrea lenca* De Andrade**

Platythyrea lenca De Andrade, 2004: 648 (w.) HONDURAS.

Type series examined.

One paratype worker (MCZC), from HONDURAS: Santa Barbara, 4 km SW Mina El Mochito, 1040m, 14 March 1979, W. Brown.

Material Examined: type series.

Natural History: *Platythyrea lenca* occurs in Honduras (Fig. 15).

Diagnosis: Worker. The head is elongate less than 1/3 longer than broad with parallel sides; the posterior lateral borders are rounded. The distance between the frontal lobes is narrow and the frontal lobes are rounded. The anterior border of the clypeus is rounded, the clypeus has a swollen surface. The posterior border of the clypeus and frontal area are well developed, but the borders are poorly defined. The eyes are small, about 1/7 of the head length. The mandibles are triangular with 10 teeth. The mandibular sulcus is present, but poorly developed. The antennal scape extends past the posterior lateral corner of the head by about the length of the first funicular segment. The mesosoma is elongate in profile. The pronotal suture is impressed. The propodeal angles are present and well developed. The petiole is elongate, about 1/3 longer than broad (seen from above) and has one dorsal poorly developed medial lobe. The two lateral posterior lobes are not developed. The sternopetiolar process is developed into a well-defined lobe. The postpetiole is fused with the gaster. The head and mandibles have fine erect and suberect hairs. The pilosity is more prominent on the petiole and sparser on the gaster. The head, mesosoma, petiole, postpetiole and gaster finely punctate (Fig. 14 A. & B.).

Measurements in mm and indices (n=1). HL 1.62; HW 1.2; FIW 0.51; SL 1.31; EL 0.24; EW 0.23; DpH 0.81; DpW 0.56; FW 0.38; FL 1.69; CI 74.1; SI 80.1; FI 22.5.

The female and male are unknown.

Comparison: *Platythyrea lenca* can be easily confused with *P. prizo* as both species have mandibular teeth (Fig. 18 A.). The main characteristic that distinguishes the two species is that *P. lenca* has short erect hairs (length of hairs 0.05 mm in *P. lenca*, 0.02 mm in *P. prizo*) on the petiole and gaster that are longer and denser than in *P. prizo* (Fig. 18 B.). Another feature that separates *P. lenca* from *P. prizo* is that *P. prizo* has larger eyes (EL 0.29 mm in *P. prizo* Fig. 18 A., 0.24 mm in *P. lenca*) and a shorter scape (SL 1.35 mm in *P. prizo*, 1.50 mm in *P. lenca*).

Platythyrea lenca can also be confused with *P. exigua* because they both have mandibular teeth but can be separated because *P. lenca* is larger in size (TL *P. prizo* 7.22 mm, *P. exigua* 4.70-4.84 mm). *P. exigua* has 6-7 mandibular teeth (Fig. 12 A.) and *P. lenca* has 10 teeth. The scape of *P. lenca* extends past the posterior lateral corner of the head (Fig 14 A.); the scape in *P. exigua* fails to reach the posterior lateral corner of the head. Another feature that separates *P. lenca* from *P. exigua* is that the petiole has one poorly developed dorsal lobe and the two posterior lateral lobes are not developed; *P. exigua* has a poorly developed dorsal lobe and the two lateral lobes are well developed as in *P. exigua*.

Platythyrea lenca can be distinguished from *P. punctata* and nearly all other species by the presence of mandibular teeth. Unlike *P. punctata*, *P. lenca* has an antennal scape that extends past the posterior lateral border of the head. *Platythyrea lenca* has a long face with parallel sides and *P. punctata* is characterized by a shorter rectangular head (Fig 20 A.). As mentioned before, *P. lenca* has one dorsal poorly developed lobe and the two posterior lobes are not developed; *P. punctata* has one dorsal and two poorly developed lateral posterior lobes (Fig 20 B.).

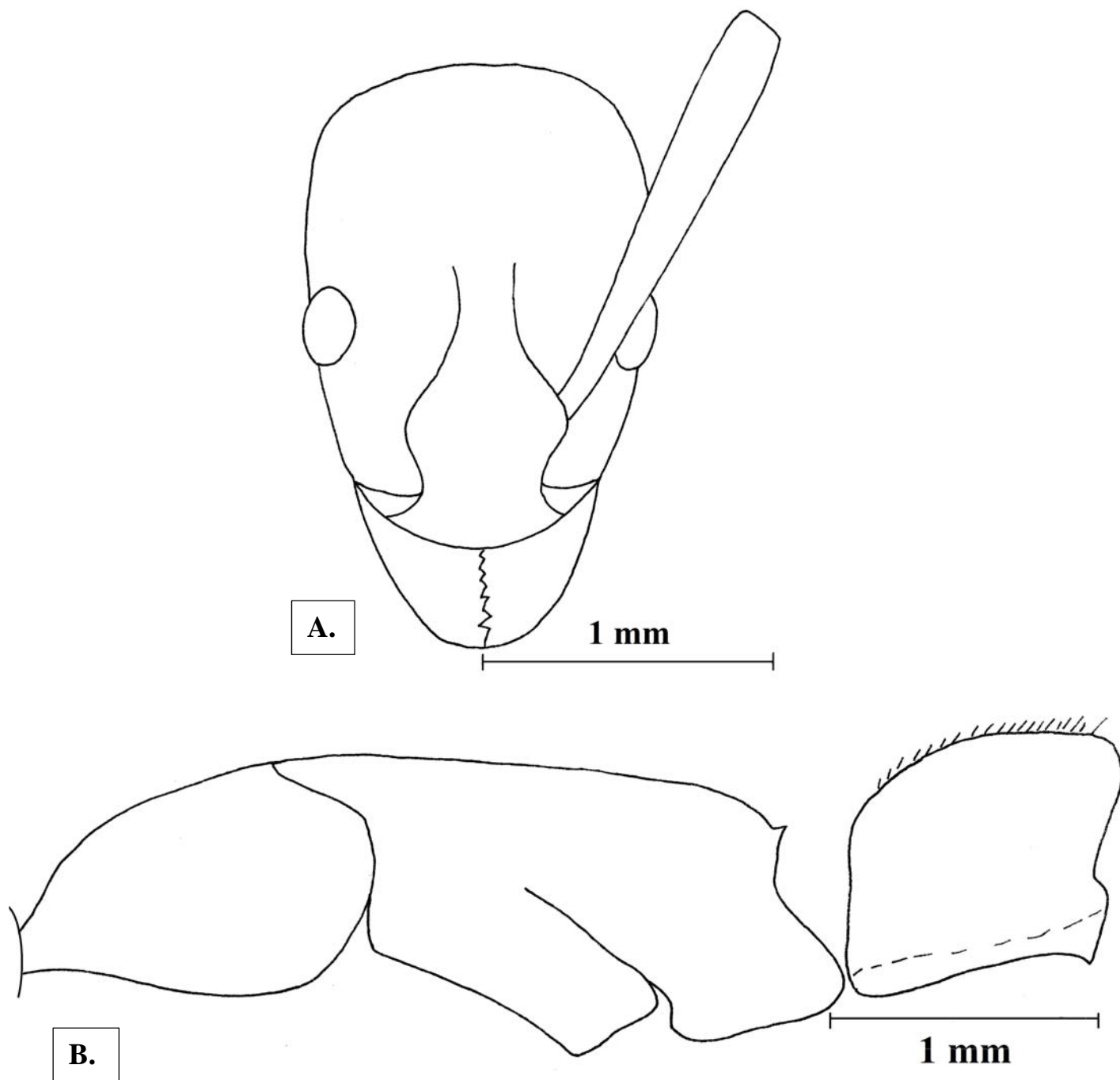


Figure 14. **A.** Frontal view of head of the paratype worker of *P. lenca*. **B.** Lateral view of the paratype worker of *P. lenca*.

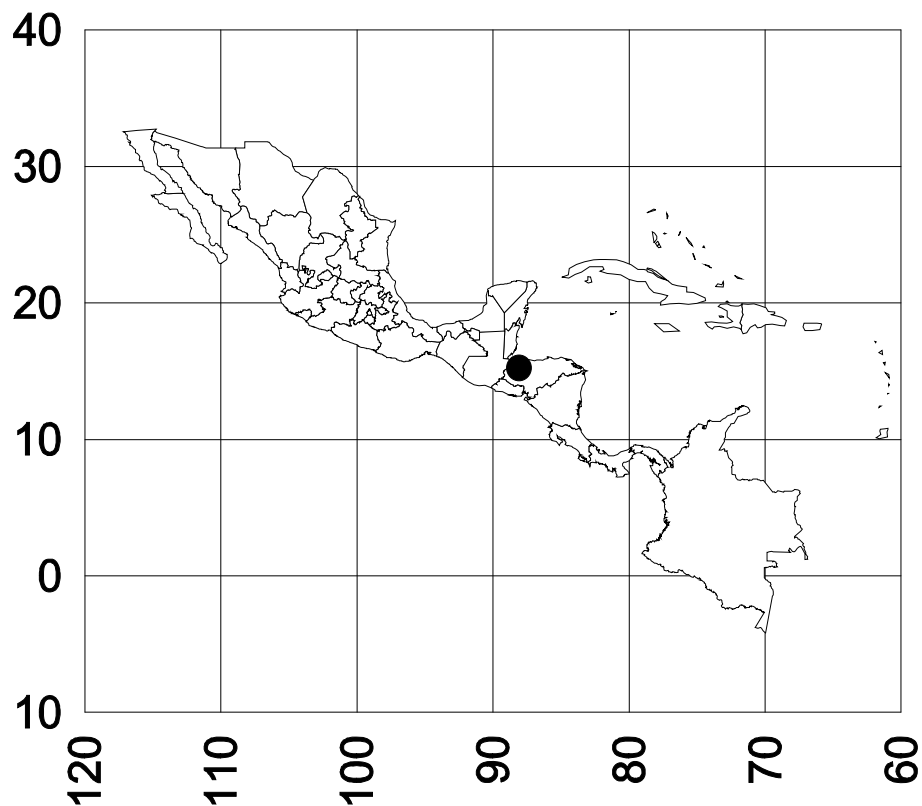


Figure 15. Distribution of *P. lenca*.

***Platythyrea pilosula* (Smith)**

Ponera pilosula Smith, F. 1858b: 95 (w) BRAZIL. Combination in *Platythyrea*: Mayr, 1886c: 358; in

Leptogenys: Emery, 1911d: 106; in *Platythyrea*: Kempf, 1965: 181; 1975: 9.

Platythyrea incerta Emery, 1890a: 56 (w) VENEZUELA. Wheeler, G. & Wheeler, J. 1971b: 1198 (l);

subspecies of *punctata*: Forel, 1912c: 36; junior synonym of *pilosula*: Brown, 1975: 9.

Type series not found.

Material Examined: BRAZIL: Ibicaba, 20-iv-1996, P. Rocha and E. Xavier (3 w MCZC). BRITISH GUYANA: Essequibo, 24-xi-35, J. Myers 5333 (1 w MCZC). ECUADOR: Los Rios, Pichilingue, 11-2-1955, E. Schilinger & E. Ross (2w CASC); Smith Collection (BNHM).

Natural History: *Platythyrea pilosula* occurs in Brazil, British Guyana, Colombia, Costa Rica, Ecuador, Mexico, Paraguay and Venezuela (Fig. 17).

Diagnosis: Worker. The shape of the head is nearly rectangular; the posterior border of the head is straight. The frontal lobes are wide and rounded. The anterior border of the clypeus is slightly convex, the clypeus has a flat surface. The posterior border of the clypeus and frontal area are poorly defined. The eyes are large, about $\frac{1}{4}$ of the head length. The mandibles are triangular without teeth except for a poorly defined apical tooth. The mandibular sulcus is weakly developed or completely absent. The antennal scape reaches the posterior lateral border of the head. The mesosoma is elongate, the dorsum of the mesosoma is flat. The propodeal angles are weakly developed. The petiole has one poorly developed dorsal lobe. The two lateral posterior lobes are poorly developed or completely missing. The sternopetiole process is developed into a well-defined lobe. The post-petiole is fused with the gaster. The third abdominal tergum is much longer than the postpetiole. The mandibles, mesosoma, petiole, postpetiole and gaster are covered with a fine silky pile and with fine scattered punctures (Fig. 16 A. & B.).

Measurements in mm and indices (n=3). TL 7.69-8.02; HL 1.47-1.51; HW 1.30-1.33; FIW 0.80; SL 1.12-1.14; EL 0.33-0.35; EW 0.30; WL 2.18-2.23; DpH 1.00-1.03; DpW .073-0.78; FW 0.47; FL 1.26-1.32; CI 86.1-90.5; SI 74.2-76.8; FI 35.6-37.3.

The female and male are unknown.

Comparison: *Platythyrea pilosula* can be confused with *P. angusta* because of the lack of lateral posterior lobes on the petiole. These two species can be differentiated because *P. pilosula* lacks a swollen femur, which is about $\frac{1}{3}$ as wide as it is long, whereas, *P. angusta* has a strongly swollen femur (FI *P. angusta* 41.6-42.5% Fig. 10 B., *P. pilosula* 35.6-37.3% Fig. 16 B.).

Platythyrea pilosula can also be confused with *Platythyrea sinuata* because they both have a similar face and body. The two species can be distinguished because the petiole of *P. sinuata* has a well-defined pointed dorsal lobe and lateral posterior lobes (Fig 24 B.), whereas, *P. pilosula* has poorly developed dorsal and lateral posterior lobes. The antennal scape slightly passes the posterior border of

the head in *P. pilosula* while the antennal scape extends past the posterior lateral border of the head by approximately half of the first funicular segment in *P. sinuata* (Fig 24 A.).

Platythyrea pilosula can be distinguished from *P. punctata* by the complete lack of the mandibular sulcus. In *P. pilosula* the distance between the frontal lobes is wide, which is not the case in *P. punctata* (Fig 20 A). The petiole of *P. pilosula* has one dorsal developed lobe, the two lateral posterior lobes are poorly developed or completely missing. The petiole of *P. punctata* is characterized by well defined dorsal and posterior faces; usually with one dorsal and two lateral poorly developed posterior lobes (Fig 20 B.).

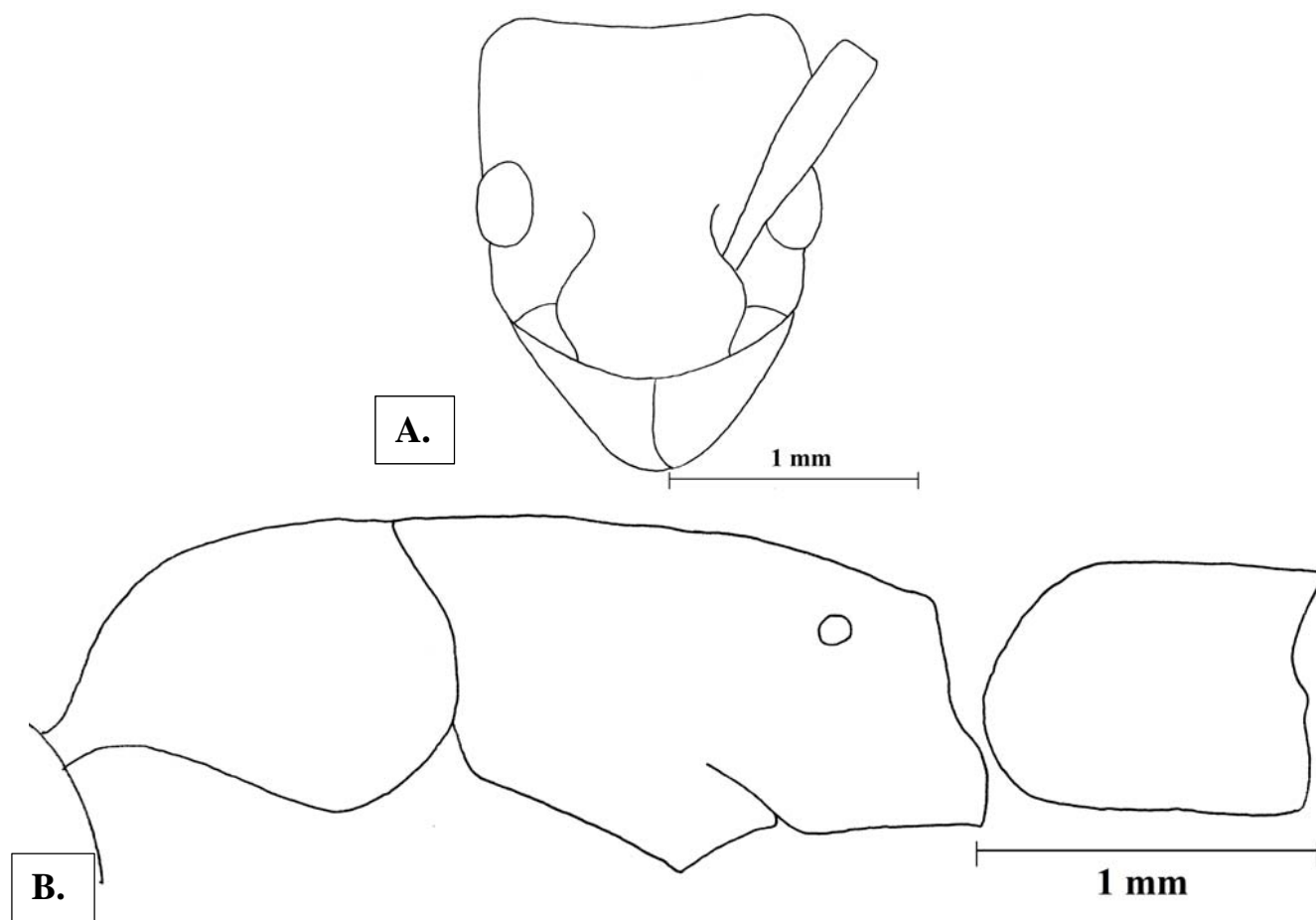


Figure 16. A. Frontal view of head of a worker of *P. pilosula* from Ecuador (MCZC). B. Lateral view of worker a of *P. pilosula* from Ecuador (MCZC).

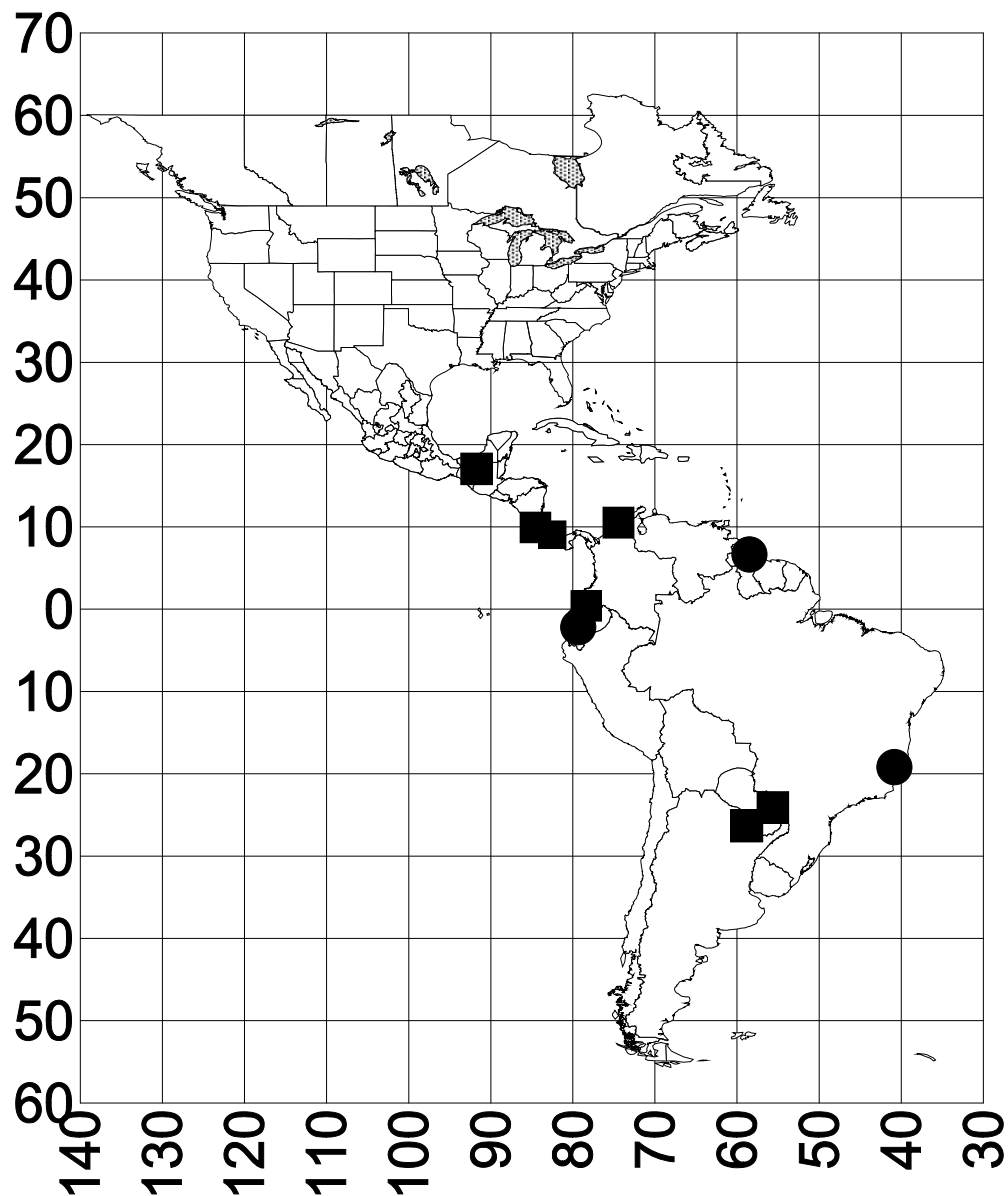


Figure 17. Distribution of *Platythyrea pilosula*. The black dots are records from this study; the squares are information obtained from www.AntWeb.org.

***Platythyrea prizo* Kugler**

Platythyrea prizo Kugler, C. 1976: 216, figs. 1-3 (w) COSTA RICA.

Type series examined.

Two Paratype (MCZC) from COSTA RICA; Heredia, OTS La Selva field Sta., Puerto Viejo de Sarapiquí, Rio Puerto Viejo, III: 5:1973, 10° 26'N-83°59'W, J. Wagner & J. Kethley.

Material Examined: Type series and COLOMBIA: Antioquia, Amalfi, Canon del Ponce, Tenche, 65°1' 26"N 75°7'32"W, 20-vii-1997, F. Serna (2 w).

Natural History: *Platythyrea prizo* occurs in Colombia, Costa Rica and Mexico (Fig. 19)

Diagnosis: Worker. The head is elongate, less than 1/3 longer than broad with parallel sides. The posterior border of the head is straight (in full face view). The distance between the frontal lobes is narrow and the lobes are gently rounded; the frontal lobes do not completely cover the antennal insertions. The anterior border of the clypeus is rounded, the clypeus has a swollen surface. The posterior border of the clypeus and frontal area are defined; the eyes are small. The mandibles are triangular shaped with 8-11 teeth, the mandibular sulcus is absent. The antennal scape extends past the posterior lateral corner of the head by approximately the first funicular segment. The mesosoma in profile is elongate and the dorsum of the mesosoma is flat. The pronotal suture is impressed. The propodeal angles are present and well developed. The petiole is elongated, and has one poorly developed dorsal lobe. The two lateral posterior lobes are not developed. The sternopetiolar process is developed into a well-defined lobe. The postpetiole is fused with the gaster. The mandibles have fine erect and suberect hairs, the remainder of the body is without such erect or suberect hairs. The mandibles are finely punctate and the sides of the face has aggregated punctures. The mesosoma, petiole and postpetiole have coarse punctures. The gaster has wavy transverse striae with poorly defined punctures (Fig 18 A. & B.).

Measurements in mm and indices (n=2). TL 7.98; HL 1.67; HW 1.21; FIW 0.54; SL 1.35; EL 0.29; EW 0.27; WL 2.66; DpH 0.86; DpW 0.61; FW 0.44; FL 1.68; CI 74.8-77.6; SI 87.4-89.6; FI 24.6-26.1.

The female and male are unknown.

Comparison: *Platythyrea prizo* can be confused with *P. exigua* because of the presence of mandibular teeth in both species, but can be separated because *P. prizo* is larger in size. *Platythyrea prizo* has a

scape that extends past the posterior lateral corner of the head by approximately the first funicular segment (Fig 18 A.); the scape of *P. exigua* fails to reach the posterior lateral corner of the head (Fig. 12 A.). Another feature that separates *P. prizo* from *P. exigua* is that *P. prizo* has one dorsal poorly developed petiolar lobe and the two posterior lateral lobes are not developed. *Platythyrea exigua* has a poorly developed dorsal petiolar lobe and the two lateral lobes are well developed (Fig 12 B.).

Platythyrea prizo can be distinguished from *P. punctata* and nearly all of the other species by the presence of mandibular teeth. Unlike *P. punctata*, *P. prizo* has an antennal scape that extends past the posterior lateral border of the head. *Platythyrea prizo* has a long face with nearly parallel sides and *P. punctata* is characterized by a nearly rectangular head (Fig 20 A.). As mentioned before, *P. prizo* has one poorly developed dorsal petiolar lobe and the two posterior lobes are not developed. *Platythyrea punctata* has one dorsal and two poorly developed lateral posterior lobes (Fig 20 B.).

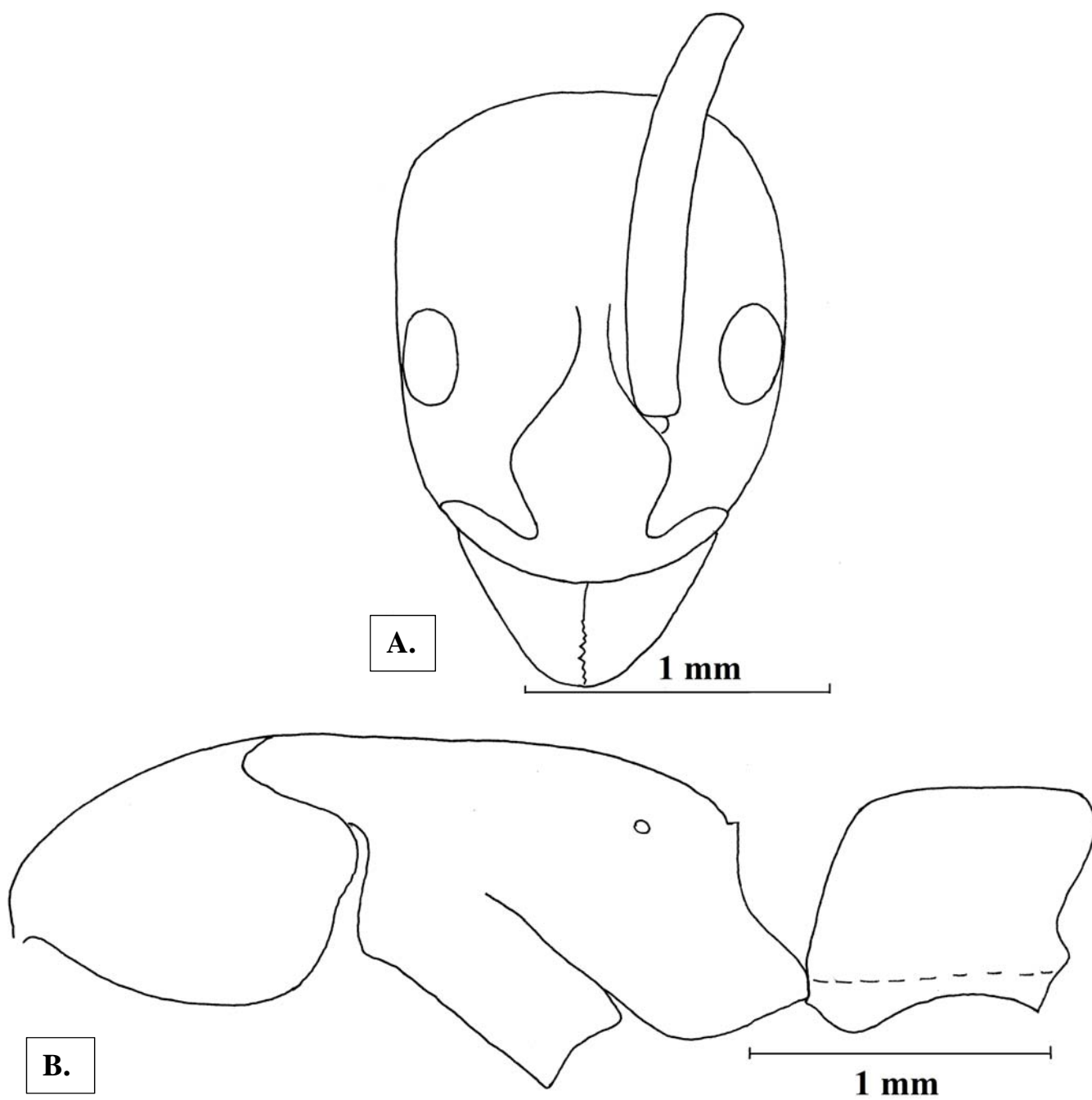


Figure 18. **A.** Frontal view of the head of a paratype worker of *P. prizo*. **B.** Lateral view of a paratype worker of *P. prizo*.

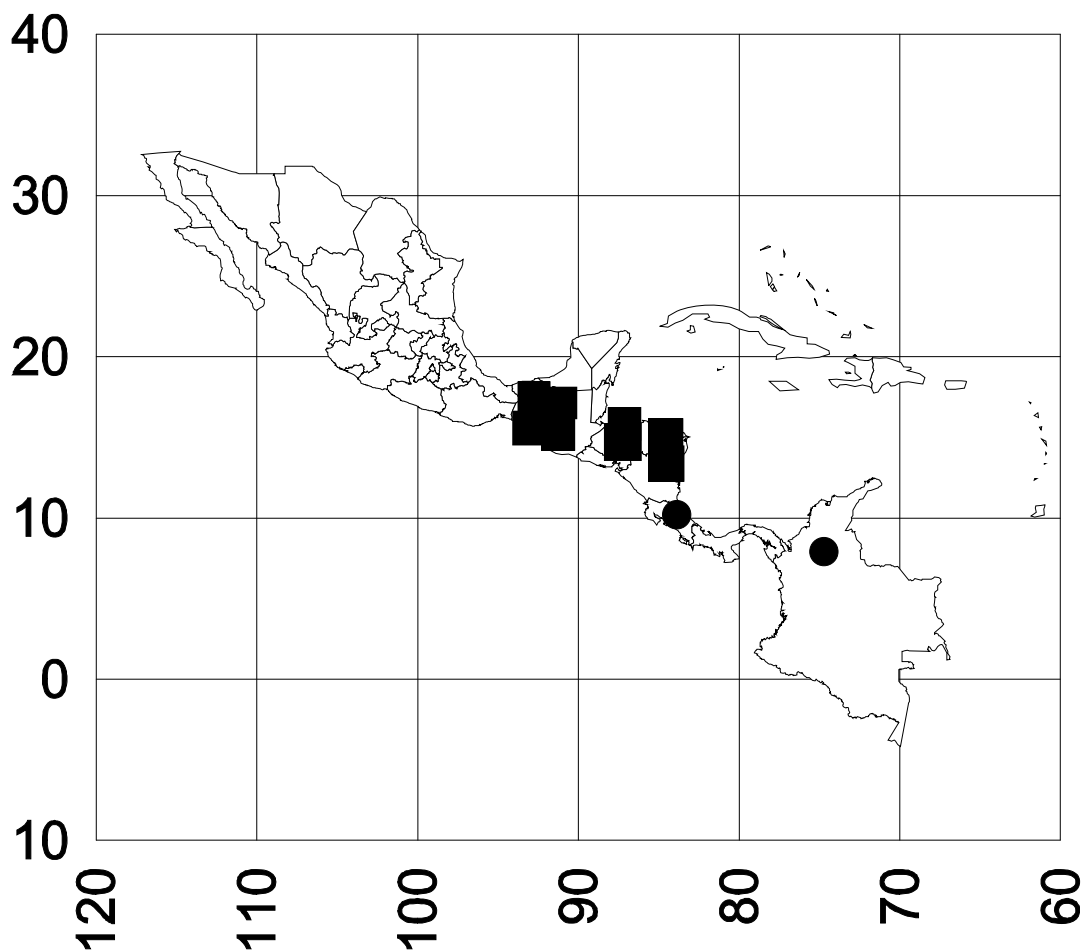


Figure 19. Distribution of *Platythyrea prizo*. The black dots are records from this study; the squares are information obtained from www.AntWeb.org.

***Platythyrea punctata* (Smith)**

Pachycondyla punctata Smith, F. 1858b: 108 (w m). Forel, 1893g: 358 (q) CENTRAL AMERICA.

Wheeler, W.M. 1905b: 81 (L). Combination in *Platythyrea*: Roger, 1863a: 173.

Platythyrea pruinosa Mayr, 1870b: 962 (w.). Forel, 1893g: 358 (m) MEXICO. Subspecies of *punctata*:

Forel, 1901f: 335; Wheeler, W. M. 1917g: 457; Wheeler, W. M. 1923c: 3. Junior synonym of *punctata*: Wheeler, W.M. 1908a: 123; Brown, 1975: 9.

Platythyrea cineracea Forel, 1886b: xxxix (w). Forel, 1899c: 4 (m) GUATEMALA. Subspecies of

punctata: Forel, 1893g: 359; Forel, 1912c: 35. Junior synonym of *punctata*: Brown, 1975: 9.

Type series not found.

Material Examined: BAHAMAS: Blutt, W. Mann (1 w); Eluthera Island, New Ports Mouth, 28-iii-1953, G. Rabb (1 w); Long Island, Clarence Town, 10-iii-1953, L. Giovandii (13 w); Nassau, vi-vii-1961, W. Wheeler (4 w MCZC). BELIZE: Las Cuevas, 15-iii-1995; Lygal & Hollis (2 w BHAM). BRAZIL: Grand Etang, Geada, IX-3-10, C. Brewes (2 w). BRITISH GUYANA: Bartica, II-18-1913 (1 w); Guadeloupe, 23-iii-1977, W. Whitcomb (2 w FSCA); Walker Expedition, 18-vii-1914 F. Gaige (1 w FSCA). BRITISH VIRGEN ISLANDS: Tortola I., Sage Mnt., 18° 25'N 64°40'W, 23-x-1992, R. Shelling (1 w LACM); Tortola, Sage Mnts., 1650 ft, 30-x-1997, C. Bartlett (2 w STDC). COSTA RICA: Provincia Coma Barbudal, ii-1990, S. Vinson (1 w CWEM). CUBA: Baracoa, W. Mann (3 w); Havana, 27-xi-1947, W. Buren (1 w LACM); Havana, Baker (1 w CASC); Havana (1 w CASC); (Provincia de Holguin), Preston, iii-18-29 (1 w MCZC); Santiago de las Vegas, 4-vii-1940, J. Bradley (1 w). DOMINICAN REPUBLIC: Clarkehall, 8-ii-1965, J. Clarke (1 w); Prov. Distrito Federal, Naco Santo Domingo, 22-ix-1985, L. Strange (1 w FSCA); Provincia Hato Mayor, Farm Mango Limpio, 29-x-1986, W. Palawski (1 w CASC); Soufriere, 11-ii-1963, J. & T. Clarke (3 w); Springfield, xi-1967, N. Krauss (1 w). EL SALVADOR: Quezaltepeque, 500 m, 5-vii-68, D. Cavagnaro & M. Irwin (1 w CASC); Quezaltepeque, 16-vi-1963 (1 w CASC). GUATEMALA: Alta Vera Paz, Estacion Biologica Lechua, 14°31' 21.2" N 91°08' 11.1" W, 17-vii-2004, W. & E. Mackay (1 w CWEM); Alta Vera Park, Trece Aguas, 11-iv, B. Schwarz (1 w); Alta Vera Park, 24-iii-1906 (1 w); El Peten, Tikal National Park Ruins, 25-iv-1990 (2 w MCZC); Escuintla, 31-xii-1911, W. Wheeler (1 w LACM); Izabal, Parque Archeologico Quirigua, 15°16' 07.5" N 89°02' 25.8" W, 27-vii-1974, W & E Mackay (1 w CWEM); Mixco, W. Mann (2 w); San Jose, 20-viii-1954, E. Ross (1 w); Secanquin, Alta Vera Park, 25-xi-2004, G. Goll (4 w); Suchitepequez, Finca, Terrales. 12.3 K N of Patuliv, 14°31' 21.2" N 91°08' 11.1" (2 w CWEM); 7-i-1948 (1 w, 2 q). HONDURAS: La Ceiba, W. Mann (1 w). JAMAICA: Manchester Parish, Mandeville, 19-vii-1995 G. Edwards (2 w FSCA); Martiniquez, 26-vii-1945, H. Stchie (2 w). Portland,

5 mi W. Pat Antonio, 8-ix-1975, C. O'Brien (2 w CASC); St. James, Brandon Hill Cave, Montego Bay, 1-ix-1974 (2 w MCZC); St. James, Brandon Hill Cave, Montego Bay, 14-iii-1911 (1 w); St. Vincent, H. Smith (1 w). MEXICO: Chiapas, 1954, R. Dressler (1 w MCZC); Quintana Roo, Puerto Morelos, 7-iv-1986, A. Dejean (1 w LACM); Rosario, Izapa, Tuxtla Chico, 5-viii-83 (1 w CWEM); Chiapas: Rosario Izapa, Tuxtla Chico, 4-ix-1984 (1 w); Cordoba (1 w); Chiapas, 8 k NE. of Huixtla, 1-ii-1980, E. Ross (2 w CASC); Chiapas, Calakmul, 20-xi-1983, J. Bueno (1 w); Chiapas, Chajul, 22-x-1984, P. Rojas (3 w) Colima, W. Mann (3 w); Jalisco, Puerto Vallarta, 1-i-1971, P & H Arnaud (1 w, 1 m CASC); Jalisco, Puerto Vallarta, 31-xii-1971, P & H Arnaud (1 q CASC); Morelos, near Tijalpa, 22-v-1963, R. Woodruff (1 w FSCA); Nuevo León, 7-xi-1946 (1 w CASC); San Luis Potosi, Tamazunchale, 3-iv-1946 (2 w); Tamaulipas, Gomez Farias, 25-ix-1997, W. Mackay (1 w CWEM); Veracruz, Cardel, 19°35' 31"N 96°22' 47"W, 25-x-2007, I. Moreno (2 w CWEM); Veracruz, Catemaco, 4-i-1990, F. Capistran (1 w CWEM); Veracruz, iii-1961, N. Krauss (3 w). NICARAGUA: Granada, 4.3 mi SW of San Jorge, 88 m 11° 24' 36.6" N 85° 50' 28.9" W, 19-vii-2003, W. & E. Mackay (1 w CWEM). PANAMA: San Blas, Nusagandi, 34 m, 10°19' N 84°43' W, 27-x-1989, B. Fisher (1 w LACM); PUERTO RICO: Mayaguez, 10-viii-1935, M. Smith (2 w); Rio Grande, El Verde Field Stn. 21-vii-1984, G. Camilo (3 w); Tortuguana, 30-viii-1960 W. Buren (1 w). SAINT LUCIA: Jaques, Mt. Casteu Rd., 2 mi NE. Fond St., 9-viii-1986 C. & L. O'Brien (3 w FSCA); Union Arg. Station, i-1973, G. Whitcomb (1 w FSCA); WI, Quarter of Castries, N. Weber (2 w MCZC). UNITED STATES OF AMERICA: Florida, Key Largo, E. Wilson (1 q MCZC); Florida, Dade Co., Everglade National Park, H. Weems 20-x-1959 (2 w FSCA); Florida, Dade Co., Homestead, 14-x-1948, O. Link (1 w); Florida, Dade Co., Miami, vii-1946, W. Buren (1 w); Florida, Dade Co., Miami, v-1948, W. Brown (3 w FSCA); Florida, Highland Co., Archbold Biol Station, Lake Placid, 31-x-1983, M. Deyrup (1 w MCZC); Florida, Highland Co., Archbold Biol Station, 25-viii-1992, M. Deyrup (3 w MCZC); Florida, Indian River Co., 5 mi S. of Vero Beach, 22-x-1983, J. Frank (2 w, 1 q FSCA); Florida, Indian River Co., 5 mi S. of Vero Beach, 23-ix-

1983, J. Frank (2 w, 1q FSCA); Florida, Indian River Co., 5 mi S. of Vero Beach, 18-xi-1983, J. Frank (1 q FSCA); Florida, Indian River Co., 5 mi S. of Vero Beach, 16-vii-1983, J. Frank (2 w FSCA); Florida, Martin Co., Bluefield, 24-viii-1983, K. Hibbard (9 w FSCA); Florida, Monroe Co., Marathon Vaca, x-1947, W. Buren (1 w FSCA); Florida, St. Lucia Co., G. Costner, 23-ii-1951 (3 w). Texas, Cameron Co., southernmost Sabal Palm Grove Sanct., 17-x-1981, R. Turnbow & E. Ortiz (1 m CWEM), Texas, Brownsville, 28-iv-1942, W. Ross (1 w CASC). VIRGIN ISLANDS: St. Thomas, Hisbiscals, 22-iii-1945 (1 w); St. Croix, La Grande, ii-1935-1936, H. Beatty (1 w).

Natural History: *Platythyrea punctata* occurs in the Bahamas, Belize, Barbados, Brazil, British Guyana, British Virgin Islands, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Puerto Rico, Saint Lucia, United States of America and the Virgin Islands (Fig. 23).

Diagnosis: Worker. The head is nearly rectangular and the posterior border of the head is straight. The mandibles are triangular without teeth and the mandibular sulcus is present. The frontal lobes are wide and rounded. The anterior border of the clypeus is straight with a flat surface. The posterior border of the clypeus and frontal area are well defined. The eyes are large. The antennal scape slightly reaches the posterior border of the head. The mesosoma is elongate; the dorsum of the mesosoma is flat. The propodeal spiracle is almost circular; the propodeal angles are developed. The petiole is elongate and has one poorly developed dorsal lobe. The two lateral posterior lobes are not developed. The sternopetiole lobe is developed. The postpetiole is fused with the gaster. The mandibles have fine erect hairs and are finely punctate. The head, mesosoma, petiole and postpetiole are covered with scattered punctures and gray pile (Fig 20 A. & B.).

Comparison: See other comparisons.

Measurements and indices (n=3). TL 6.79-6.98; HL 1.26-1.33; HW 1.05-1.11; FIW 0.68-0.71; SL 0.94-1.06; EL 0.30-0.35; EW 0.31-0.40; WL 2.09-2.18; DpL 0.78-0.80; DpW 0.66; FW 0.36-0.37; FL 1.08-1.15; CI 79.2-83.5; SI 79.9-80.0; FI 32.7-33.3.

Diagnosis: Queen. Similar to worker in shape and length except the mesosoma is more robust. The sclerites are developed. The ocelli is weakly developed or completely absent. The stinger is well developed. The female is winged as a virgin and the wing venation complete (Fig 21 A. & B.).

Measurements and indices in mm (n=1). TL 6.98; HL 1.31; HW 1.13; FIW 0.61; SL 1.00; EL 0.45; EW 0.27; WL 2.23; DpH 0.75; DpW 0.73; FW 0.31; FL 1.12; CI 86.2; SI 76; FI 27.6.

Diagnosis: Male. Similar to worker except the ocelli is present. The antennal scape is short and fails to reach the posterior lateral corner of head. The antenna is 13-segmented and the antennal insertions are exposed. The anterior border of clypeus straight. The eyes are huge; the diameter is greater than the distance from anterior margin of eye to the insertion of the antenna. The head is broader than long and the posterior border of head is concave. The male is similar in size to that of workers and queens (Fig. 22 A.).

The promesonotal suture is well developed and the mesosoma is flat. The notauli is present. The anapleural suture is well defined. The propodeal spiracle is nearly circular and the propodeal angles are often developed. The petiolar node is similar to that of workers (Fig 22 B.).

Measurements and indices (n=1): TL 6.41; HL 1.11; HW 1.12; FIW 0.23; SL 0.22; EL 0.67; EW 0.35; WL 2.28; DpH 0.72; DpW 0.56; FW 0.30; FL 1.11; CI 100; SI 19; FI 27.

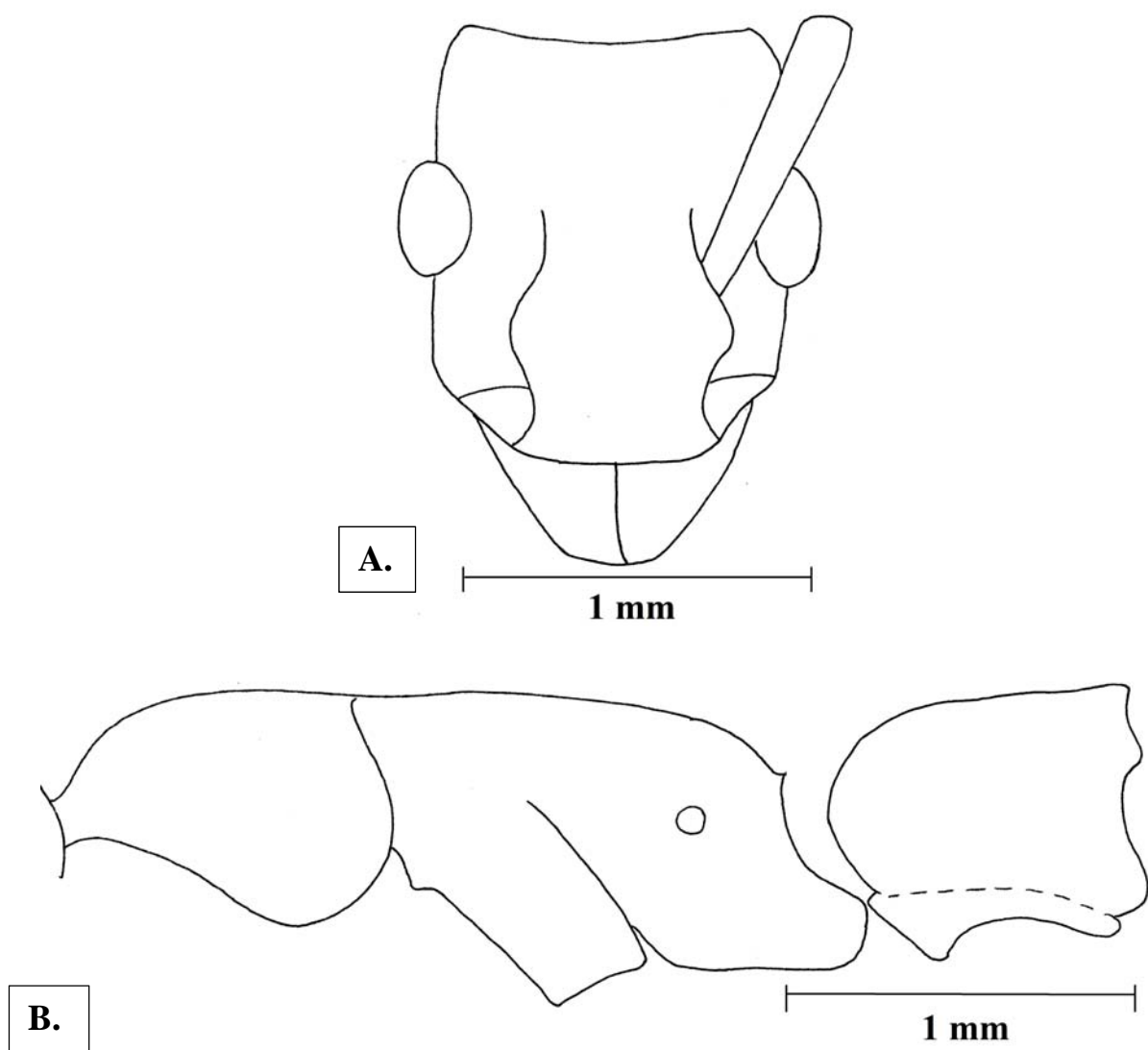


Figure 20. **A.** Frontal view of the head of a worker of *P. punctata* from Mexico (LACM). **B.** Lateral view of a worker of *P. punctata* from Mexico (LACM).

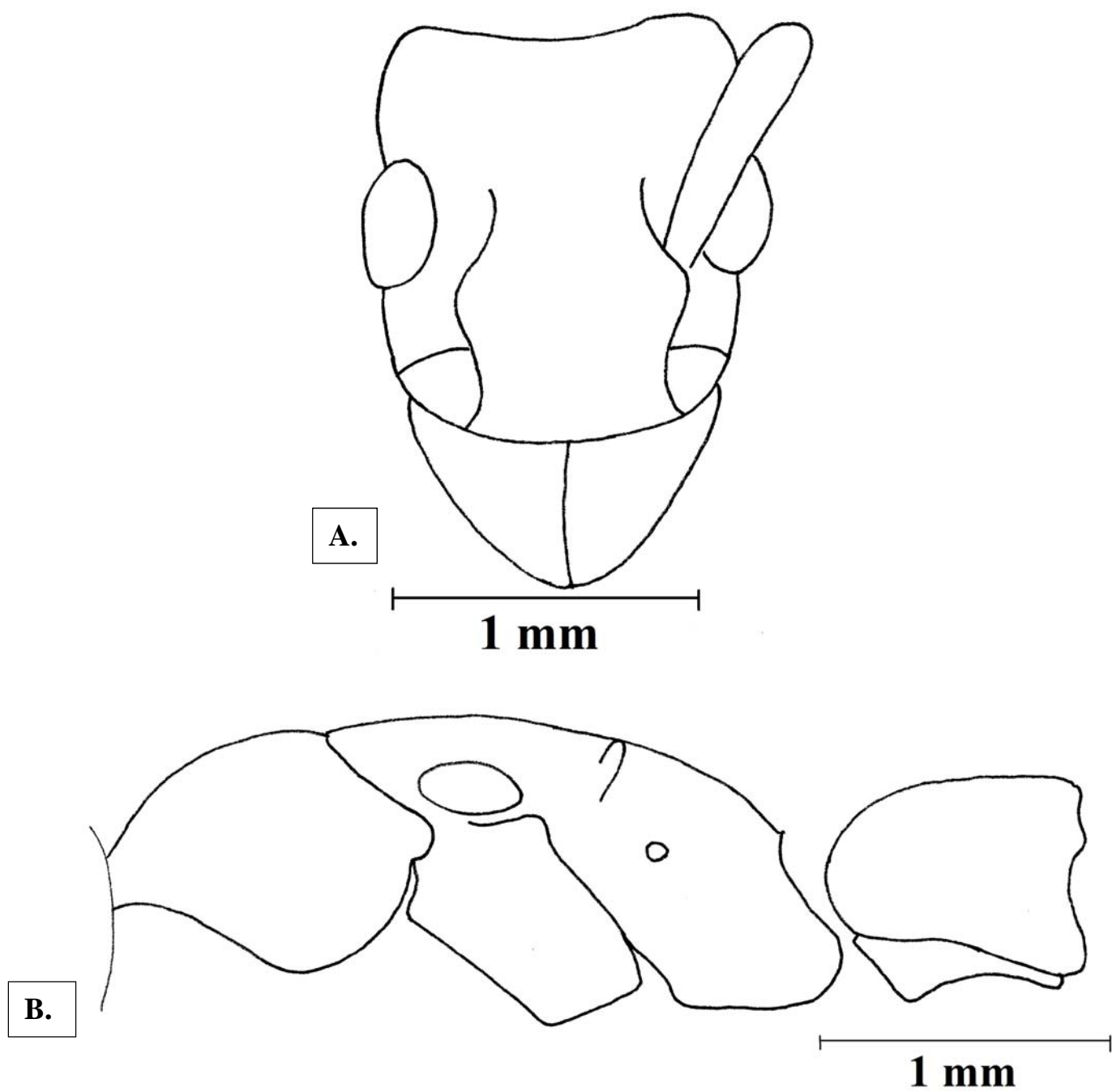


Figure 21 **A.** Frontal view of the head of a female of *P. punctata* from Florida (MCZC). **B.** Lateral view of a female of *P. punctata* from Florida (MCZC).

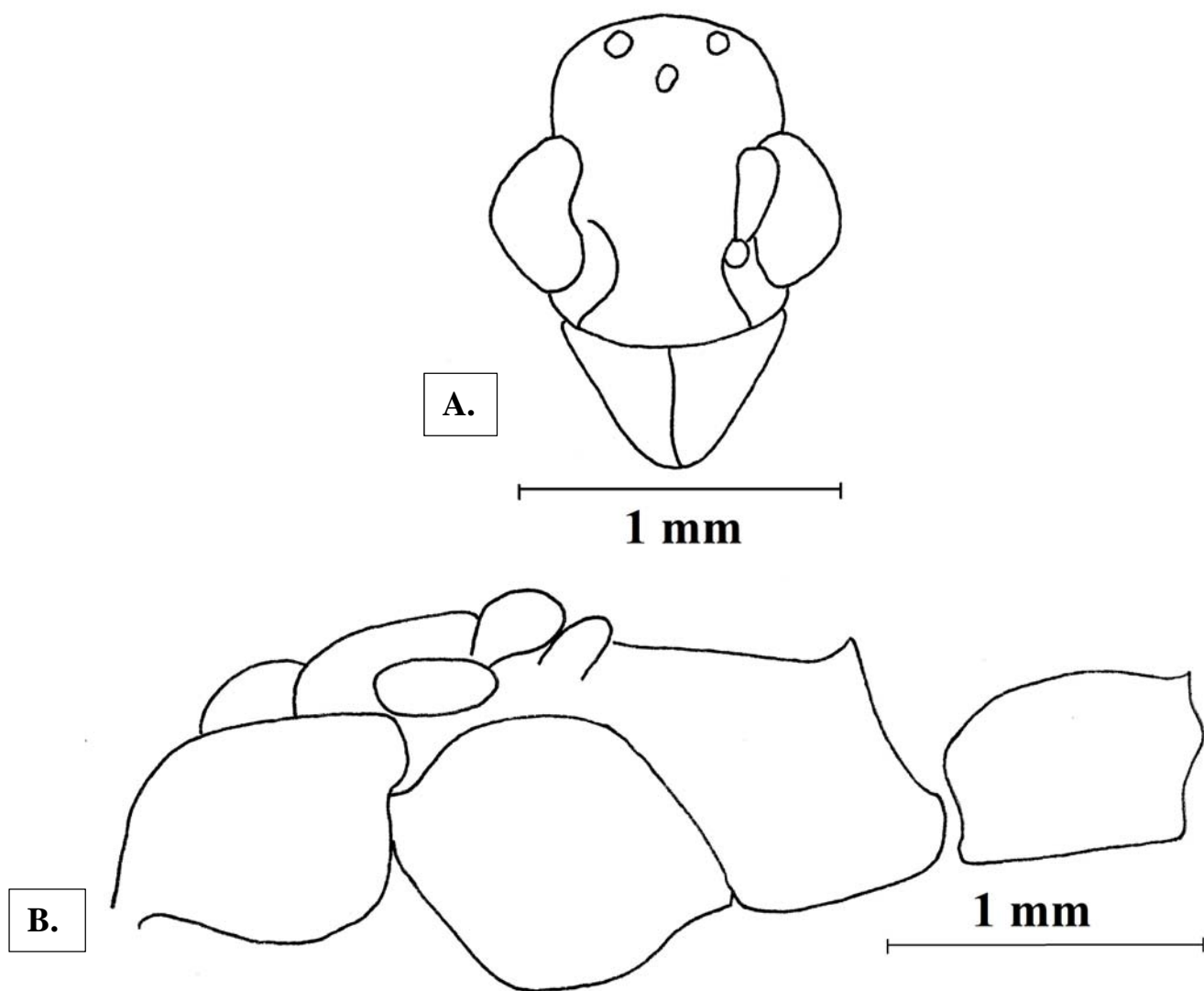


Figure 22. **A.** Frontal view of the head of a male of *P. punctata* from Texas (CWEM). **B.** Lateral view of a male of *P. punctata* from Texas (CWEM).

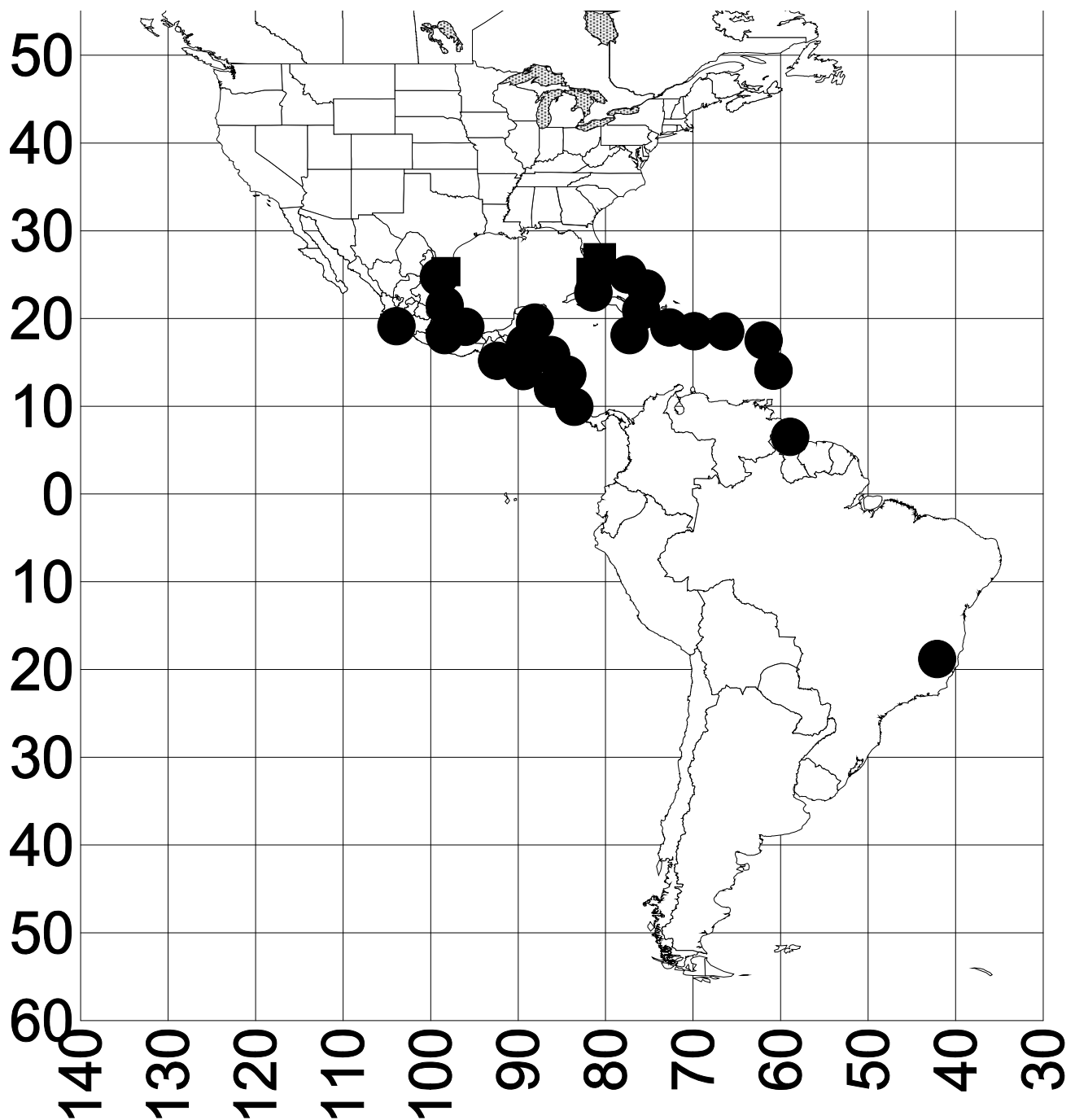


Figure 23. Distribution of *Platythyrea punctata*. The black dots are records from this study; the squares are information obtained from www.AntWeb.org.

***Platythyrea sinuata* (Roger)**

Ponera sinuata Roger, 1860: 297 (w m) SURINAM. Combination in *Platythyrea*: Roger, 1863a: 173.

Platythyrea meinerti Forel, 1905b: 156 (w) VENEZUELA. Junior synonym of *sinuata*: Brown, 1975: 9.

Platythyrea meinerti st. *boliviana* Santschi, 1921g: 83 (w) BOLIVIA. Junior synonym of *sinuata*:

Brown, 1975: 9.

Type series was not found.

Material Examined: BRAZIL: Amazonas, Ig. Marianil, Rio Branco Rd., 24 km. NE of Manaus, Aug. 22-viii-1962 (2 w); Lizarda Vereda, Rio Maravilha, 09° 03' 14"S 47° 06' 40"W, R. Silva & R. Feitosa (3 w MCZC). BRITISH GUYANA: Kurupung, H. Lang (1 w CASC). COLOMBIA: Huila, Neiva, 5-xii-95, W & E Mackay (1 w CWEM). ECUADOR: Provincia Napo, 0°26' N 76° 36' W, 18-vii-1989, P. Kazan (1 w FSCA); S. Santa Rosa, El Oro, 23-i-1955, E. Schilinger & E. Ross (1 w CASC); Napo, near Dureno, 287 m, 0° 4' 40.8"N 76° 43' 50.5"W, 20 vii-2005, W. & E. Mackay (1w CWEM). PANAMA:Barro Colorado I., Canal Zone, i-1960, W. Brown & E. McCluskey (2 w); PERU; Loreto, Boqueron, 500 m., 14-vii-1985, J. Shunk (1 w LACM); Madre de Dios, 34.39 k Puerto Maldonado, Sachavacayoc Centre, 205 m SW, 30-viii-12, W&E Mackay (6 w CWEM); Puerto Maldonado, Sachavacayoc Centre, 209m, 12° 51' 15.4"S 69° 22' 15.9W, 31-vi-2012, ant course (1 w CWEM). Tingo Maria, 670 m, Weyrauch (3 w, 1 q MCZC). VENEZUELA: Trujillo, 400 m, 9°28'N 70° 29' W, J. Lattke (2 w MCZC).

Natural History: *Platythyrea sinuata* occurs in Bolivia, Brazil, British Guayana, Colombia, Costa Rica, Ecuador, Panama, Peru, Suriname, and Venezuela (Fig. 26).

Diagnosis: Worker: The head is rectangular shaped and the posterior border of the head is slightly concave (full face view). The frontal lobes are wide and rounded. The anterior border of the clypeus is straight, the clypeus has a flat surface. The posterior border of the clypeus and frontal area are defined. The eyes are large about ¼ of the length of the head. The mandibles are triangular and mandibular sulcus is present. The antennal scape extends past the posterior lateral border of the head by approximately half of the first funicular segment. The mesosoma is robust and the dorsum of the

mesosoma is flat. The propodeal angles are well developed. The petiole is elongate and has one well defined pointed dorsal lobe and two lateral developed posterior lobes that are sharp and defined. The sternopetiolar process is developed into a lobe. The postpetiole is fused with the gaster. The mandibles have fine hairs and are finely punctate. The remainder of the head, mesosoma, petiole and postpetiole and gaster with scattered coarse punctures and without hair (Fig 24 A. & B.).

Measurements and indices (n=3). TL 7.17-7.59; HL 1.3-1.4; HW 1.11-1.18; FIW 0.73-0.75; SL 1.06-1.18; EL 0.37-0.33; EW 0.33-0.35; WL 2.37-2.47; DpL 0.91-1.00; DpW 0.73-0.81; FW 0.43; FL 1.23-1.25; CI 84.7-86.1; SI 85.7-90; FI 34.4- 35.8.

The female resembles the worker but is winged and has well developed sclerites. The ocelli are absent, the wing venation is complete (Fig 25 A.).

The male is unknown.

Comparison: *Platythyrea sinuata* can be mostly confused with *P. strenua* but can be separated by the lack of a mandibular sulcus. The anterior border of the clypeus in *P. sinuata* is straight and the clypeus has a flat surface (Fig, 24 A.), unlike *P. strenua* which has the anterior border of the clypeus slightly rounded (Fig. 27 A.). *Platythyrea sinuata* has well defined propodeum humeral angles (Fig. 24 B.) and *P. strenua* does not. Another way to tell the two species apart is by the shape of the petiole. *Platythyrea sinuata* has one well defined pointy dorsal lobe, and two sharply developed posterior lateral lobes, as compared to *P. strenua*, which has one dorsal and two poorly developed lateral posterior lobes (Fig 27 B.).

Platythyrea sinuata can be distinguished from *P. punctata* because it is larger. Apart from *P. strenua*, it is the second largest *Platythyrea* in the New World. Another way to separate *P. sinuata* from *P. punctata* is by the extension of the antennal scape. The antennal scape in *P. sinuata* extends past the posterior lateral border of the head by approximately half of the first funicular segment. In *P. punctata* the antennal scape fails to reach past the posterior lateral corner of the head (Fig 20 A.).

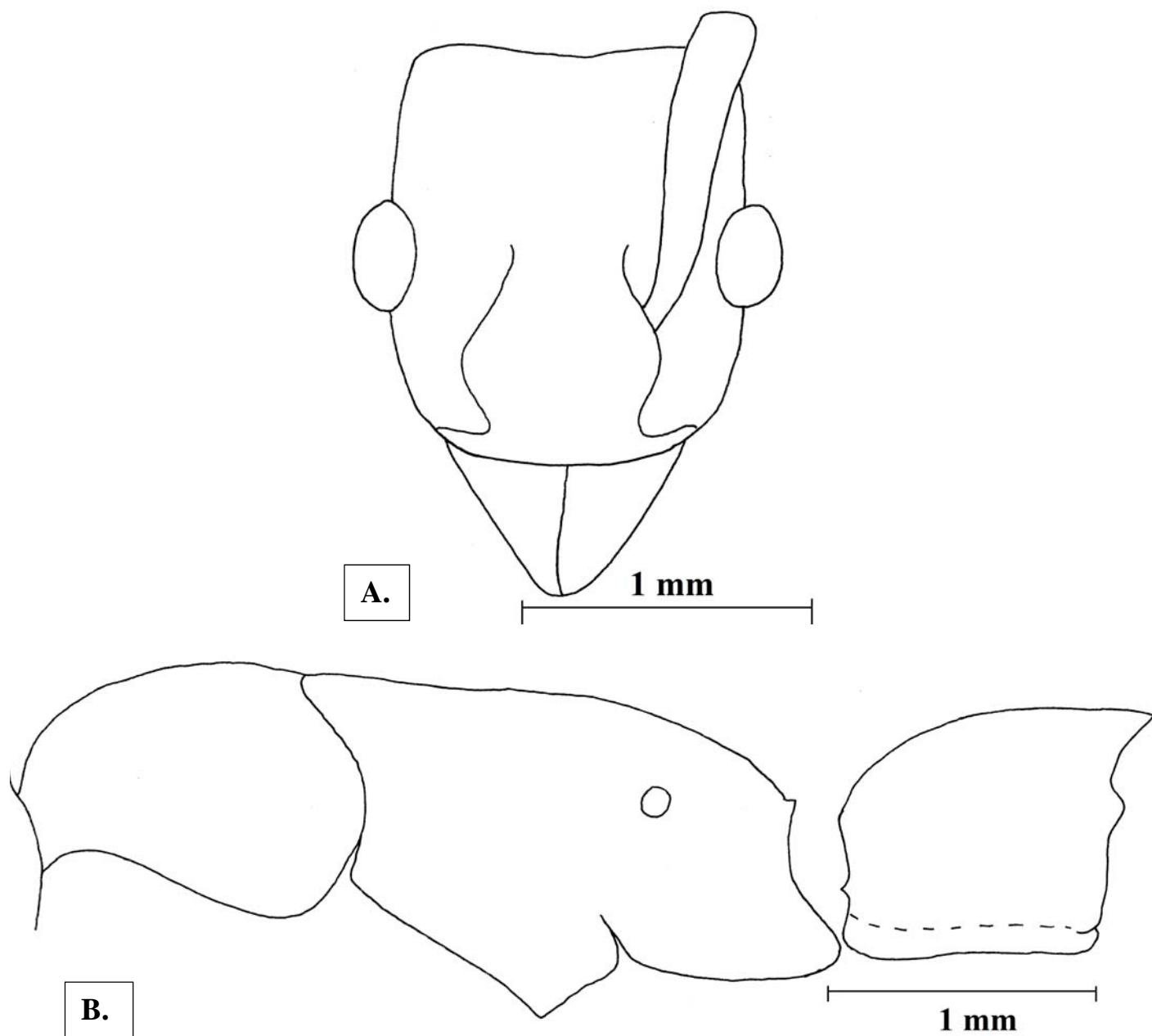


Figure 24. **A.** Frontal view of head of a worker of *P. sinuata* from Peru (LACM). **B.** Lateral view of a worker of *P. sinuata* from Peru (LACM).

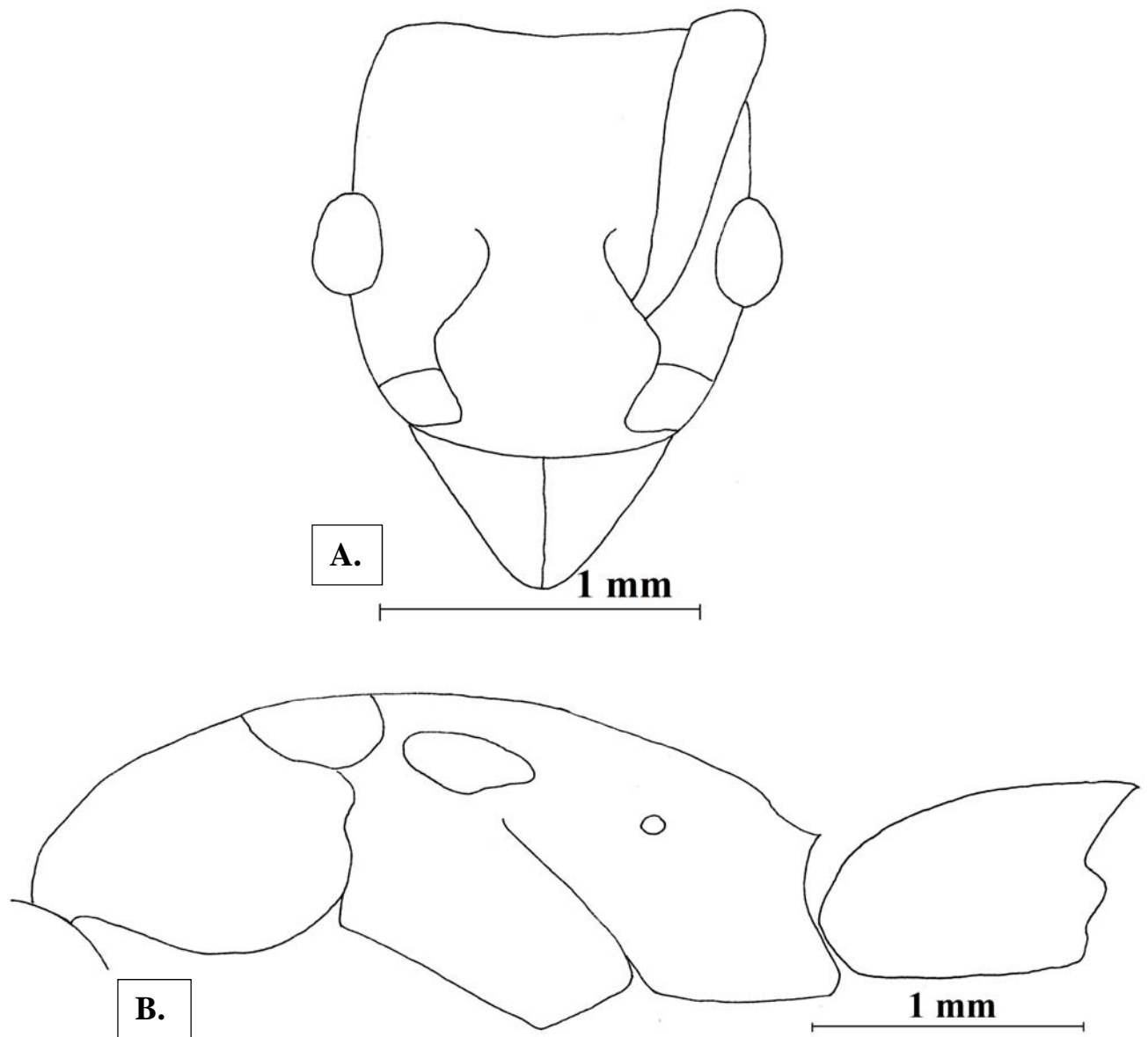


Figure 25. **A.** Frontal view of head of a female of *P. sinuata* from Peru (LACM). **B.** Lateral view of a female of *P. sinuata* from Peru (LACM).

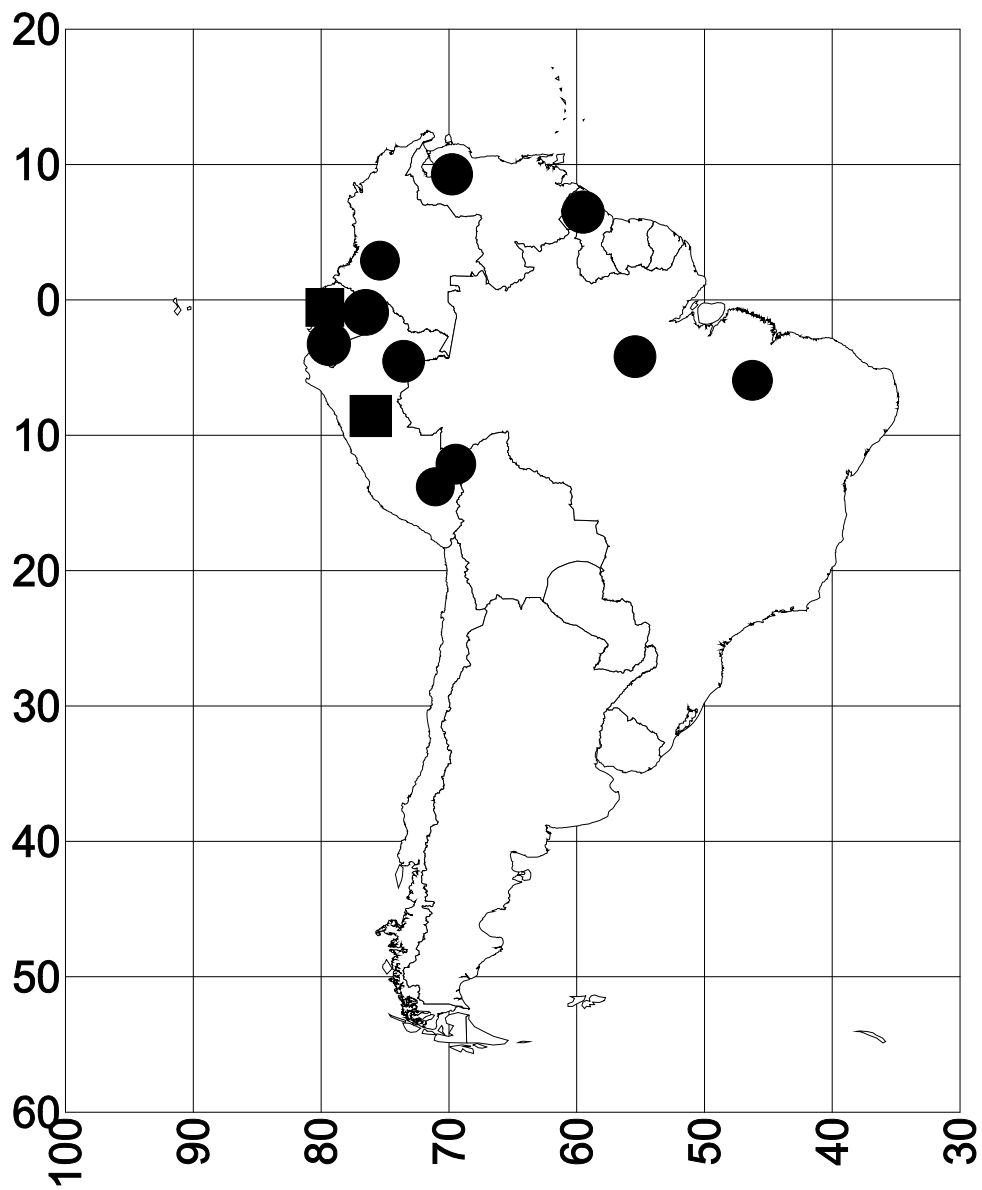


Figure 26. Map of *Platythyrea sinuata*. The black dots are records from this study; the squares are information obtained from www.AntWeb.org.

***Platythyrea strenua* Wheeler**

Platythyrea strenua Wheeler, W. M. & W. Mann, 1914: 6, fig. 1 (w.) HAITI.

Type series. Three lectotypes HAITI; Diquini, , W. Mann; (3 w MCZC)

Material Examined: Type series, HAITI: Diquiri, 1954, W. Mann (2 w MCZC). REPUBLICA DOMINICANA: Prov Pedernales, Sa. De Baoruco, N Cano Rojo, Km 33, 1500m, 10-ii-975, W. & D. Brown (3 w MCZC).

Natural History: *Platythyrea strenua* in endemic to Hispanola (Fig. 28).

Diagnosis: Worker. The head is almost as long as it is wide and the posterior border of the head is concave. The frontals lobes are wide and rounded. The anterior border of the clypeus is slightly rounded. The posterior border of the clypeus and frontal area are defined. The eyes are large. The mandibles are triangular with apical tooth present; the mandibular sulcus is present. The antennal scape extends past the posterior lateral border of the head by approximately half the first funicular segment. The mesosoma is robust when compared to the other species. The propodeal angles are poorly defined. The petiole has one dorsal and two poorly developed lateral posterior lobes.; the petiole is almost as long as it is wide. The sternopetiole process is developed into a well-defined lobe. The head and mandibles with small erect hairs, the remainder of the body is without such erect or suberect hairs. The mandibles are finely punctate, the sides of the face have aggregated punctures. The surface of the face is dull. The mesosoma, petiole and postpetiole have coarse punctures (Fig. 27 A. & B.).

Measurements in mm and indices (n=3). TL 8.40-8.55; HL 1.57- 2.60; HW 1.56-1.74; FIW 0.92-0.94; SL 1.25-1.45; EL 0.43- 0.50; EW 0.35-0.38; WL 2.75-2.89; DpH 0.91- 0.93; DpW 0.85-0.94; FW 0.45-0.48; FL 1.50-1.61; CI 92.7-99.6; SI 77.5-79; FI 27.6-30.

The female and male are unknown.

Comparison: *Platythyrea strenua* can be confused with *P. sinuata* because they are both larger species, but can be separated because *P. strenua* has a larger head. *Platythyrea strenua* has poorly defined propodeal angles (Fig. 27 B.), contrary to *P. sinuata*, which has well defined propodeal angles (Fig. 24 B.). Another way to distinguish the two species is by the shape of the petiole. *Platythyrea strenua* has a

petiole that is almost as wide as it is long (in dorsal view) and *P. sinuata* has a long petiole but it is not as wide (in dorsal view) .

The worker of *Platythyrea strenua* can be distinguished from all of the other species by the size, as it is the largest New World species in the genus. It can be distinguished from *P. punctata* by the extension of the antennal scape. The antennal scape in *P. strenua* extends past the posterior lateral border of the head by approximately half the first funicular segment. In *P. punctata* the antennal scape fails to reach past the posterior lateral corner of the head (Fig. 20 A.). *P. strenua* has a head that is just as wide as it is long and *P. punctata* has a head that is almost rectangular (frontal view).

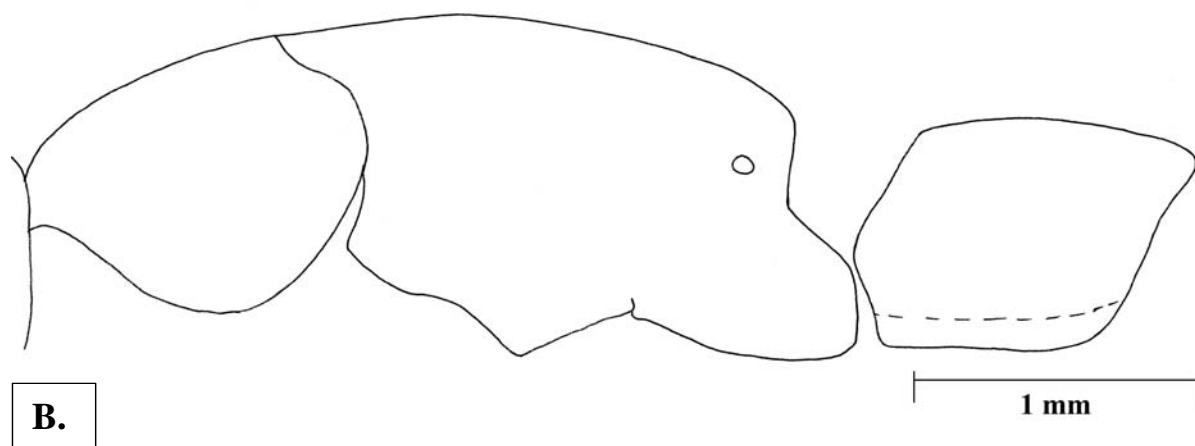
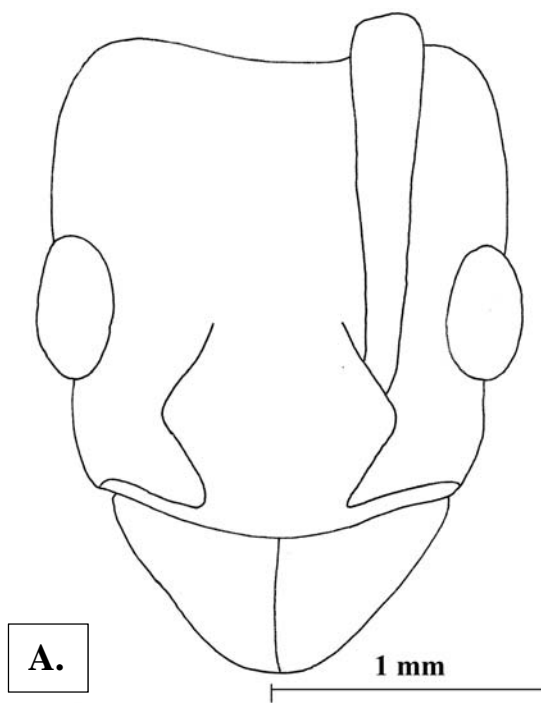


Figure 27. A. Frontal view of head of the lectotype worker of *P. strenua* from Haiti (MCZC). B. Lateral view of the lectotype worker of *P. strenua* from Haiti (MCZC).

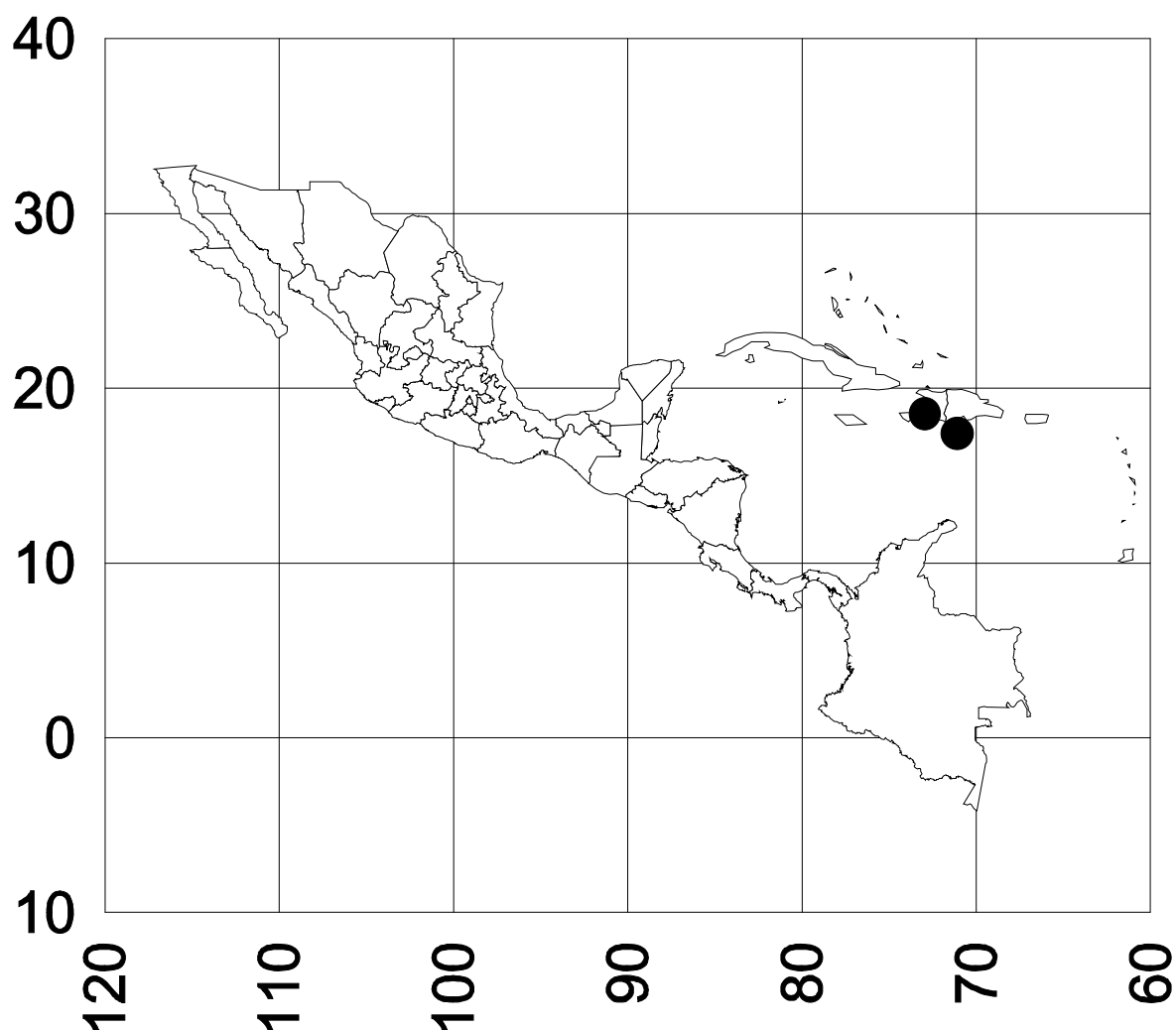


Figure 28. Map of *Platythyrea strenua*.

***Platythyrea zodium* Brown**

Platythyrea zodium Brown, 1975: 55, figs. 34-36 (w.) ECUADOR.

Type series. Holotype ECUADOR; Pastaza, Napo, 2-8 mi. N. of Puyo 953 m 11-9-1955. E. Schilinger & E. Rose (1 w CASC).

Material Examined: type series.

Natural History: *Platythyrea zodion* occurs in Ecuador (Fig. 30).

Diagnosis: Worker. The head is elongate slightly, longer than broad with parallel sides; the posterior border of the head is straight (full face view). The distance between the frontal lobes is narrow; the frontal lobes are gently rounded. The anterior border of the clypeus is straight; the clypeus has a flat surface. The anterior border of the clypeus and the frontal area are poorly defined. The eyes are small. The mandibles are triangular and the mandibular sulcus is absent. The antennal scape fails to reach the posterior lateral corner of the head by approximately the first two funicular segments. The mesosoma is robust. The pronotum is rounded and the propodeal angles are developed. The petiole is elongate without any developed dorsal or lateral posterior lobes. The postpetiole is fused with gaster. The prothoracic femur is swollen. The mandibles are finely punctate, with fine erect hairs. The mesosoma, petiole and postpetiole have coarse punctures (Fig. 29 A. & B.).

Measurements in mm and indices (n=1). TL 4.84; HL 1.06; HW 0.86; FIW 0.49; SL 0.55; EL 0.22; EW 0.20; WL 1.52; DpH 0.63; DpW 0.56; FW 0.33; FL 0.76; CI 81.3; SI 51.8; FI 41.2.

The female and male are unknown.

Comparison: *Platythyrea zodion* can be confused with *P. angusta* or *P. exigua* because of the presence of a swollen prothoracic femur. *Platythyrea zodion* can be separated from *P. angusta* because it is much smaller in size (TL *P. zodion* 4.84 mm, *P. angusta* 7.07-7.17 mm). The main characteristic to distinguish *P. zodion* from *P. exigua* is the lack of mandibular teeth in *P. zodion*. The anterior border of the clypeus is straight, the clypeus has a flat surface in *P. zodion* unlike *P. exigua* which has the anterior border of the clypeus is convex, and the clypeus has a swollen (Fig. 12 A.).

Platythyrea zodion can be distinguished from *P. punctata* because the shape of the head. That of *P. zodion* is almost as broad as long and the posterior border of the head is straight. *Platythyrea zodion* also has a swollen femur similar to *P. angusta* (Fig. 10 B), which is a key characteristic for separating this species from most of the remainder of the species in the genus.

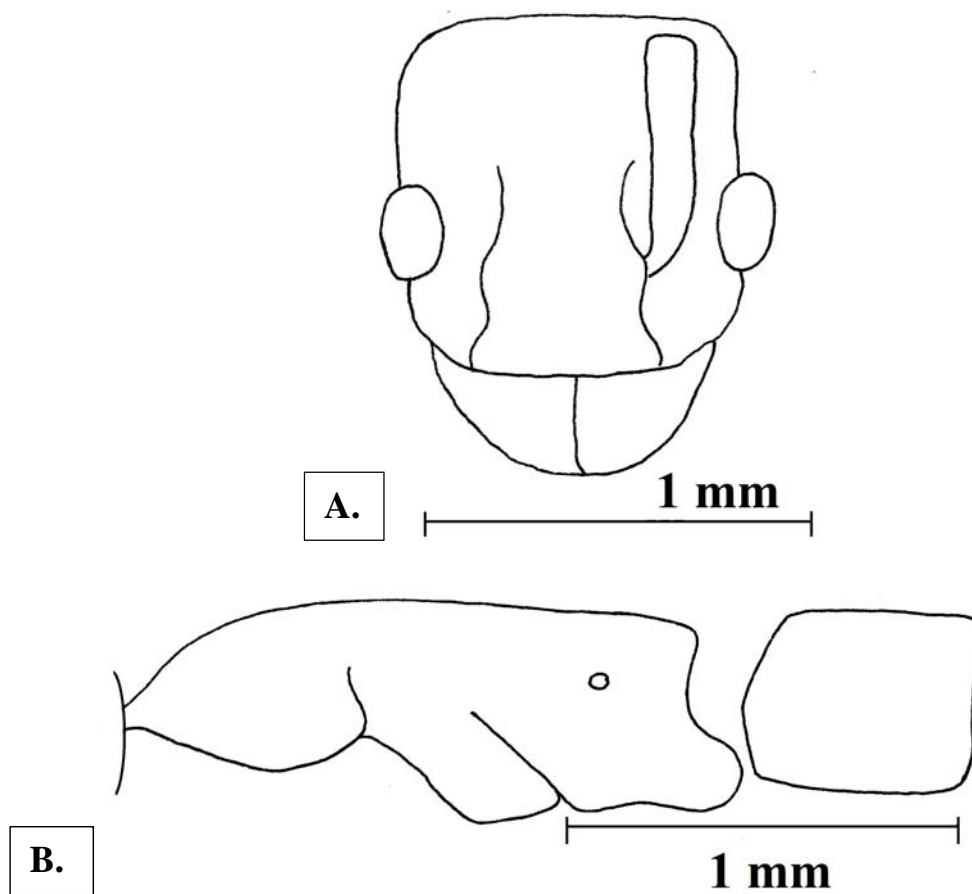


Figure 29. **A.** Frontal view of the head of holotype worker of *P. zodion* **B.** Lateral view of the holotype worker of *P. zodion*.

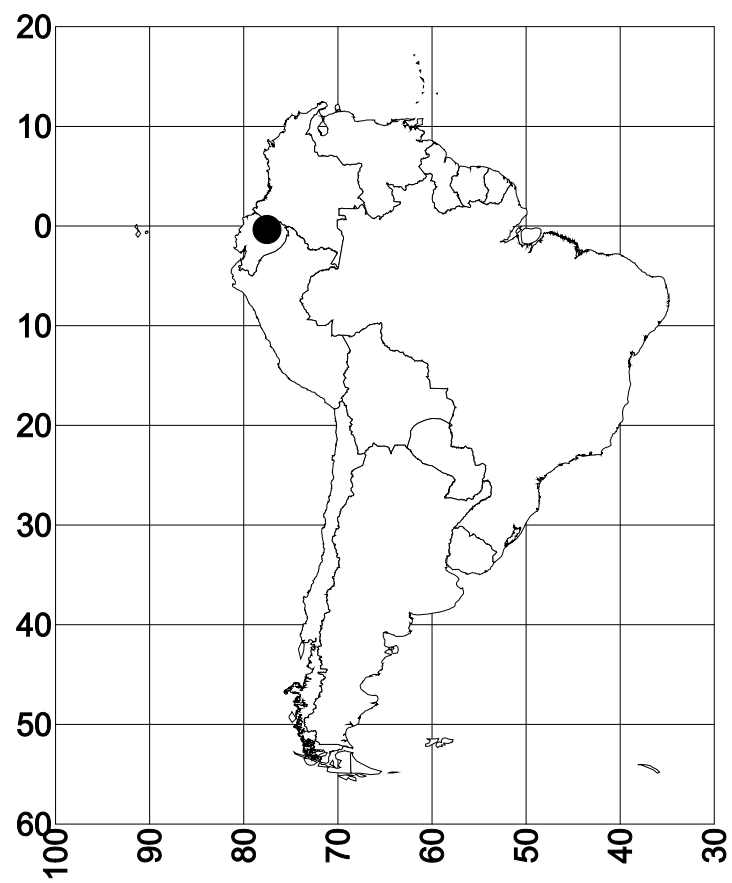


Figure 30. Map for *P. zodion*.

DISCUSSION/CONCLUSION

The morphological characters support the previous species designations of *Platythyrea* given by Brown (1975) and De Andrade (2004); however modifications to previous keys were needed in order to efficiently identify specimens. Brown (1975) used the mandibular sulcus as a key character, although, this character is subject to individual variation within species, therefore, it is hard to rely on it as a principal character. De Andrade (2004) also provided a key to the genus in 2004 where she treats *P. sinuata* as a junior synonym of *P. pilosula*. The two species can be differentiated by the shape of the petiole among other morphological characters.

Although, worker characters are seemingly indistinct initially, closer inspection provide a relatively easy identification of the *Platythyrea* species. The most important characters are the petiole shape, scape length and overall body size.

The collection records from the materials examined, in conjunction with Antweb records establish new distributional ranges for *P. angusta*, *P. pilosula*, *P. prizo*, *P. punctata*, *P. sinuata* and *P. strenua* and establish range overlaps between 8 species including *P. angusta*, *P. exigua*, *P. lenca*, *P. pilosula*, *P. prizo*, *P. punctata*, *P. sinuata* and *P. zodion*.

The genus of *Platythyrea* is rare. Rareness is associated with: geographical restrictions, habitat specificity and small colony size. (Espadaler et al., 1991). *Platythyrea* is restricted to pantropical areas but it is not geographically restricted. *Platythyrea* is an arboreal genus. There are other genera of ants such as *Pseudomyrmex*, *Crematogaster*, and *Azteca* that share similar habitat specificities as *Platythyrea* and are commonly collected. The colony size of *Platythyrea* ranges between 14-50 workers compared to other members of the Formicidae this is small. In large colonies workers are more integrated into a network of chemical communications, however, small colonies rely on the capacity for workers to learn to exploit the foraging area efficiently (Espadaler et al., 1991). It can be said that members of *Platythyrea* are not efficient workers, therefore, are unable to compete for resources with other ants or

organism limiting its population size. This leads to the question, is *Platythyrea* rare due to its small population size or is it rare because of inadequate techniques to capture them?

Despite the work presented here, many questions still remain in terms of *Platythyrea* taxonomy. The female caste is still undescribed in *P. angusta*, *P. lenca*, *P. pilosula*, *P. prizo*, *P. strenua*, and *P. zodion*; the male is undescribed in all species except *P. punctata*. These unknown castes likely exist in various South American collections, however, they may be impossible to identify if they are not captured with a worker.

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APPENDIX



Figure 2. A. Frontal, B. Dorsal and C. Lateral view of a paratype worker of *Platythyrea angusta*. Photographer: Will Ecrison, from www.Antweb.org



Figure 3. A. Frontal, B. Dorsal and C. Lateral view of a worker of *Platythyrea exigua*. Photographer: April Nobile, from www.Antweb.org

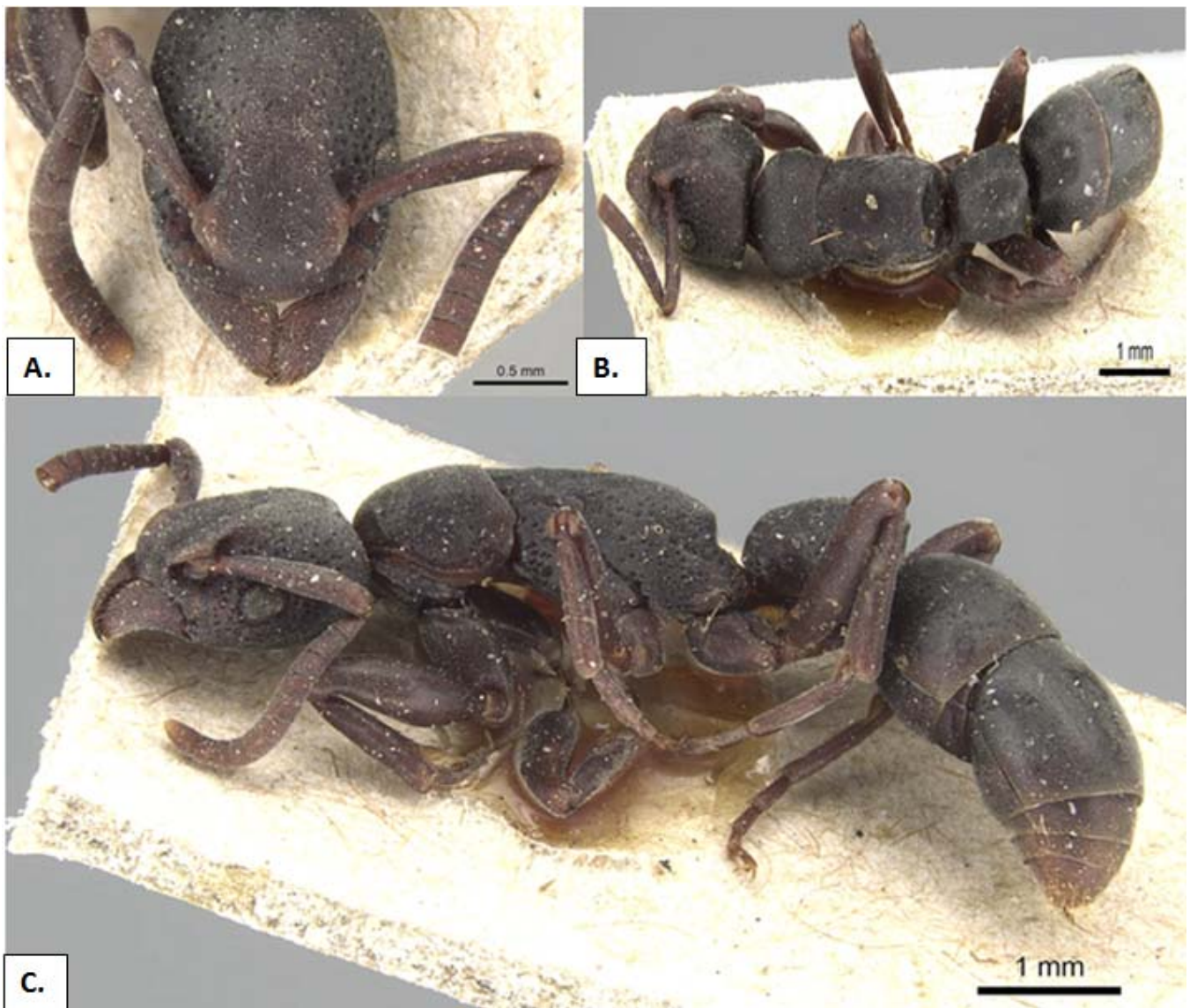


Figure 4. A. Frontal, B. Dorsal and C. Lateral view of a paratype worker of *Platythyrea pilosula*. Photographer: Will Ericson, from www.AntWeb.org

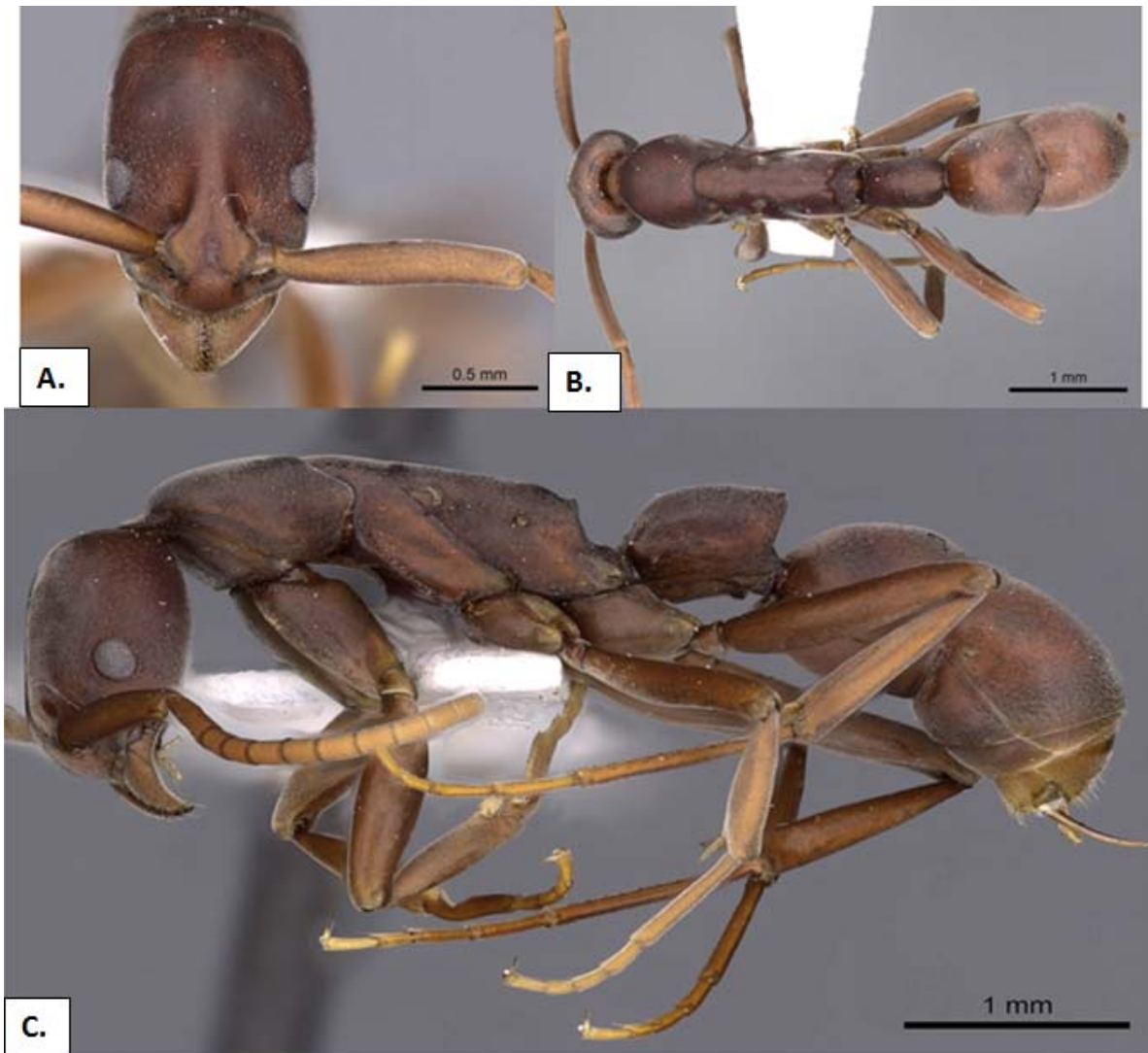


Figure 5. A. Frontal, B. Dorsal and C. Lateral view of a paratype worker of *Platythyrea prizo*. Photographer: Ryan Perry, from www.AntWeb.org

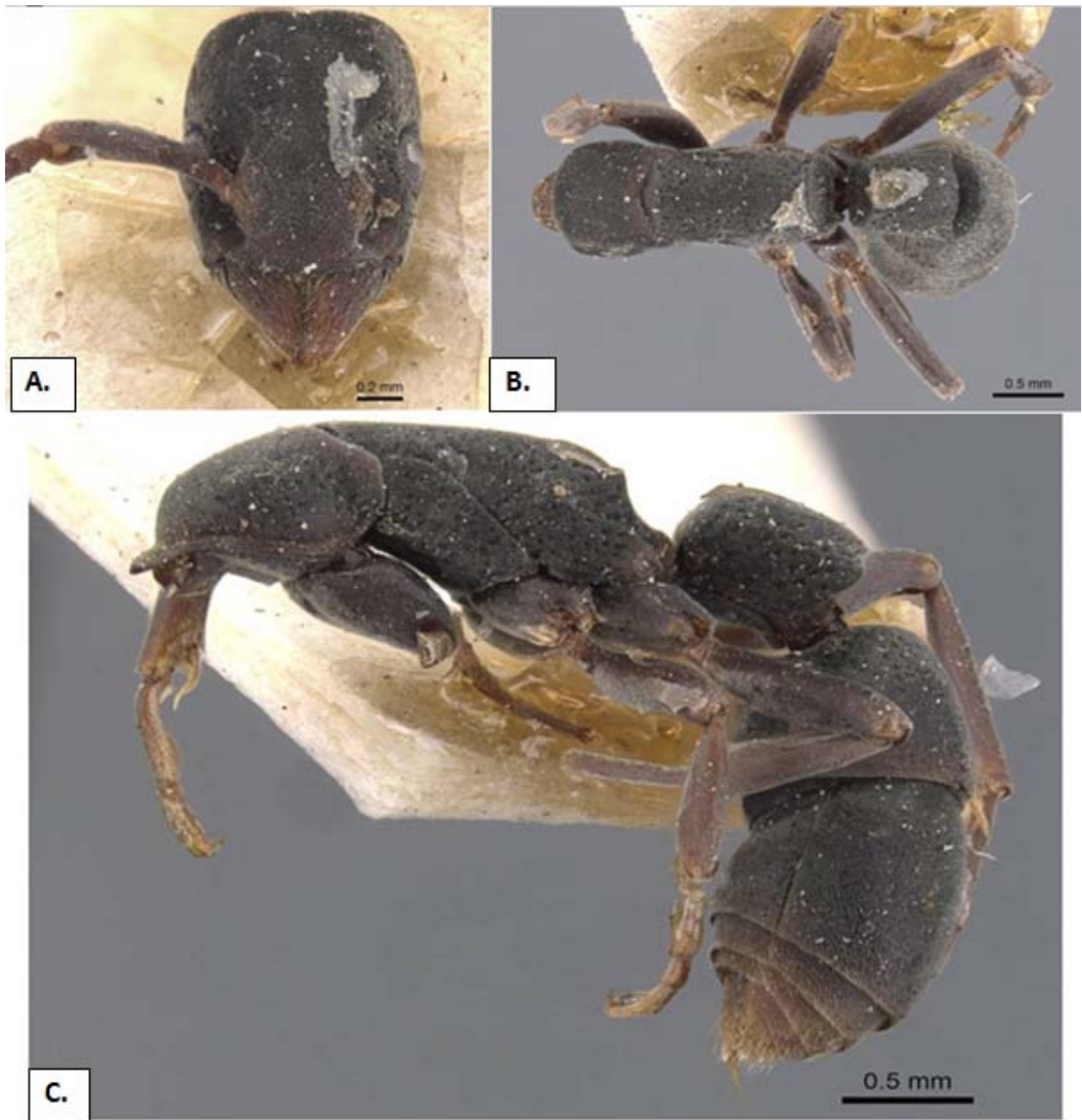


Figure 6. A. Frontal, B. Dorsal and C. Lateral view of a paratype worker of *Platythyrea punctata*. Photographer: Will Ericson, from www.AntWeb.org



Figure 7. A. Frontal, B. Dorsal and C. Lateral view a of worker of *Platythyrea sinuata*. Photographer: Will Ericson, from www.AntWeb.org



Figure 8. A. Frontal, B. Dorsal and C. Lateral view a of worker of *Platythyrea strenua*. Photographer: Will Ericson, from www.AntWeb.org

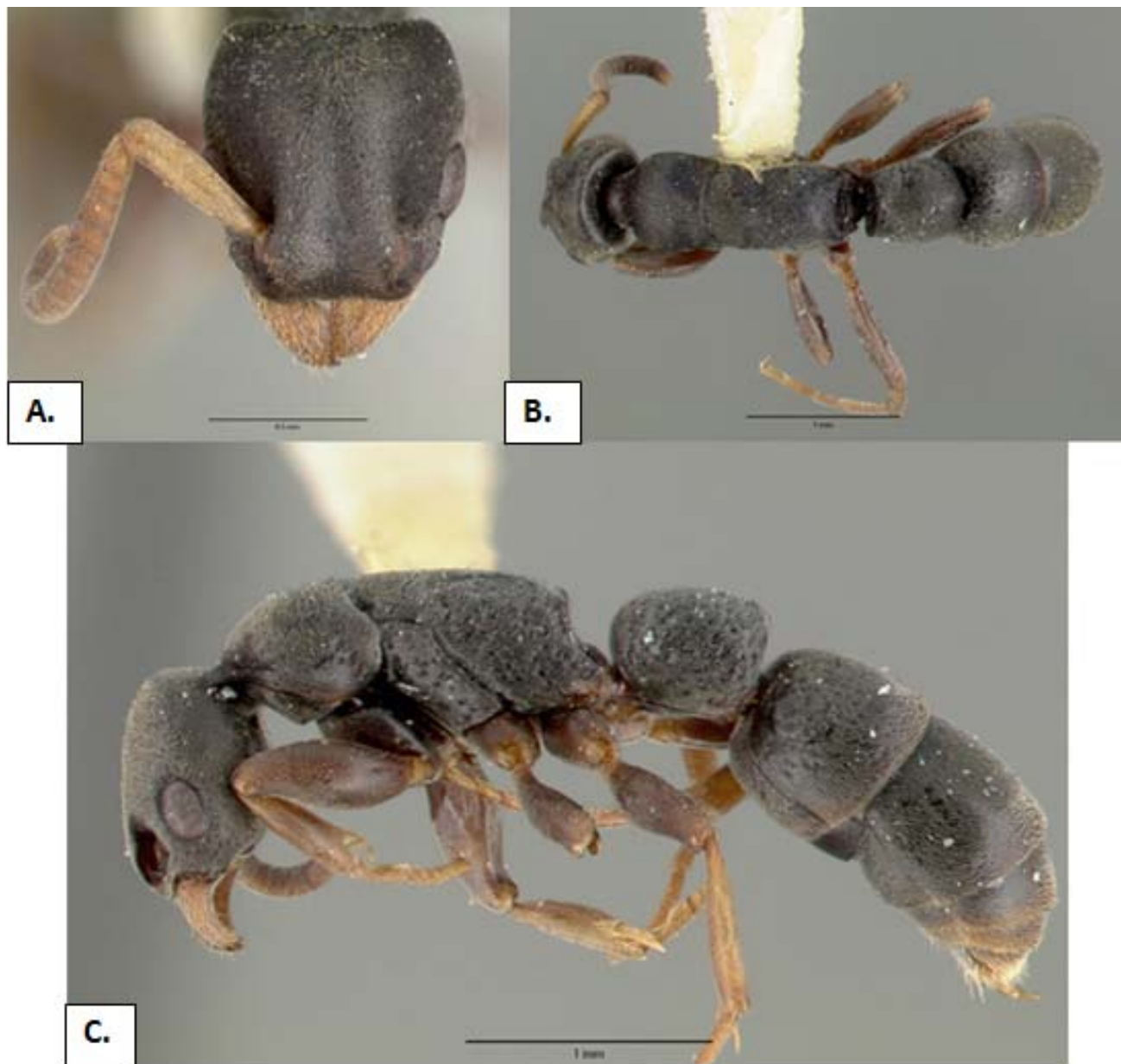


Figure 9 A. Frontal, B. Dorsal and C. Lateral view of a worker of *Platythyrea zodium*, from www.AntWeb.org

VITA

Mayra Leyva was born and raised in El Paso, Texas. She graduated from the University of Texas at El Paso (UTEP) with her Bachelors of Science in May 2010. After graduation, she started her graduate studies at UTEP. While enrolled as a graduate student she taught a variety of laboratories including Anatomy and Physiology 1 & 11, Vertebrate Physiology, Ecology and Entomology. Mayra will complete her Masters of Science in the Fall of 2013. After graduation she plans on staying in the El Paso area and use her knowledge and skills to serve her community.

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