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## Taxonomic revision of the Neotropical ant genus *Hylomyrma* Forel, 1912 (Hymenoptera: Formicidae: Myrmicinae), with the description of fourteen new species

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## Abstract

This paper provides a taxonomic revision of the Neotropical ant genus *Hylomyrma* Forel (1912) (Myrmicinae: Pogonomyrmecini). Morphological traits combined with geographical data and natural history information led to the recognition of 30 species, fourteen of them described here as new: *Hylomyrma adelae* sp. n., *Hylomyrma dandarae* sp. n., *Hylomyrma jeronimae* sp. n., *Hylomyrma lispectorae* sp. n., *Hylomyrma lopesi* sp. n., *Hylomyrma macielae* sp. n., *Hylomyrma margaridae* sp. n., *Hylomyrma mariae* sp. n., *Hylomyrma marielleae* sp. n., *Hylomyrma mitiae* sp. n., *Hylomyrma peetersi* sp. n., *Hylomyrma primavesi* sp. n., *Hylomyrma virginiae* sp. n. and *Hylomyrma wachiperi* sp. n. Lectotypes for *H. speciosa* (junior synonym of *H. balzani*) and *H. reitteri* are here designated from syntypes to improve nomenclatural stability. Except for the three species most recently described (*H. montana*, *H. plumosa*, and *H. villemantae*), the external morphology of workers is described or redescribed, as well as for the known males and queens, most described here for the first time. Of the 30 recognized species herein, 11 present intercastes; at least three of them present female specimens with queen-like traits that may be understood as ergatoids. An updated identification key for *Hylomyrma* workers is provided, as well as high resolution photographs of all known sexes and castes, species distribution maps, and a summary of what is known from the biology of all species.

**Key words:** Taxonomy, Intercaste, Morphology, Pogonomyrmecini

## Introduction

The Myrmicinae genus *Hylomyrma* was described by Forel (1912) as a subgenus of *Pogonomyrmex*, and raised to genus level by Wheeler (1922). The first revision of *Hylomyrma* was made by Kempf (1973), who recognized 12 species and provided an identification key based on workers of the then known species. Most of them were described from small series with at most three specimens. Thus, few observations on intraspecific variation were possible. Since then, four more species have been described (Kutter 1977; Pierce *et al.* 2017; Neves *et al.* 2018). Pierce *et al.* (2017) applied an integrative approach to *Hylomyrma* taxonomy revealing a group of cryptic species in Central America, including *H. dentiloba* (Santschi, 1931), *H. plumosa* Pierce *et al.*, 2017, and *H. versuta* Kempf, 1973.

Ward *et al.* (2015), based on molecular data, proposed the reorganization of Myrmicinae, with the genera *Pogonomyrmex* Mayr, 1868 and *Hylomyrma* composing the tribe Pogonomyrmecini. With the segregation of the genus *Patagonomyrmex* (Johnson & Moreau 2016), *Pogonomyrmex* became monophyletic and sister to *Hylomyrma*.

*Hylomyrma* currently includes 16 nominal species, comprising small to midsized ants, cryptic inhabitants of leaf-litter of wet and dry environments in the Neotropical region. They have been collected from sea level to 3,600 m, from Mexico to northern Argentina and southern Brazil, and in Trinidad and Tobago (Kempf 1973; Bolton 2017; Neves *et al.* 2018). The genus biology is poorly known, and much of the known information comes from label data and rare field observations. Wilson noted that the workers of *H. versuta* (firstly identified as *H. columbica* (Forel, 1912) and later as *H. versuta* by Kempf) maintained in a laboratory captured *Drosophila* spp., springtails, and other selected small invertebrates (Wheeler & Wheeler 1960). *Hylomyrma reitteri* (Mayr, 1887) has been characterized as a midsized epigaeic generalist predator based on a suite of morphological characters, such as medium size, triangular mandibles, developed eyes set at borders of comparatively large heads, and eyes placed relatively high on head, away from mandibles (Silva & Brandão 2010).

The genus was previously considered rare, as species were represented by relatively low numbers in collections. However, with the employment of recently widely adopted techniques to survey ants in forested localities, such as the Winkler extractors, *Hylomyrma* species are now commonly sampled (Neves *et al.* 2018). In the last three decades, hundreds of described and undescribed *Hylomyrma* specimens have accumulated in different collections. Moreover, recent material has confirmed that intercastes are common in *Hylomyrma*. These are often recorded in widely distributed species, but not exclusively in them. Typically, the worker-like intercaste coexists with the regular workers and queen, but in a few species, a series of gradual intermediates from worker-like to queen-like intercastes co-occur with the regular workers and queen. However, we do not know whether these intercastes are reproductively specialized.

Herein, *Hylomyrma* is revised, thirteen species are redescribed, and fourteen species are proposed as new and described. The three species most recently described (*H. montana* Pierce *et al.*, 2017, *H. plumosa*, and *H. villemantae* Neves *et al.*, 2018) are not redescribed here, although we added comments on some characters. High resolution photographs of all known sexes and castes are provided, as well as a worker-based species identification key, distributional maps for the species, and a summary of what is known from the biology of all species, including the intercastes.

## Methods

The terminology of external morphology follows Hölldobler & Wilson (1990), Bolton (1994, 2000), Serna & Mackay (2010) (queen), Keller (2011), and Boudinot (2015) (male). We understand that the transverse carina or keel (terms used interchangeably by Kempf 1973) on the anteriormost region of the dorsal face of propodeum (Fig. 1A–B: tc) is not equivalent to the transverse propodeal carina defined by Vilhelmsen *et al.* (2010, see their Figs. 54D and 62A: tpc) as a “distinct carina present some distance from propodeal foramen”. tpc does not mark the anterior boundary of propodeum as tc seems to do. Moreover, in *Hylomyrma* species the tc can be indistinct, inconspicuous or well-marked, and the metanotal groove can be indistinct (obliterated) or discernable by a slight depression and/or altered sculpture. Depending on the combination of the states of these two characters, the boundaries among mesonotum, metanotal groove and propodeum cannot be inferred. Thus, we decided to use tc *sensu* Kempf (1973). The inferior pronotal process and the epicneminal process (Serna & Mackay 2010) are here named as the projection on the region of confluence between the ventral and posterolateral margins of the pronotum (Fig. 1A–B: mpp) and

the projection on the anteroventral margin of the mesepisternum (Fig. 1A–B: *avmp*), respectively. The characters' definitions are in accordance with Serna & Mackay (2010), *mpp* flanks the procoxa basally and *avmp* flanks the posterior margin of procoxa. These two name changes are proposed in order to facilitate the correlation between the name of the structure and the position of the structure in the specimen. To characterize pilosity we used Wilson (1955). The forewing venation terminology follows the proposal of Yoshimura & Fisher (2011, 2012); hindwing terminology follows Yoshimura & Fisher (2012); and Melo *et al.* (2012) was used for vein terminology. The integument sculpture nomenclature is adapted from Harris (1979), although some of the terms defined by him are difficult to apply because the distinction between them is rather subtle, as costate, costulate, and striate. The complication may also lie in the fact that these types of sculpture may co-occur, or there is a gradient between them, or the integument is so densely sculptured it gets impractical to distinguish whether what one sees are grooves, elevations or lines. Kempf (1973) used the terms costulate and striate to characterize *Hylomyrma*. By definition, both terms describe longitudinal sculptures. In the present work, we adopt the term striate because it is more commonly used, but not taking in consideration any definition as to the direction of the striae. We characterize the integument sculpturing by describing their type (smooth or striate), striae type (regular, irregular, vermicular, vermiculated-areolated or rugose), striae direction (longitudinal, transverse, semicircular, semi-elliptical, V-shaped, or elliptical), striae interspaces (indistinguishable or distinguishable), striae width (thin or thick, and uniform or variable) and striae crest condition (smooth or punctuated). In the descriptions we used the following abbreviations: W = worker, Q = queen, M = male; I = intercaste; indet. = indeterminate, for specimen we could not determine whether W or I, especially due to the missing head.

The specimens were examined with a Leica MZ9.5 stereomicroscope at magnifications up to 60× at the Laboratório de Sistemática, Evolução e Biologia de Hymenoptera (MZSP). All measurements were taken using this stereomicroscope with an ocular micrometer scaled in 0.1 mm, and are given in millimeters (minimum-maximum). The following standard measurements were used (Fig. 1C–E):

HL—Head length: maximum length of head in full-face view, from the median anterior clypeal margin to the posteriormost midmargin of the head.

HW—Head width: maximum width of head in full-face view, measured posterior to compound eyes.

SL—Scape length: maximum chord distance from the base (excluding condyle) to the apex of the antennal scape, with the head in full-face view.

ML—Mandibular length: maximum distance from base of mandible to its apex (taken dorsally).

MOD—Maximum ocular diameter: maximum diameter of the eye measured with the head in lateral view.

WL—Mesosomal length or Weber's length: maximum distance between the inflexion of anterior dorsal margin of pronotum to the posteriormost point of the ventral flap projection on metapleural gland (Fig. 1A–B: *vfp*; see Keller 2011, Fig. 23: a), in lateral view.

PNW—Pronotal width: maximum width of pronotum in dorsal view.

PSL—Propodeal spine length: maximum length from the propodeal spine apex to a transversal imaginary line across the base of propodeal spine, in lateral view.

PL—Petiolar length: maximum length of petiole in lateral view, from the anteriormost point of the tergo-sternal petiolar suture to the insertion of the postpetiole.

PW—Petiolar width: maximum width of petiole in dorsal view.

PPL—Postpetiolar length: maximum length of postpetiole in lateral view, from the anteriormost point of the tergo-sternal postpetiolar suture to the insertion of the gaster.

PPW—Postpetiolar width: maximum width of postpetiole in dorsal view.

SPP—Subpostpetiolar process height: maximum height of subpostpetiolar process in lateral view.

GL—Gaster length: maximum length of gaster in lateral view, excluding sting.

TL—Total length, sum of the following measures ML, HL, WL, PL, PPL, and GL.

CI—Cephalic index, (HW×100)/HL.

SI—Scape index, (SL×100)/HW.

OI—Ocular index, (MOD×100)/HW.

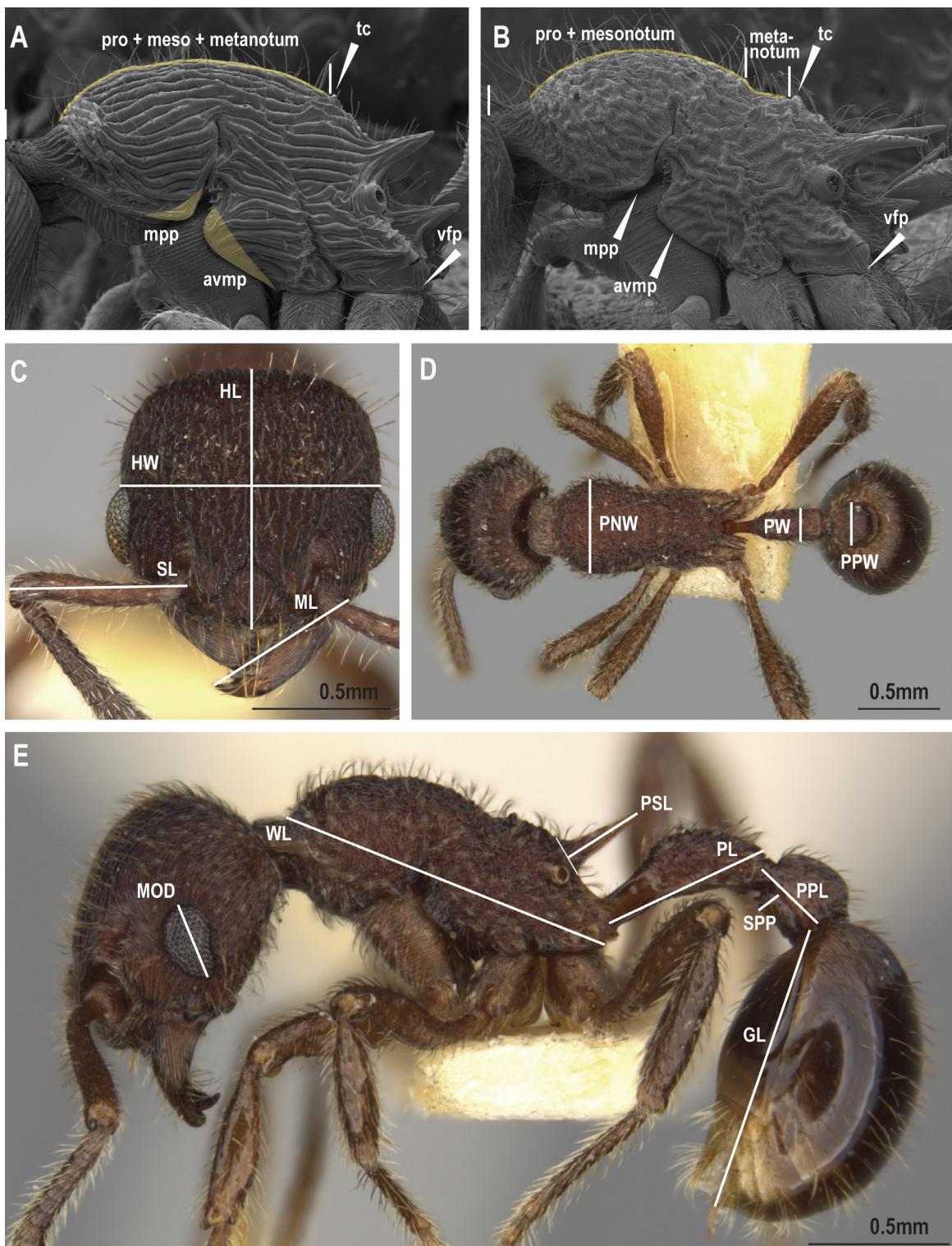
Collections are referred to by the following acronyms:

BMNH—The Natural History Museum (formerly British Museum of Natural History), London, England

- CASC—California Academy of Science, California, USA  
CBF—Colección Boliviana de Fauna, La Paz, Bolivia  
CEPLAC—Laboratório de Mirmecologia, Centro de Pesquisas do Cacau, Comissão Executiva do Plano da Lavoura Caqueira, Itabuna, Brazil  
DZUP—Laboratório de Sistemática e Biologia de Formigas, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil  
ECOFOG—L’UMR Écologie des Forêts de Guyane, Kourou, French Guiana  
IFML—Instituto Fundación Miguel Lillo, San Miguel de Tucumán, Argentina  
IHVL—Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Santafé de Bogotá, Colombia  
INPA—Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil  
JTLC—Dr. John Longino’s Collection, Utah, USA  
MCZC—Museum of Comparative Zoology, Cambridge, USA  
MHNG—Museum d’Histoire Naturelle, Genève, Switzerland  
MIZA—Instituto de Zoología Agrícola, Maracay, Venezuela  
MPEG—Museu Paraense Emílio Goeldi, Belém, Brazil  
MSNG (formerly MCSN)—Museo Civico di Storia Naturale Giacomo Doria, Genova, Italy  
MUSENUV—Museo de Entomología, Universidad del Valle, Cali, Colombia  
MZSP—Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil  
NHMB—Naturhistorisches Museum Basel, Basel, Switzerland  
NHMW—Naturhistorisches Museum, Wien, Austria  
NMSM—Museo de Historia Natural, Universidad Nacional de San Marcos, Lima, Peru  
QCAZ—Museo de Zoología, Pontificia Universidad Católica del Ecuador, Quito, Ecuador  
UCD—University of California, Davis, California, USA  
UCR—Universidad de Costa Rica, San Pedro, Costa Rica  
UECE—Laboratório de Entomologia e Mirmecologia, Universidade Estadual do Ceará, Fortaleza, Brazil  
UFGD—Universidade Federal da Grande Dourados, Dourados, Brazil  
UFMG—Laboratório de Ecología de Insetos, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil  
UFSC—Laboratório de Biología de Formigas, Departamento de Ecología e Zoología, Universidad Federal de Santa Catarina, Florianópolis, Brazil  
UFV—Laboratório de Ecología de Comunidades, Departamento de Biología Geral, Universidad Federal de Viçosa, Viçosa, Brazil  
UNMSM—Museo de História Natural, Universidad Nacional Mayor de São Marcos, Peru  
USCG—Escuela de Biología, Universidad de San Carlos de Guatemala, Guatemala  
USNM—National Museum of Natural History, Washington, D.C., USA  
UTEP—Biodiversity Collections, The University of Texas, El Paso, USA  
UTPL—Universidad Técnica Particular de Loja, Loja, Ecuador

High-resolution images of the majority of the holotypes, paratypes, non-type workers and males, and the queen of *H. mitiae* n. sp. were taken with a Canon EOS Rebel T3i camera, equipped with a Canon MP-E 65 mm macrolens and a LED illumination dome (Kawada & Buffington 2016). The photos were captured using Helicon Remote and multi-focal images were processed with Helicon Focus, method C, except for the images of *H. mitiae* n. sp., which were combined with Zerene Stacker version 1.04. The images of the other queens, the worker of *H. villemantae* and the male of *H. versuta* were taken with a Leica M205 C stereomicroscope with coupled camera Leica MC190 HD and the software LAS V4.12. The images of *H. montana* and *H. plumosa* holotypes were obtained from the AntWeb site (<http://www.antweb.org/>), where the type images of *Hylomyrma* species here described will also be available.

The Scanning Electron Micrographs (SEM) were made at Universidade Federal de Santa Catarina/UFSC in the Laboratório Central de Microscopia Eletrônica (Central Laboratory of Electronic Microscopy) with a JEOL JSM-6390LV microscopy. The specimens were dehydrated at 50°C for 12 hours, and covered with gold. Drawings of the intercastes and the wings of queens and males were made using a Camera Lucida of the Carl Zeiss Stemi SV6 stereomicroscope. The drawings of the setae types were based on SEM images. All images were cropped and edited in a photo editing software. The plates were organized using a vector graphics editor.



**FIGURE 1.** Terminology of external morphology (in part) and measurements used to characterize the species of *Hylomyrma*. A) Paratype worker of *H. lopesi* (MZSP67385); B) Paratype worker of *H. lispectorae* (MZSP67347); C) Paratype worker of *H. dolichops* (MCZ35419); D–E) Paratype worker of *H. longiscapa* (MCZ31531). Abbreviations: avmp—the projection on the anteroventral margin of the mesepisternum, GL—gaster length, HL—head length, HW—head width, ML—mandibular length, MOD—maximum ocular diameter, mpp—the projection on the region of confluence between the ventral and posterolateral margins of the pronotum, PSL—propodeal spine length, PL—petiolar length, PNW—pronotal width, PPL—postpetiolar length, PPW—postpetiolar width, SPP—subpostpetiolar process height, tc—transverse carina on the anteriormost region of the propodeum’s dorsal face, vfp—the ventral flap projection on metapleural gland, WL—Weber’s length. Photos by M.A. Ulysséa.

A detailed list of the examined material is provided for each species. All label information was transcribed. The data inside brackets corresponds to: missing data recovered on published articles, field journals, and/or collection catalogues; misspelled words; and the collection's acronym of the specimen repository. If available, the specimen/pin unique identifier is given inside parentheses before the acronym.

Distribution maps were created using Quantum GIS version 2.18.7-1 (QGIS.org 2021). Localities were obtained from specimen labels. When latitude and longitude data were not available in the labels, this information was approximated using Google Earth (<https://www.google.com/earth/>). Only the specimens examined in this work are represented in the maps. The species were grouped in the distribution maps avoiding the overlap of sympatric species in order to provide the best visualization.

Eleven out of fourteen new species described in this paper were named in honor of women from different places, times and backgrounds—educators, feminists, poetess, footballers, rural workers, politicians, human rights activists, sociologists, psychoanalysts, conservationists, environmentalists, pioneers in ecological management of tropical soils, leaders against slavery, and biologists. We pay tribute to these incredible women to raise awareness to biases that, to this date, perpetuate the lack of diversity, equity and inclusion in our society as well as in science.

## Taxonomic synopsis of *Hylomyrma* Forel, 1912

Type-species: *Pogonomyrmex* (*Hylomyrma*) *columbicus*, by original designation.

*Hylomyrma* as subgenus of *Pogonomyrmex*: Forel, 1912: 16; Forel, 1917: 240; Emery, 1921: 49; Donisthorpe, 1943: 651; Kusnezov, 1951: 245; Kusnezov, 1956: 18. *Hylomyrma* as genus: Wheeler, 1922: 660; Borgmeier, 1927: 77; Brown, 1953: 3; Kempf, 1964: 54; and following authors. *Lundella* Emery, 1915 as junior synonym of *Hylomyrma*: Brown, 1953: 3. *Hylomyrma* in Myrmicinae, Myrmicini: Emery, 1921: 49; Wheeler, 1922: 660. *Hylomyrma* in Myrmicinae, Pogonomyrmecini: Ward, Brady, Fisher & Schultz, 2015: 16. References: Emery, 1921: 49 (diagnosis, and catalogue); Emery, 1924: 292 (diagnosis of *Lundella*, and catalogue); Wheeler & Wheeler, 1960 (comments on biology, description of *H. versuta* semipupa); Kempf, 1964: 54 (identification key to species); Kempf, 1972: 118 (catalogue); Kempf, 1973: 258 (diagnosis, revision, identification key to species); Kutter, 1977: 86 (new species, identification key to species); Brandão, 1991: 346 (catalogue); Bolton, 1995a: 1050 (census); Bolton, 1995b: 213 (catalogue); Pierce *et al.*, 2017 (new species, Central American species key, phylogeny); Neves *et al.*, 2018 (new species); Fernández & Serna, 2019: 796 (Colombia species key).

**Diagnosis.** Relatively small ants (TL 4.15–6.6 mm, WL 1.08–1.75 mm); palpal formula 4:3; antennal club 4-segmented; anterior margin of clypeus bidentate; dorsal margin of mesosoma predominantly convex; prominent projections on the region of confluence between ventral and posterolateral margins of pronotum, and on the anteroventral margin of mesepisternum; propodeal spiracle aligned with the base of propodeal spine; propodeal spine well-developed; propodeal lobe uni- or bidentate; meso- and metatibial spurs sharp, with interior margin serrated; petiole relatively elongated and narrow.

WORKER: TL 4.15–6.6 mm, WL 1.08–1.75 mm. Body black to light-brown, black to yellowish appendices, densely sculptured, integument subopaque to shiny. Mostly unbranched and thin setae with sharp apex. Some species with branched setae. Setae erect to appressed; short to long; long unbranched setae on anterior margin of clypeus longer than 0.5× the mandibular length.

Head subquadrate to quadrate (CI 88.46–102.17 mm); in full-face view posterior margin straight or slightly concave at middle; posterior corner rounded, not protruding. Mandible subtriangular, with regular, parallel and longitudinal striae; masticatory margin with 5–7 teeth. Labial palp 3-articulated; maxillary palp 4-articulated (Kempf 1973; here observed in *H. reginae* and *H. montana*). Anterior margin of clypeus concave, straight or slightly convex medially, with a pair of lateral teeth, small to well-developed teeth; clypeus striate medially, with striae interspaces indistinguishable (adjacent striation) or distinguishable (spaced striation). Fronto-clypeal junction distinguishable by a smooth depression. Frontal triangle with 1–3 striae. Frontal lobe short. Antennal scape striate, irregular striae inclined towards the basal-apical axis; dorsal margin straight, ventral margin slightly convex; conspicuous 4-segmented antennal club. Frontal carina short, usually not exceeding the posterior limit of frontal triangle; if exceeding, it does not reach eye posterior margin; frontal carina straight or slightly concave posterior to antennal socket. Compound eye located laterally on the anterior half of head; oval (anterior and posterior regions with similar format), reniform or drop-shaped (anterior region narrower than posterior region); larger diameter with 9–17 ommatidia. Head dorsum sculpture varies among species; concentric striae on head ventral surface, interspaces indistinguishable or distinguishable.

Dorsal margin of mesosoma convex to somewhat straight, continuous (promesonotal junction and metanotal groove indistinguishable) (Fig. 1A) or discontinuous (promesonotal junction and/or metanotal groove discernible) (Fig. 1B: metanotal groove); sculpture varies among species; humeral angle rounded. Promesonotal junction and metanotal groove indistinguishable, or recognized by a slight depression (better seen in lateral view, LV) and/or altered sculpture (better noticed in dorsal view, DV). Transverse carina indistinct, inconspicuous or well-marked on the anteriomost region of the dorsal face of propodeum (Fig. 1A–B: tc). Prominent projections on the region of confluence between ventral and posterolateral margins of pronotum, and on the anteroventral margin of mesepisternum (Fig. 1A–B: mpp, avmp). Propodeal lobe uni- or bidentate. Propodeal spine well-developed; short to long; straight or apex curved down- or upwards. Striae on procoxa regular, parallel and transverse, with uniform or variable thickness; transverse striae on meso- and metacoxa irregular or rugose, striae weakly marked. Profemur entirely smooth or with posterior surface striate. Protibia smooth, or with extensor surface partly or entirely striate, with regular, parallel and longitudinal striae, striae weakly marked; meso- and metatibial spurs sharp, with interior margin serrate. Simple tarsal claws.

Dorsal margin of petiole discontinuous (LV), anterior surface of node differentiated from anterior peduncle; or continuous, anterior surface of node not differentiated from anterior peduncle, being convex or strongly convex. Anteroventral surface of petiole, between the propodeal lobes, with rounded or acute projection (absent only in *H. praepotens*); mesoventral surface of petiole (anterior to petiolar spiracle) unarmed or armed. Petiolar node sculpture varies among species. Postpetiole smooth or striate, with dorsal margin convex or subtriangular; subpostpetiolar process smooth or striate, weak or well-developed, with margin straight, convex or subtriangular (LV).

First gastral segment longer than all others combined; tergum striate, striae restricted to its basal region, or extending up to its anterior third; sternum smooth or striate, longitudinal or semicircular striae restrict to laterobasal region or covering the entire basal area.

**QUEEN:** TL 4.52–7.54 mm, WL 1.20–2.08 mm. Color, pilosity, and sculpture characters shared with conspecific workers, only slightly larger. Cephalic dorsum with 3 conspicuous equally developed ocelli; eye larger in diameter with 12–20 ommatidia. Promesonotal suture well-marked. Scutum rounded, sculpture varies among species. Parapsidal line indistinguishable from overall sculpturation. Tegulum subtriangular and translucent. Mesepisternal sulcus well-marked by a depression; anepisternum and katepisternum sculpture varies among species. Axilla subtriangular, laterally rounded. Scutoscutellar sulcus inconspicuous or conspicuous, restricted to lateral area, never continuous. Mesoscutellar disc elliptical, convex in lateral view. Propodeum sculpture varies among species.

On forewing, well-developed pigmented pterostigma; venation well-developed, with costa (C), radial (R), radial sector (Rs), media (M), cubitus (Cu), anal (A), radial-subcosta (R+Sc), media-cubitus (M+Cu), cubitus-anal cross-vein (cu-a), first media-cubitus crossvein (1m-cu), and radial sector-media 1 (Rs+M<sup>1</sup>) present. Four species—*H. balzani*, *H. lispctorae*, *H. reitteri*, and *H. versuta*—also have radial sector-media 2 (Rs+M<sup>2</sup>) vein. Five species—*H. adelae*, *H. dentiloba*, *H. lispctorae*, *H. longiscapa*, and *H. versuta*—also have second radial sector-media (2rs-m). All species present basal (B), sub-basal (BS), discal (D), sub-marginal 1 (SM1), and marginal (M) cells; only five species—*H. adelae*, *H. dentiloba*, *H. lispctorae*, *H. longiscapa*, and *H. versuta*—also have the sub-marginal 2 (SM2) cell. Hindwing with 5–6 hamuli; venation underdeveloped, with costa (C), radial-subcosta (R+Sc), radial sector (Rs), media-cubitus (M+Cu), media-first radial sector-media (M+1rs-m), anal (A), and cubitus-anal (cu-a) present; jugal lobe absent. Wings covered with unbranched and short setae with sharp apex.

**MALE:** TL 4.26–6.26 mm, WL 1.20–1.84 mm. Brownish body, lighter appendices. Mandible longitudinally striate, 4–6 teeth. Antennal scape short, antennomeres apical and XI longer than others. Anterior margin of clypeus laterally rounded, unarmed. Eye large, oval. Head dorsum striate; irregular striae assuming multiple directions, interspaces distinguishable; striae on ventral surface concentric. Promesonotal suture well-marked. Scutum partly smooth and partly covered with regular to irregular striae. Notaulus well-marked. Parapsidal line well-marked. Tegulum subtriangular and translucent. Mesepisternal sulcus well-marked; anepisternum and katepisternum mostly smooth or longitudinally striate. Axilla subtriangular, laterally rounded. Scutoscutellar sulcus marked dorsally, continuous, longitudinally striate, regular to irregular striae. Scutellum sculpture varies between species. Mesoscutellar disc trapezoidal, convex in lateral view. Propodeum sculpture varies between species. Propodeal lobe rounded, subquadrate or forming an acute angle or tooth on the dorsal region and rounded on the ventral region. Petiole dorsum partly smooth and partly covered with irregular striae assuming multiple directions. Postpetiole smooth or longitudinally striate with thin striae. Gaster shiny, smooth or striation on tergum of first gastral segment restricted to basal area.

Male wings similar to conspecific queens, differing mainly in the more pigmented veins. *Hylomyrma balzani*, *H. reitteri* and *H. versuta* males do not present the  $Rs+M^2$  vein. Also, some specimens of *H. reitteri* present the second radial sector-media (2rs-m) and, consequently, the sub-marginal 2 (SM2) cell.

**SEMIPUPA** (according Wheeler & Wheeler 1960): “Total length about 3.5 mm. Leg, wing, and gonopod present, vestigial. Integument spinulose. Body hairs sparse, long and denticulate, of two types: (1) 0.036–0.08 mm, slightly curved, filiform, on every somite; (2) 0.18–0.22 mm, few, sinuous, long, hooked at apex, simple or with diminute branches on the apical third, present medially on every somite. Cranium subtrapezoidal, occipital corners broadly rounded. Antenna small, with 3 sensilla, each of which bears a spinule. Head hairs few, short to long (0.054–0.09 mm), slightly curved, with diminute denticles. Labrum width equivalent to  $1\frac{1}{2}$  its length; bilobed, anterior surface with a sulcus extending dorsally; each lobe with 7 sensilla on anterior surface and ventral margin, posterior surface with 7 sensilla medially; posterior surface sparsely spinulose, diminute spinules on short rows. Mandible subtriangular; apical tooth heavily sclerotized, curved medially and posteriorly; masticatory margin irregular, with 1–2 subapical teeth; anterior surface with few spinules. Maxilla apex paraboloidal, spinules sparse, isolated or in short rows; palpus with 2 apical, 2 subapical, and 1 lateral sensilla; galea digitiform, apical half bent outward at a  $25^\circ$  angle, with 2 apical sensilla bearing a spinule each. Labium spinulose, spinules in short transverse rows; palp with 5 sensilla; 1 sensillum between each palp and the sericteries opening.”

This description was based on two specimens collected in Mexico by E.O. Wilson, firstly identified as *H. columbica*, and subsequently recognized as *H. versuta* by Kempf (1973).

**Etymology.** *Hylomyrma* is derived from the Greek: *hyle* = wood and *myrmex* = ant. Although not stated in the original description, the name possibly makes reference to the collection sites or overall rugged appearance of the ants, making them hard to discern from the surrounding debris. The only *Hylomyrma* nest sampled thus far was collected inside a fallen twig in the leaf-litter in the Peruvian Amazon.

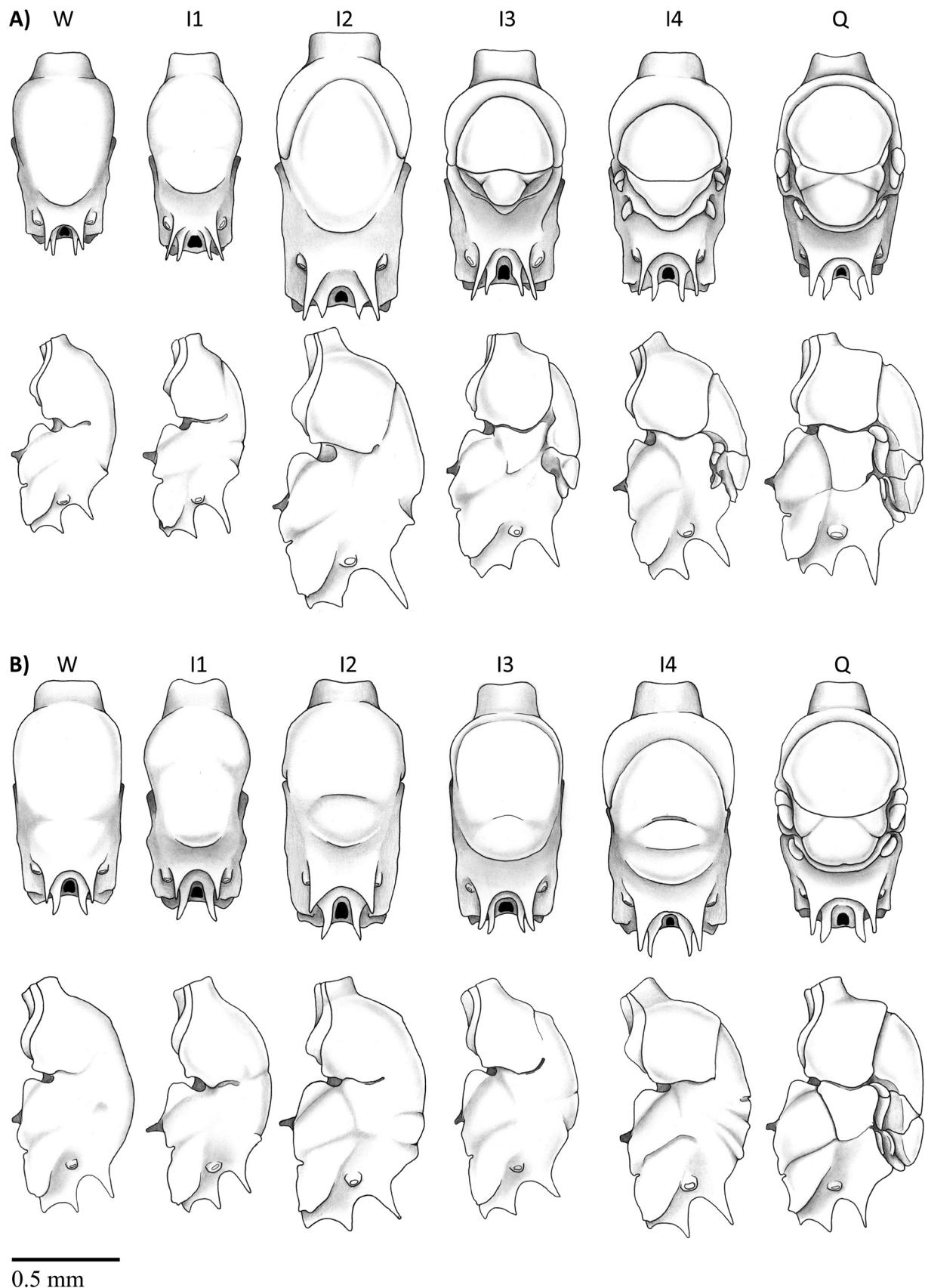
**Comments.** *Hylomyrma* can be easily differentiated from the other two Pogonomyrmecini genera. *Pogonomyrmex* species have the anterior margin of clypeus unarmed whereas *Hylomyrma* presents a pair of lateral teeth. *Patagonomyrmex* has a somewhat straight dorsal margin of mesosoma, and the petiolar node is strongly subtriangular, while in *Hylomyrma* the dorsal margin of mesosoma is predominantly convex and the dorsal margin of the petiole can be continuous and convex, or discontinuous, with the anterior surface of node differentiated from anterior peduncle in lateral view.

*Hylomyrma* species identification may be rather difficult because of the body homogeneity, and because of the presence of female intercastes in many species (Fig. 2A–B), revealing a comparatively large phenotypic plasticity. The most important characteristics for *Hylomyrma* species identification are the sculpture pattern, the petiolar shape, and the seta type. In relatively large species, or in species with conspicuous setae regarding size, thickness or branching, it is rather easy to characterize the species’ seta type. However, only SEM images enabled the correct characterization of the seta type of smaller species (e.g. *H. balzani*, *H. reitteri* and *H. versuta*), whose setae were originally described as simple (Kempf 1973), but in reality bear minute lateral ramifications. This seta type was firstly described by Wheeler & Wheeler (1960) from *H. versuta* semipupa. Moreover, *H. balzani* also has branched setae, flattened in its apical half, which are located mainly on the gaster dorsum. In *H. dolichops* the setae have multiple branches of equal size, with a lobed tip. Although setae are important for species identification, this trait was not used intensively in the identification key because SEM equipment is not easily available to all.

**Distribution.** *Hylomyrma* occurs in the Neotropical region, from southern Mexico (Veracruz) to northern Argentina (Misiones) and southern Brazil. It occurs in Trinidad, but not elsewhere in the Caribbean. There are no records for Chile or El Salvador. The center of greatest diversity of the genus is the Amazon Biome, where 17 out of the 30 recognized species occur. Records occur from sea-level to 3,600 m elevation.

**Natural history.** Our knowledge about species biology is restricted to a few label data and rare observations of live specimens. *Hylomyrma* species are commonly collected in leaf-litter samples of wet and dry environments submitted to winkler extractors, indicating, therefore, a preference for forested habitats or cropping areas with soil covered with litter.

One *Hylomyrma blandiens* colony was collected by M.A. Ulysséa inside a fallen twig (10 cm length x 4 cm diameter) found among the leaf-litter in Madre de Dios, Peru. The colony had 24 specimens, comprising three queens (two callow with wings) and 21 workers, as well as plant remains and parts of a Curculionidae imago. There was no brood (larvae or pupae) inside this nest. Wilson observed that, in captivity, *H. versuta* workers captured *Drosophila* spp., *Isotoma viridis* Bourlet, 1839 (springtails), and other selected small invertebrates offered in the feeding cham



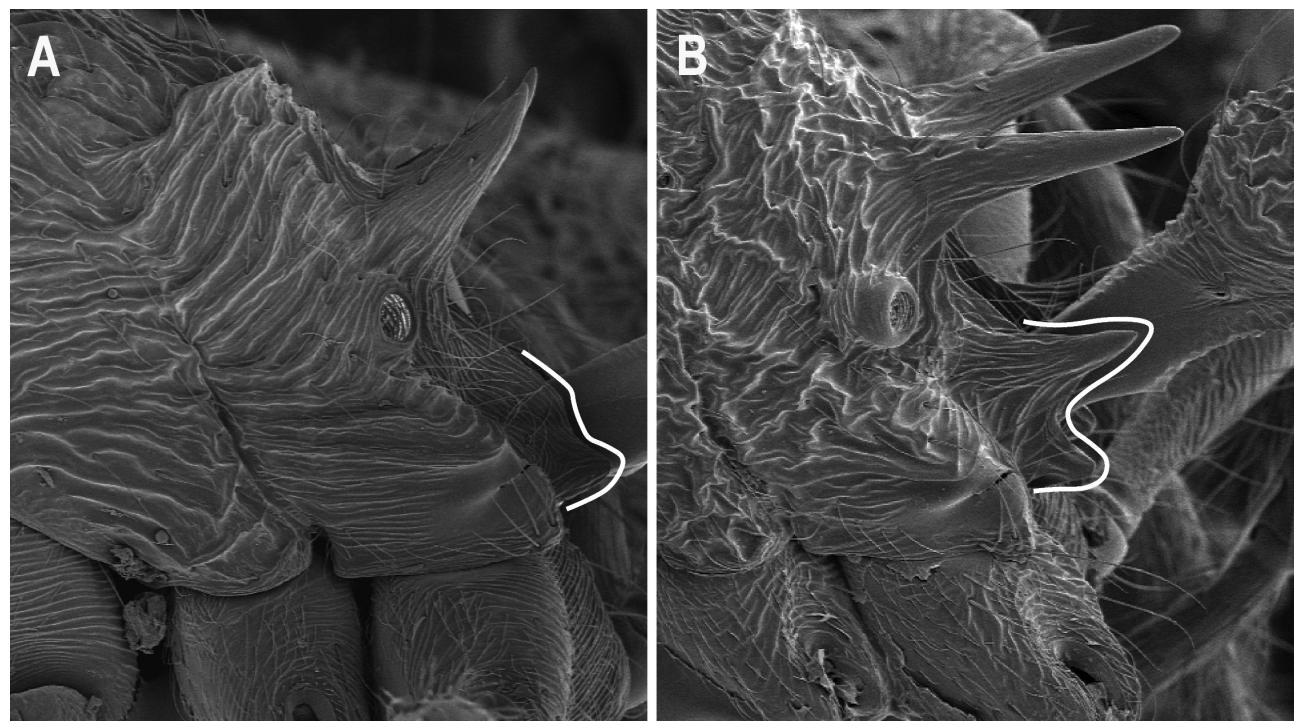
**FIGURE 2.** Female external morphology of mesosoma, showing worker (W), intercastes (I1–I4) and queen (Q). A) *Hylomyrma reitteri* (W: MZSP67444; I1: MZSP67445; I2: MZSP67446; I3: MZSP67447; I4: MZSP67448; Q: MZSP67449); B) *Hylomyrma lopesi* (W: MZSP67438; I1: MZSP67439; I2: MZSP67440; I3: MZSP67441; I4: MZSP67442; Q: paratype MZSP67356).

ber, which they used to feed the larvae (Wheeler & Wheeler 1960). The colonies are apparently rather small; most of the leaf-litter samples included only one to three individuals of *Hylomyrma*. Exceptionally, five to fifteen specimens of *H. villemantae* (Neves & Lacau 2018) and nine *H. reitteri* were collected in a few samples. Samples with five, seven or at most ten specimens are rare. When disturbed, the workers tend to assume a dead posture (thanatosis), which makes their visualization in field conditions very challenging (personal observation to *H. immanis* and *H. reitteri*), because in thanatosis they resemble small litter debris.

Our study of 3,260 specimens (1,959 workers, 308 queens, 116 males, 860 intercastes, and 8 individuals of indeterminate caste) indicates that intercaste phenotypes are far from rare, being known in 11 out of the 30 known *Hylomyrma* species. Winged queens, described here for 23 species, are the most common reproductive form. At least four species—*H. balzani*, *H. lopesi*, *H. montana* and *H. reitteri*—present queen-like intercastes, which may be understood as ergatoids in the future. This topic, intercastes in *Hylomyrma*, will be discussed in detail in an upcoming article.

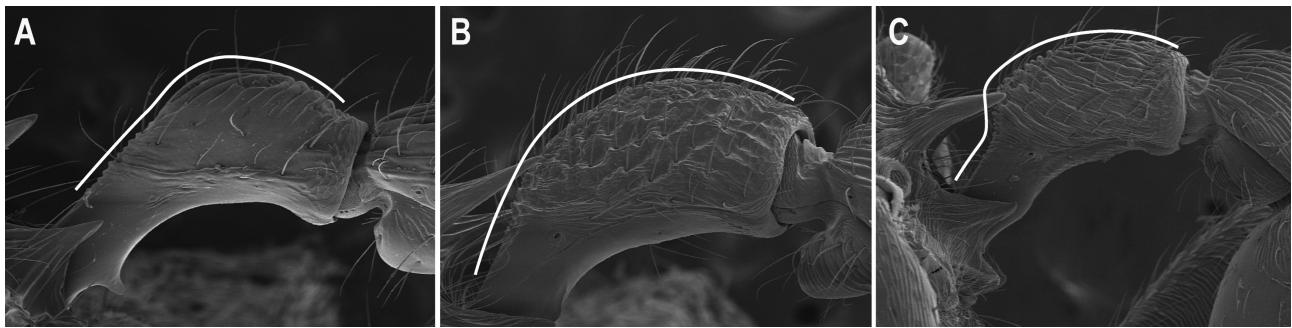
### Key to species of *Hylomyrma* based on workers

- |    |   |                            |
|----|---|----------------------------|
| 1. | Propodeal lobe bidentate (Fig. 3B) . . . . .                                | 2                          |
| -  | Propodeal lobe unidentate, dorsal region rounded (Fig. 3A) (Peru) . . . . . | <i>H. wachiperi</i> n. sp. |

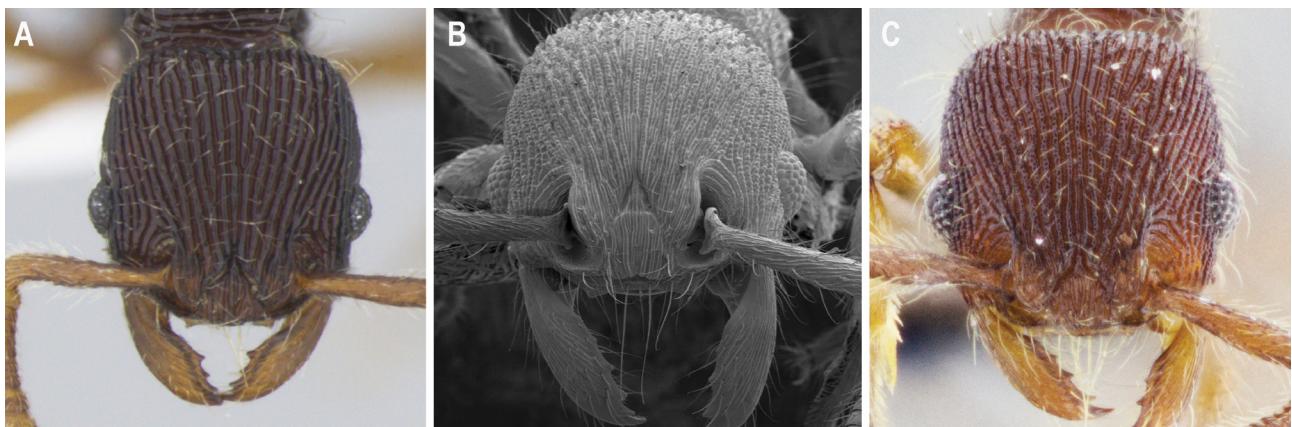


**FIGURE 3.** Lateral view of propodeum; propodeal lobe outlined. A) *H. wachiperi* (MZSP67468); B) *H. mariae* paratype (MZSP67393).

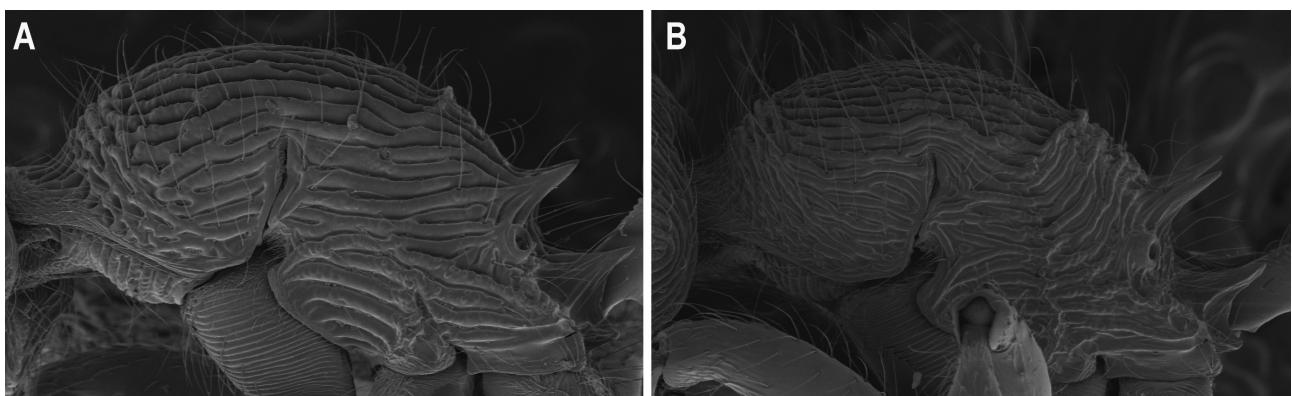
- |       |   |                             |
|-------|---|-----------------------------|
| 2(1). | Dorsal margin of petiole continuous, anterior surface of node not differentiated from anterior peduncle (Fig. 4A–B) . . . . .   | 3                           |
| -     | Dorsal margin of petiole discontinuous, anterior surface of node differentiated from anterior peduncle (Fig. 4C) . . . . .  | 12                          |
| 3(2). | Dorsal margin of petiole strongly convex (Fig. 4A) . . . . .  | 4                           |
| -     | Dorsal margin of petiole slightly convex (Fig. 4B) . . . . .  | 6                           |
| 4(3). | Striae on dorsal surface of head with smooth crests (Fig. 5A); mesosoma with a few elliptic and concentric striae; postpetiolar dorsum and gaster smooth (Brazil) . . . . .   | <i>H. villemantae</i>       |
| -     | Striae on dorsal surface of head with punctuated appearance (Fig. 5B–C); mesosoma longitudinally striate; postpetiolar dorsum and base of first gastral segment with longitudinal striae . . . . .  | 5                           |
| 5(4). | In lateral view, striae of mesosoma directed to propodeal spine (Fig. 6A); petiole mesoventral surface armed with conspicuous spine; petiolar dorsum with transverse and longitudinal striae; subpostpetiolar process more prominent (SPP 0.13–0.14 mm) (Guyana, French Guiana) . . . . .                   | <i>H. margaridae</i> n. sp. |
| -     | In lateral view, striae of mesosoma directed to propodeal dorsum (Fig. 6B); petiole mesoventral surface armed with inconspicuous subtriangular projection; petiolar dorsum entirely covered with transverse striae; subpostpetiolar process less prominent (SPP 0.11–0.12 mm) (Guyana, Venezuela) . . . . . | <i>H. peetersi</i> n. sp.   |



**FIGURE 4.** Lateral view of petiole; dorsal margin of petiole outlined. A) *H. margaridae* paratype (USNMENT00688844); B) *H. reginae* (USNMENT00688778); C) *H. columbica* (COLOMBIA: on fiber plant from Colombia at Quarantine [USNM]).

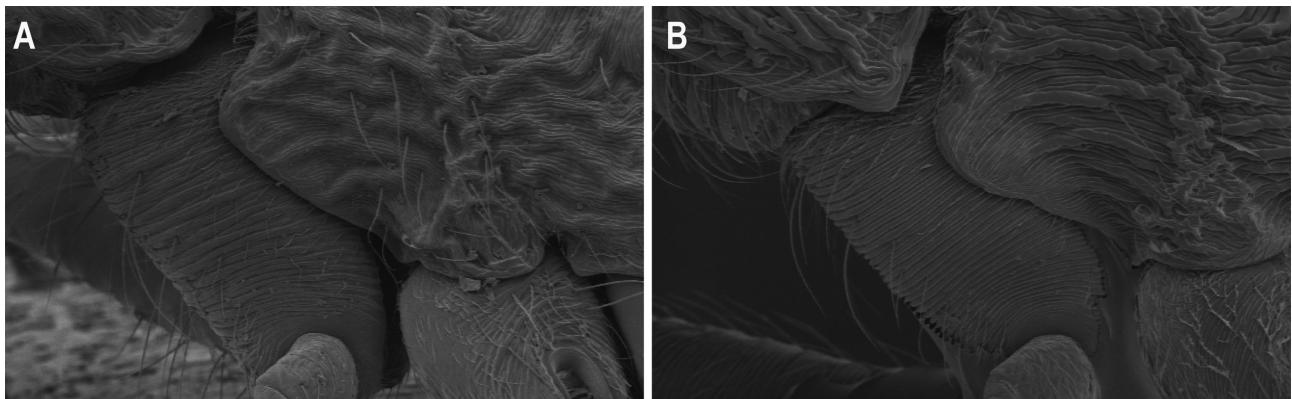


**FIGURE 5.** Frontal view. A) *H. villemantae* (MZHY199 [MZSP]), photo by M.A. Ulysséa; B) *H. peetersi* paratype (USNMENT00413896); C) *H. margaridae* paratype (USNMENT00688844), photos by Ricardo Kawada.

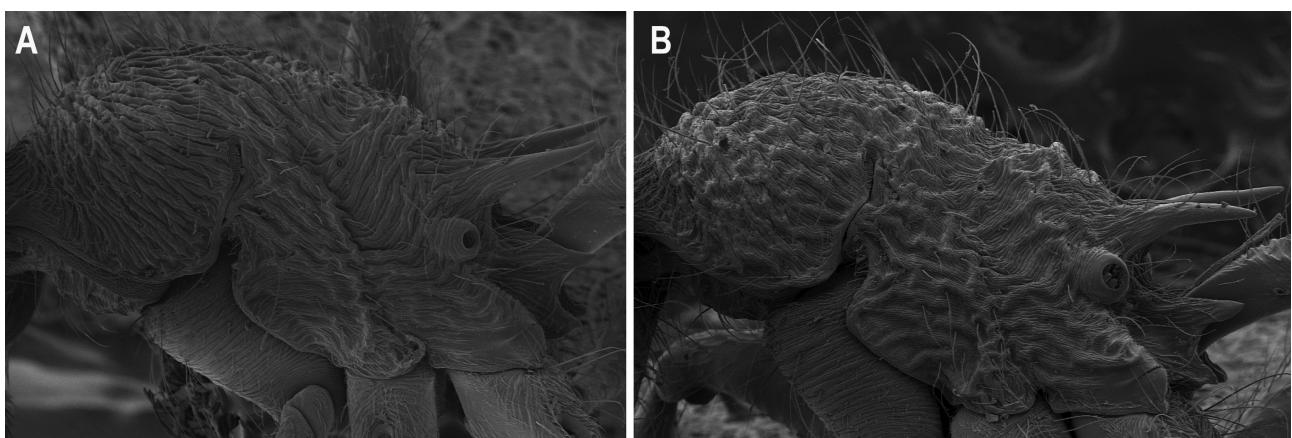


**FIGURE 6.** Lateral view of mesosoma. A) *H. margaridae* paratype (USNMENT00688844); B) *H. peetersi* paratype (USNMENT00413896).

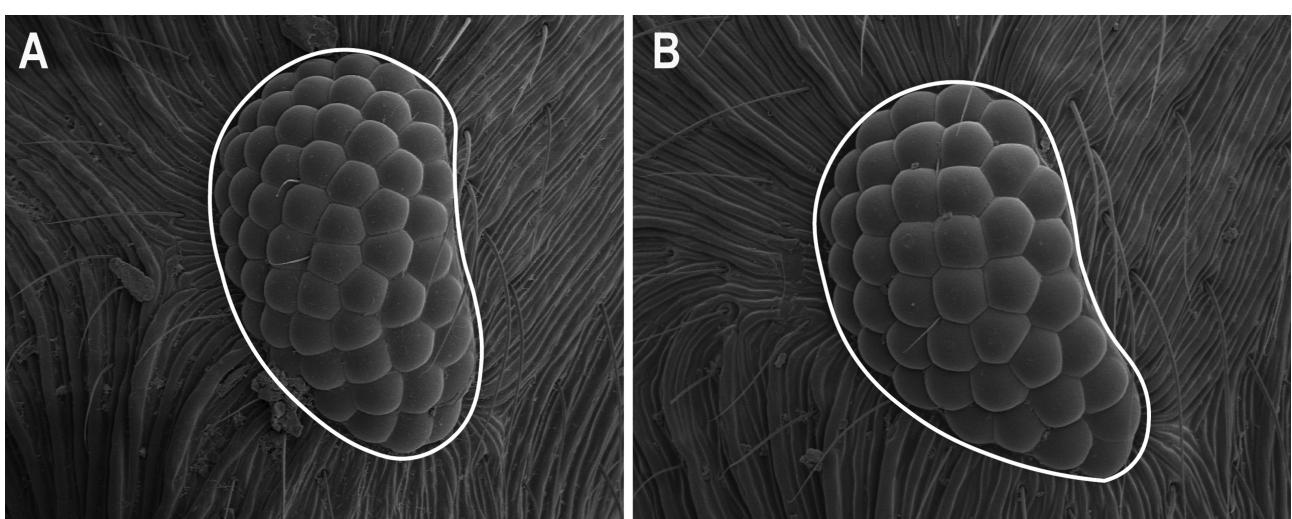
- 6(3). Procoxa striae with variable thickness (Fig. 7A); postpetiolar dorsum predominantly smooth ..... 7
- Procoxa striae with uniform thickness (Fig. 7B); postpetiolar dorsum striate ..... 8
- 7(6). Regular and irregular striae on mesosoma, interspaces between striae smooth; dorsal margin of mesosoma somewhat straight (mesosoma slightly flattened dorsally) (Fig. 8A) (Costa Rica, Ecuador, Panama) ..... *H. montana*
- Mesosoma covered with irregular to vermicular striae of variable thickness, interspaces indistinguishable; dorsal margin of mesosoma notably convex (Fig. 8B) (Colombia, Ecuador) ..... *H. lispctorae* n. sp.
- 8(6). Eye reniform (Fig. 9A); propodeal spine relatively short (PSL 0.21–0.24 mm) (Costa Rica, Panama) ..... *H. jeronimae* n. sp.
- Eye drop-shaped (anterior region narrower than posterior region) (Fig. 9B); propodeal spine relatively long (PSL 0.25–0.58 mm) ..... 9
- 9(8). Subtriangular projection on mesoventral surface of petiole present (anterior to petiolar spiracle) (Fig. 10A–B); subpostpetiolar process very prominent (Fig. 10A) (Brazil, Guyana, French Guiana, Suriname) ..... *H. reginae*
- Subtriangular projection on ventral surface of petiole absent; subpostpetiolar process less prominent (Fig. 10C–D) ..... 10



**FIGURE 7.** Lateral view of procoxa. A) *H. lispectorae* paratype (MZSP67347); B) *H. columbica* (COLOMBIA: on fiber plant from Colombia at Quarantine [USNM]).



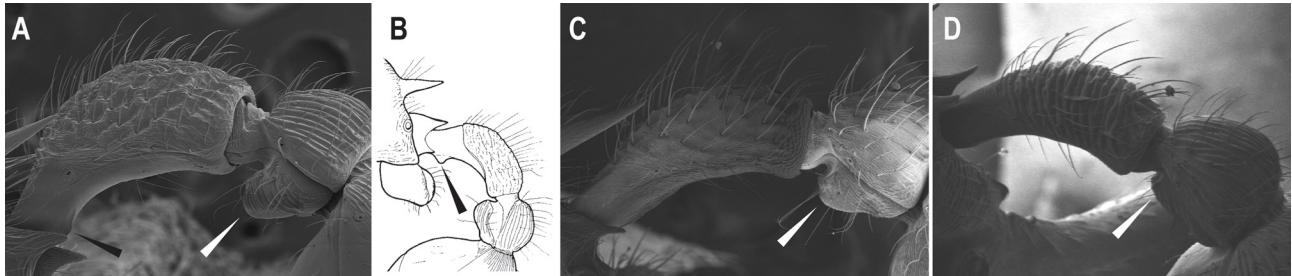
**FIGURE 8.** Lateral view of mesosoma. A) *H. montana* (MZSP67433); B) *H. lispectorae* paratype (MZSP67347).



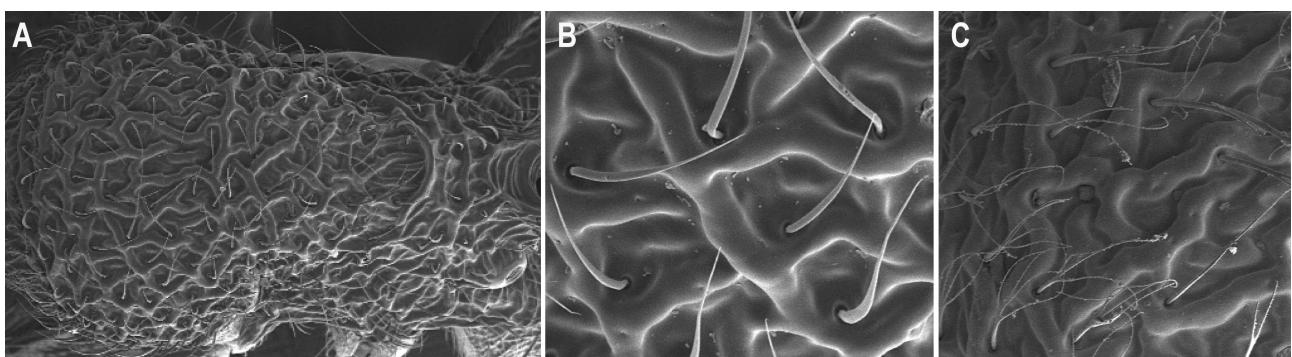
**FIGURE 9.** Lateral view of head; eye format outlined. A) *H. jeronimae* paratype (MZSP67341); B) *H. blandiens* (MZSP67435).

- 10(9). Integument predominantly subopaque, covered with very thin striae (microsculpture) superimposed on vermicular striae (macrosclupture), interspaces between striae indistinguishable (Bolivia, Brazil, Colombia, Ecuador, Guyana, French Guiana, Peru, Trinidad and Tobago, Venezuela)..... *H. immanis*
- Integument shinier, covered with thick striae, interspaces distinguishable ..... 11
- 11(9). Regular to irregular striae on mesosoma; transverse striae on petiolar dorsum; sternite of the first gastral segment with semicircular striae covering the midbasal and lateral regions (Brazil, Colombia, Ecuador)..... *H. praepotens*
- Vermicular striae on mesosoma; petiolar dorsum mostly covered with irregular to vermicular striae; sternite of the first gastral

segment with striation restricted to laterobasal region (Colombia) . . . . .	<i>H. sagax</i>
12(2). Antennal scape relatively long, surpassing the posterior margin of head in full-face view (SI 88.37–100 mm); vermicular striae on mesonotum (Fig. 11A) . . . . .	13
- Antennal scape relatively short, never surpassing the posterior margin of head in full-face view (SI 65.16–81.81 mm); mesonotum striae variously shaped, but never vermicular . . . . .	14

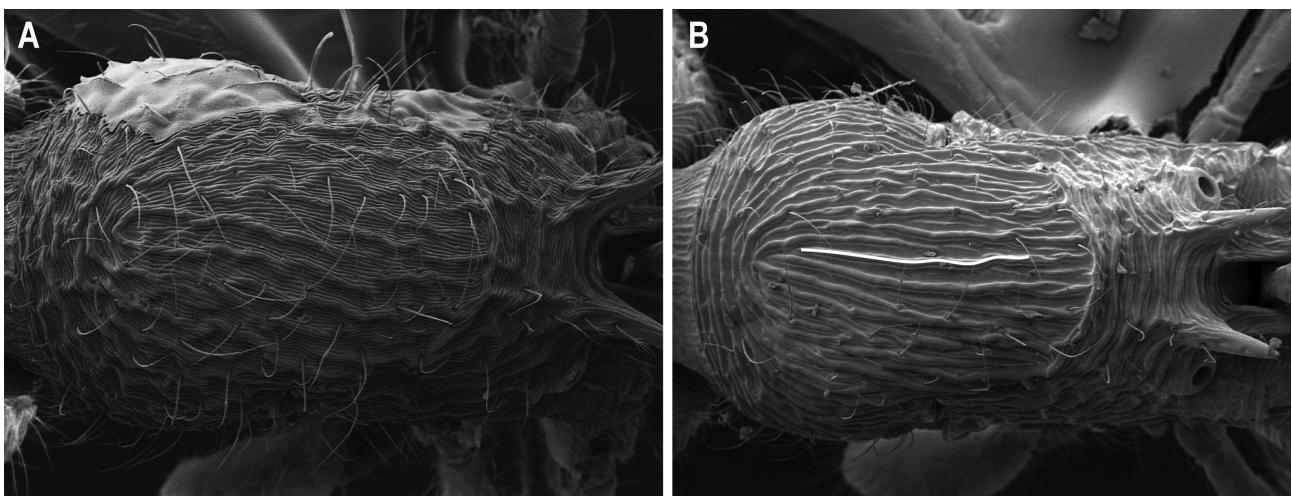


**FIGURE 10.** Lateral view of petiole and postpetiole; projection on mesoventral surface of petiole (black) and subpostpetiolar process (white) pointed. A) *H. reginae* (USNMENT00688778); B) drawing of *H. reginae* holotype from Kutter, 1977; C) *H. immanis* (MZSP67335); D) *H. praepotens* (MZSP67411).



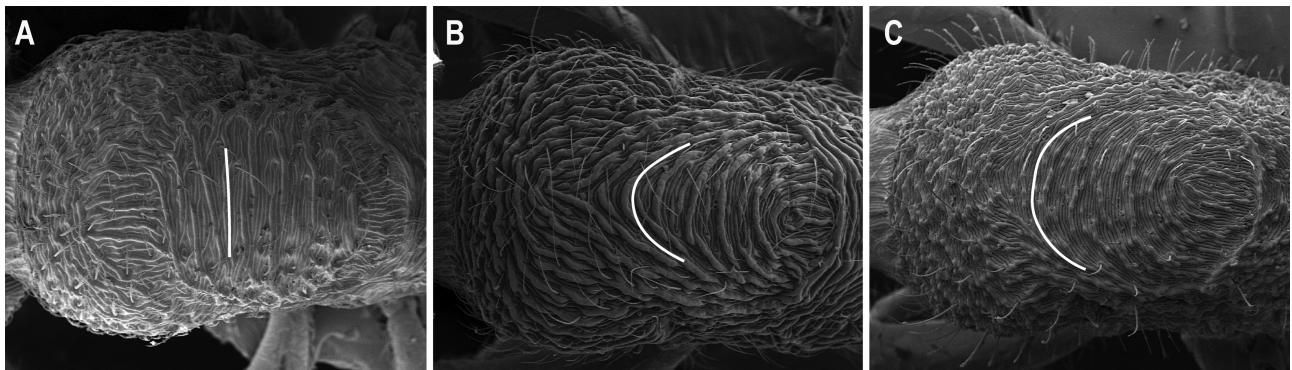
**FIGURE 11.** Dorsal view of mesosoma. A-B) *H. marielleae* paratype (MZSP67399); C) *H. longiscapa* (MZSP67436).

13(12). Thick, dark and unbranched setae (Fig. 11B) (Bolivia, Brazil, Ecuador, French Guiana, Peru) . . . . .	<i>H. marielleae</i> n. sp.
- Thin, light and branched setae (Fig. 11C) (Brazil, Ecuador, Peru, Suriname, Venezuela) . . . . .	<i>H. longiscapa</i>
14(12). Interspaces between striae on mesosomal dorsum indistinguishable (Fig. 12A) . . . . .	15
- Interspaces between striae on mesosomal dorsum smooth (Fig. 12B) . . . . .	21



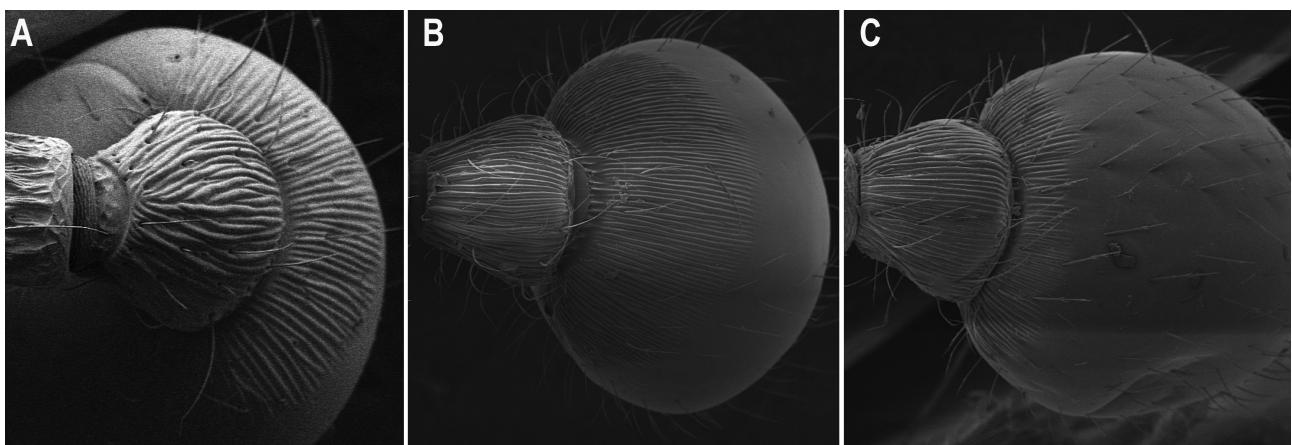
**FIGURE 12.** Dorsal view of mesosoma; striae type (regular) outlined. A) *H. blandiens* (MZSP67435); B) *H. reitteri* (MZSP67443).

15(14). Mesonotal striae predominantly longitudinal (Fig. 12A–B) . . . . .	16
- Mesonotal striae predominantly transverse (Fig. 13A–C) . . . . .	19



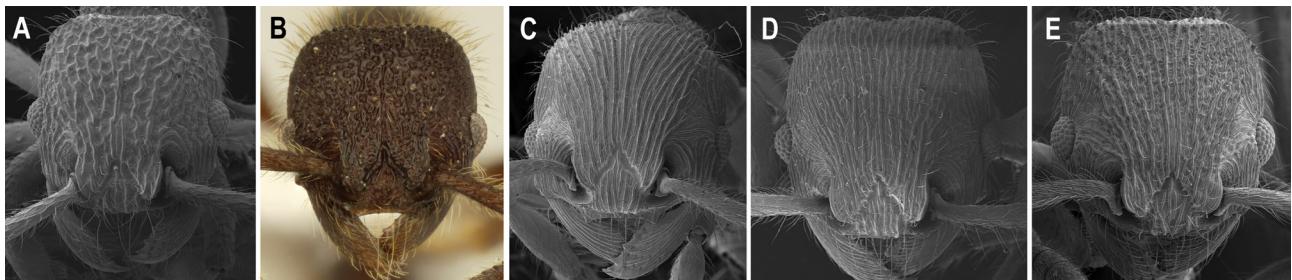
**FIGURE 13.** Dorsal view of pronotum and mesonotum; striae direction outlined. A) *H. transversa* (MZSP67452); B) *H. columbica* (COLOMBIA: on fiber plant from Colombia at Quarantine [USNM]); C) *H. dolichops* (COLOMBIA: Nariño: Orito, Territorio Kofan, 00°30'N, 77°13'W, 700m, Bosque caída, T2T6 [IHVL]).

- 16(15). Body covered with conspicuous and branched setae, trifid (Costa Rica) ..... *H. plumosa*
- Body mostly covered with thin and unbranched setae; if branched setae present, they are inconspicuous. ..... 17
- 17(16). Eye oval; metanotal groove distinguished by a slight depression; propodeal spine long (PSL 0.28–0.34 mm); postpetiolar dorsum with longitudinal, discontinuous and slightly curved striae (Fig. 14A) (Colombia, Ecuador) .....  
..... *H. macielae n. sp.* (in part; specimens from Leticia, Colombia)
- Eye reniform or drop-shaped; metanotal groove indistinct; propodeal spine short (PSL shorter than 0.27 mm); postpetiolar dorsum with longitudinal, continuous and regular striae (Fig. 14B–C) ..... 18



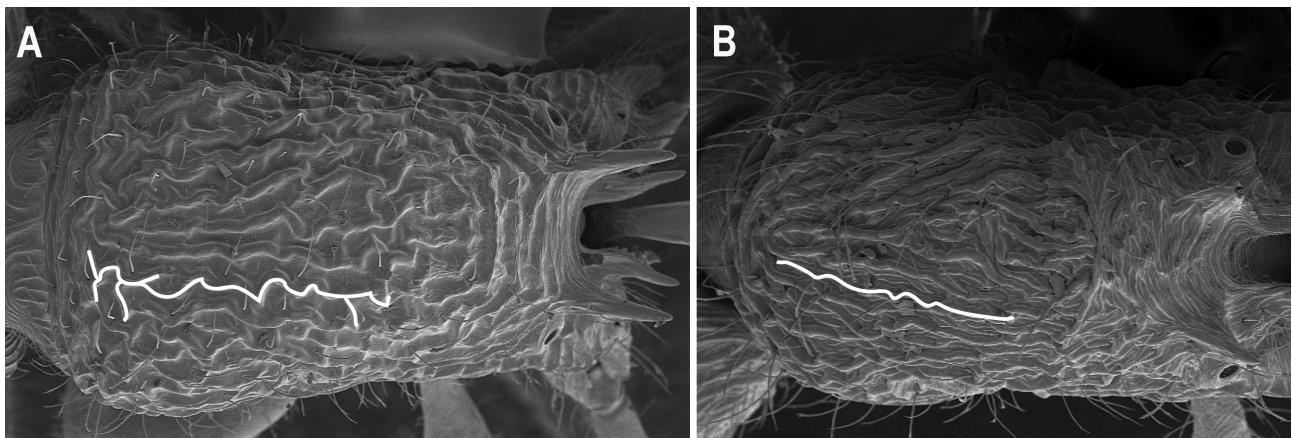
**FIGURE 14.** Dorsal view of petiole and postpetiole. A) *H. macielae* paratype (MZSP67389); B) *H. blandiens* (MZSP67435); C) *H. dentiloba* (MZSP67320).

- 18(17). Dorsal margin of mesonotum convex dorsally; propodeal spine slightly longer than the dorsal tooth of propodeal lobe (PSL 0.20–0.27 mm); striae length on first gastral segment similar to postpetiolar length (Fig. 14B) (Bolivia, Brazil, Colombia, Ecuador, Guyana, French Guiana, Peru, Suriname, Trinidad and Tobago, Venezuela) ..... *H. blandiens*
- Dorsal margin of mesonotum straight (mesonotum flattened dorsally); propodeal spine very short (PSL 0.15–0.16 mm), shorter than the dorsal tooth of propodeal lobe; striae length on first gastral segment shorter than postpetiolar length, restricted to basal region (Fig. 14C) (Panama) ..... *H. dentiloba*
- 19(15). Striae on mesonotum predominantly straight (Fig. 13A) (Bolivia, Brazil, Colombia, Peru) ..... *H. transversa*
- Striae on mesonotum semicircular (Fig. 13B–C). ..... 20
- 20(19). Eye midsize (MOD 0.21–0.24 mm), 13 facets at maximum diameter, drop-shaped; propodeal spine short (shorter than 2× the dorsal tooth of propodeal lobe); first half of petiolar node dorsum with semicircular striae, and second half with longitudinal striae; unbranched setae with sharp tip (Colombia, Venezuela). ..... *H. columbica*
- Eye large (MOD 0.26–0.30 mm), 16–18 facets at maximum diameter, reniform; propodeal spine long (2× or longer than the dorsal tooth of propodeal lobe); dorsum of petiolar node with longitudinal striae; branched setae with lobed ends (Colombia, Ecuador, Venezuela). ..... *H. dolichops*
- 21(14). Head dorsum with vermicular to vermiculated-areolated striae (Fig. 15A–B); postpetiolar dorsum and base of first gastral segment with anastomosed longitudinal striae ..... 22
- Head dorsum with longitudinal striae that are regular (Fig. 15C), irregular (Fig. 15D), or rugose (Fig. 15E); postpetiolar dorsum and base of first gastral segment with longitudinal striae not anastomosed. ..... 23



**FIGURE 15.** Frontal view. A) *H. virginiae* paratype (ECUADOR: Pichincha, 584 [IHVL]); B) *H. mitiae* holotype (MZSP67401), photo by Gabriel Biffi; C) *H. reitteri* (MZSP67443); D) *H. dandarae* paratype (COLOMBIA: Caquetá [IHVL]); E) *H. adelae* paratype (MZSP67312).

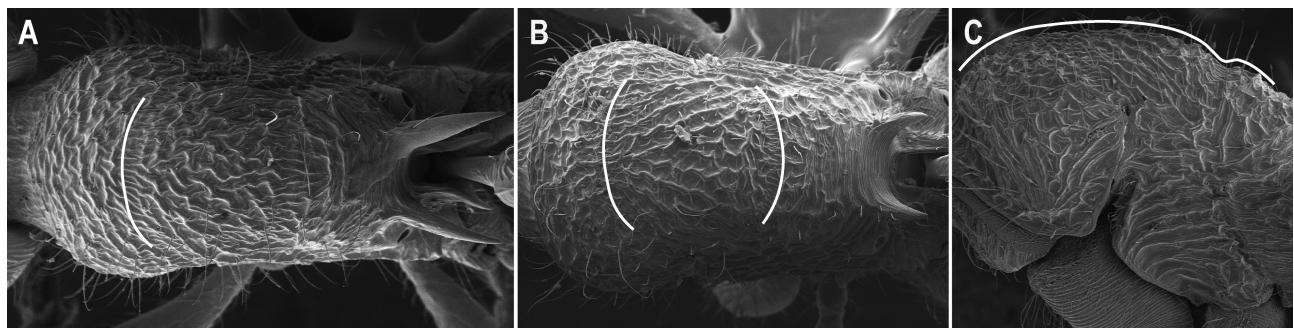
- 22(21). Gena and laterodorsal region of head covered with very thin striae (microsculpture) superimposed on vermicular to vermiculated-areolated striae (macrosculpture); dorsal margin of mesosoma continuous (LV), metanotal groove indistinct; subpostpetiolar process weak and slightly convex (Colombia, Ecuador) ..... *H. virginiae* n. sp.
- Gena and laterodorsal region of head covered with very thin striae (microsculpture) between the vermicular to vermiculated-areolated striae; dorsal margin of mesosoma discontinuous (LV), metanotal groove distinguished by a slight depression (LV) and altered sculpture (DV); subpostpetiolar process prominent and subtriangular (French Guiana) ..... *H. mitiae* n. sp.
- 23(21). Striae on mesosoma rugose (Fig. 16A) ..... 24
- Striae on mesosoma regular (Fig. 12B) or irregular (Fig. 16B) ..... 29



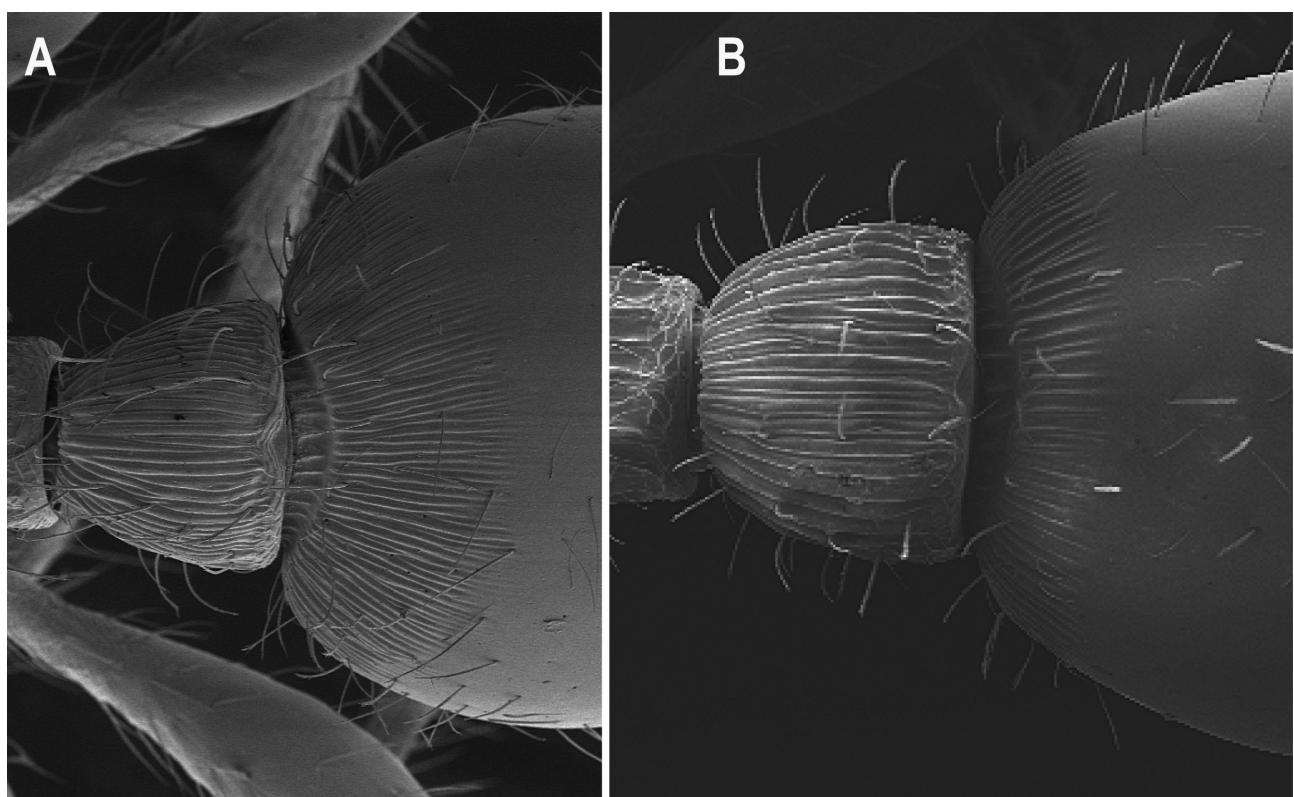
**FIGURE 16.** Dorsal view of mesosoma; striae type (A: rugose, B: irregular) outlined. A) *H. balzani* (MZSP67434); B) *H. versuta* (MZSP67461).

- 24(23). Small to midsized ant (TL 4.28–5.23 mm, WL 1.08–1.40 mm); brownish body; propodeal spine longer than the dorsal tooth of propodeal lobe ..... 25
- Large-sized ant (TL 5.32–5.78 mm, WL 1.34–1.48 mm); black body; propodeal spine with length similar to the dorsal tooth of propodeal lobe (Brazil) ..... *H. primavesi* n. sp.
- 25(24). Posterior surface of profemur mostly smooth; base of first gastral segment with short striae, shorter than postpetiole length ..... 26
- Posterior surface of profemur with transverse striae; first gastral segment with long striae, similar to or longer than postpetiole length ..... 28
- 26(25). Dorsal margin of mesosoma continuous, without differentiated metanotal groove (Fig. 16A) (Argentina, Brazil, Paraguay) .. *H. balzani*
- Dorsal margin of mesosoma discontinuous, metanotal groove distinguishable by altered sculpture (Fig. 17A–B) or a slight depression (Fig. 17C) ..... 27
- 27(26). On side of head, thinner striae (microsculpture) occur between the thicker striae (macrosculpture); striae on petiolar node mostly transverse; striae on postpetiolar tergite regular and longitudinal, striae weakly marked on lateral and posterior regions (Colombia) ..... *H. dandarae* n. sp.
- On side of head, thinner striae are superimposed on thicker striae; striae on petiolar node mostly longitudinal; striae on postpetiolar tergite regular and longitudinal, striae well-marked (Colombia, Ecuador) ..... *H. macielae* n. sp.
- 28(25). Metanotal groove distinguished by a depression; propodeal spine very long (PSL 0.32–0.37 mm), longer than 2× the dorsal tooth of propodeal lobe; dorsum of petiolar node with rugose striae (Colombia) ..... *H. mariae* n. sp.
- Metanotal groove indistinct; propodeal spine short (PSL 0.22–0.26 mm), shorter than 2× the dorsal tooth of propodeal lobe; dorsum of petiolar node with irregular and transverse striae (Bolivia) ..... *H. adelae* n. sp.
- 29(23) Longitudinal striae on head dorsum irregular and with variable thickness; striae on mesosomal dorsum irregular, interspaces in

part smooth and in part with thin striation; longitudinal striae on first gastral tergite slightly shorter than postpetiolar length (Fig. 18A) (Belize, Colombia, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Panama). . . . . *H. versuta*  
 - Longitudinal striae on head dorsum regular (Fig. 15C); striae on mesosomal dorsum regular to irregular, interspaces smooth (Fig. 12B); longitudinal striae on first gastral tergite slightly shorter than  $\frac{1}{3}$  of postpetiolar length (Fig. 18B). . . . . 30



**FIGURE 17.** Dorsal (A-B) and lateral (C) view of mesosoma; promesonotal junction and metanotal groove outlined. A) *H. dandarae* paratype (COLOMBIA: Caquetá [IHVL]); B) *H. primavesi* paratype (MZSP67418); C) *H. primavesi* paratype (MZSP67418).



**FIGURE 18.** Dorsal view of postpetiole and gaster. A) *H. versuta* (MZSP67461); B) *H. lopesi* paratype (MZSP67385).

30(29). Striae between frontal carina (posterior to torulus) and eye margin irregular; in lateral view, mesosomal striae directed to propodeal dorsum; ventral surface of petiole smooth (Brazil, Paraguay) . . . . . *H. reitteri*  
 - Striae between frontal carina and eye margin rugose; in lateral view, mesosomal striae directed to propodeal spine; ventral surface of petiole striate (Brazil) . . . . . *H. lopesi* n. sp.

## Species accounts

We present the recognized *Hylomyrma* species in alphabetical order, as we did not propose phylogenetic relationships among species. In the comments sections for each species, however, we point out possible relations among species, judging by morphological similarity. We consulted curators before determining the repositories of specimens in collections, in order to allow for an efficient distribution of paratypes and duplicates, depositing holotypes

in the original collections, but guaranteeing that collections are furnished with material that allows species identification by comparison with the material determined in our study.

### *Hylomyrma adelae* Ulysséa new species

Figures 19, 20, 80A, 81F, 83 (map)

Holotype: BOLIVIA: Cochabamba: 109k E Cochabamba at Lagunitas, 17°06'22"S, 65°40'57"W, 01.ii.99, R. Anderson [leg.], Mont. evergreen forest, litter, #18644 (1W) [MCZC]. Paratypes: same data as holotype (3W) [CASC, IHVL, USNM]; same data as holotype (1W) (MZSP67309) [MZSP]; same except #18640 (2W, one covered with gold) (MZSP67310, MZSP67312) [MZSP]; #18640 (2Q) (MZSP67311, MZSP67316) [MZSP]; #18647 (1W without postpetiole and gaster) [UTEP]; #18636 (1W) [UTEP]; #18636 (1W) (MZHY207) [MZSP].

**Diagnosis.** Rugose and divergent striae on head dorsum; rugose striae on mesosoma; promesonotal junction and metanotal groove indistinct; dorsal margin of petiole discontinuous; subtriangular projection on mesoventral surface of petiole; irregular and transverse striae on node dorsum; ventral surface of node striate; striae on profemur posterior surface and protibia extensor surface weakly marked; long striae on tergum of first gastral segment.

**Description.** WORKER (n=3) (Fig. 19A–C): HL (0.92–0.96); HW (0.82–0.90); ML (0.58–0.61); SL (0.64–0.68); MOD (0.22–0.25); PNW (0.60–0.68); WL (1.16–1.26); PSL (0.22–0.26); PL (0.52–0.58); PW (0.22–0.25); PPL (0.32–0.35); PPW (0.33–0.36); GL (1.04–1.07); TL (4.54–4.83); CI (89.13–95.65); SI (72.72–78.04); OI (26.83–27.77). Small-sized. Shiny integument. Bicolored body, brownish with lighter leg. Thin and unbranched setae (Fig. 80A), long to midsized, suberect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8 striae, striation longitudinal, regular to irregular, converging to a point on the anterior margin, interspaces between striae distinguishable. Frontal triangle with 1 stria. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 12 ommatidia. Rugose striae on head dorsum, divergent to posterior margin, interspaces between rugose striae filled with thinner striae, longitudinal and transverse. Head lateral and laterodorsal regions with thin and regular striae converging to eye margin, interspaces indistinguishable; anterior part of laterodorsal region with few irregular and longitudinal striae connecting the region posterior to frontal carina with eye margin; gena striate, 2–4 regular and semicircular striae circumscribing the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with rugose striae of uniform thickness, transverse on pronotum anterior region (DV), longitudinal in other regions (DV), interspaces smooth. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and sharper than the shorter and blunt ventral tooth; dorsal tooth length is  $\frac{1}{2}$  of the propodeal spine length. Propodeal spine midsized, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur posterior surface striate, transverse striae weakly marked. Protibia extensor surface entirely striate.

Dorsal margin of petiole discontinuous. Subtriangular projection on mesoventral surface of petiole. Convex node; transverse striae on ventral and anterior surfaces; lateral surface mostly with longitudinal striae; irregular and transverse striae on dorsal surface. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex.

First gastral segment striation similar to postpetiole striae; longitudinal striae on tergum longer than postpetiole length; sternite striation restricted to laterobasal region.

QUEEN (n=2) (Fig. 20A–C): HL (0.96–1); HW (0.89–0.91); ML (0.62); SL (0.68–0.70); MOD (0.26–0.27); PNW (0.82–0.85); WL (1.42); PSL (0.26–0.30); PL (0.60–0.62); PW (0.26); PPL (0.38); PPW (0.38–0.39); GL (1.24–1.30); TL (5.26–5.30); CI (89–94.79); SI (74.72–78.65); OI (29.21–29.67). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 13 ommatidia. Scutum longitudinally striate, regular to irregular striae going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal striation mostly regular on anepisternum and katepisternum. Longitudinal striation mostly irregular striae on axilla, interspaces distinguishable. Scutoscutellar sulcus

inconspicuous. Scutellum with same sculpture of scutum. Interspaces between striae on propodeum indistinguishable (DV). Lateral surface of mesosoma with irregular striae directed in part to propodeal dorsum and in part to propodeal spine. Wings as in Fig. 81F.

MALE Unknown.



**FIGURE 19.** Holotype worker of *Hylomyrma adelae* (BOLIVIA: #18644 [MCZC]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

**Etymology.** The epithet *adelae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. This species is named in honor of Adela Zamudio (1854–1928), a Bolivian educator, feminist, and poetess—“*Tal es joh misterio! la ley de la vida que todo renueva, que el viento y la nube son fuerzas que a un tempo destruyen y crean*”, and “*;Oh, mortal privilegiado, que de perfecto y cabal gozas seguro renombre! En todo caso, para esto, te ha bastado nacer hombre*”. Adela was born in Cochabamba, from where this species is known.

**Comments.** *Hylomyrma adelae* is similar to *H. dandarae* and *H. mariae*. *Hylomyrma adelae* can be distinguished from *H. dandarae* (characteristics in parentheses) based on the following characters: drop-shaped eye (vs. oval), rugose striae on the head dorsum (vs. irregular divergent-longitudinal), indistinct promesonotal junction and metanotal groove (vs. distinct), and tergum of the first gastral segment with long striae (vs. short striae). Both species occur in nearby geographic areas of Bolivia (Fig. 83), *H. adelae* in Cochabamba and *H. dandarae* in La Paz. *Hylomyrma adelae* differs from *H. mariae* in the rugose striae on the head dorsum (vs. irregular divergent-longitu-

dinal), the indistinct metanotal groove (vs. distinct), the shorter propodeal spine (vs. longer), the profemur posterior surface with well-marked striae (vs. weakly marked), and the dorsum of petiole with irregular and transverse striae (vs. rugose striae). Also, the two species are allopatric; *H. adelae* in Bolivia (Fig. 83), and *H. mariae* in Colombia (Fig. 88).



**FIGURE 20.** Paratype queen of *Hylomyrma adelae* (MZSP67316). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Distribution.** *Hylomyrma adelae* occurs only in forested areas in Cochabamba, Bolivia (Fig. 83).

**Natural history.** All specimens examined were found in leaf-litter samples of wet forests, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (2 workers): **BOLIVIA: Cochabamba:** 109k E Cochabamba at Lagunitas, 17°06'22"S, 65°40'57"W, 01.ii.99, R. Anderson [leg.], Mont. evergreen forest, litter, #18636 (2W) (MZHY207, MZHY218) [MZSP]. These specimens used for destructive DNA extraction.

## *Hylomyrma balzani* (Emery, 1894)

Figures 21, 22, 23, 80E, 80J, 81A, 82A, 84 (map)

*Tetramorium balzani* Emery, 1894: 165 (W). Lectotype (here designated): PARAGUAY: Balzan [leg.] (1W) (CASENT0904862)

[MSNG] [examined]. Combination in *Lundella*: Emery, 1915: 191; in *Hylomyrma*: Brown, 1953: 3.

*Lundella speciosa* Borgmeier, 1937: 241 (W). Lectotype (here designated): [BRAZIL: Rio de Janeiro]: Itatiaya, J.F. Zikán [leg.] (1W) (MZSP67307) [MZSP] [examined]. Paralectotypes: same data as lectotype (2W) (MZSP67308) [MZSP] [examined].

Synonymy by Kempf, 1960: 434.

**Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin; rugose striae on mesosoma and petiole; dorsal margin of petiole discontinuous; ventral surface of node transversely striate; anterior region of node higher than posterior region; profemur posterior surface smooth; striae on protibia extensor surface weakly marked; striation on tergum of first gastral segment restricted to base; branched setae of two types: 1) thin setae, main axis branching off 2–4 times, short branches of equal size; 2) thick setae, main axis flattened in its final half, with several branches.

**Redescription.** WORKER (n=16) (Fig. 21A–C): HL 1 (0.88–1.08); HW 0.94 (0.81–1.02); ML 0.56 (0.56–0.66); SL 0.64 (0.58–0.76); MOD 0.26 (0.23–0.26); PNW 0.64 (0.55–0.72); WL 1.20 (1.10–1.39); PSL 0.18 (0.16–0.32); PL 0.57 (0.51–0.60); PW 0.26 (0.20–0.26); PPL 0.33 (0.28–0.34); PPW 0.35 (0.30–0.37); GL 1 (0.94–1.20); TL 4.66 (4.27–5.23); CI 94 (90.72–95.91); SI 68.08 (68.08–74.74); OI 27.66 (25–28.40). Small to midsized. Shiny integument. Mesosoma and petiole dark brown; head and postpetiole light brown; yellowish or brownish appendices. Branched setae, midsized to short, suberect to subdecumbent; branched setae of two types: 1) thin setae, main axis branching off 2–4 times, short branches of equal size (Fig. 80E); 2) thick setae, main axis flattened in its final half, with several branches, mainly in the postpetiole and gaster (Fig. 80J).

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus slightly convex medially, with a pair of small teeth laterally; median area of clypeus with 8–9 regular to irregular, longitudinal and thick striae converging to a point on the anterior margin, interspaces smooth or with thinner striation. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere as long as previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye reniform, midsized, larger diameter with 12 ommatidia. Regular and longitudinal striae on head dorsum, divergent towards posterior margin; interval between thicker striae filled with thinner longitudinal and few transverse striae. Head lateral region with thin, regular and adjacent striae converging to eye margin; laterodorsal region rugose; gena striae, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with rugose striae of uniform thickness, interspaces smooth. Promesonotal junction and metanotal groove indistinct. Transverse carina indistinct to inconspicuous. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and acute than the shorter and blunt ventral tooth; dorsal tooth length is slightly longer than  $\frac{1}{2}$  of propodeal spine length. Propodeal spine midsized, straight (LV), divergent (DV), sculptured on base. Transverse striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur smooth. Protibia extensor surface entirely striate.

Dorsal margin of petiole discontinuous. Subtriangular projection on mesoventral surface of petiole. Node with transverse striae on ventral and anterior surfaces, interspaces distinguishable; rugose striae on lateral and dorsal surfaces, interspaces smooth. Postpetiole and subpostpetiolar process with regular, longitudinal, weakly marked striae or smooth; subpostpetiolar process weak, convex.

First gastral segment striae similar to postpetiole striae; striae on tergum shorter than  $\frac{1}{3}$  of postpetiole length; sternite striae restricted to laterobasal region.

QUEEN (n=5) (Fig. 22A–C): HL 1 (0.96–1.08); HW 0.96 (0.93–1.01); ML 0.58 (0.58–0.66); SL 0.64 (0.64–0.70); MOD 0.26 (0.26–0.28); PNW 0.80 (0.76–0.88); WL 1.38 (1.32–1.48); PSL 0.24 (0.20–0.32); PL 0.58 (0.58–0.66); PW 0.28 (0.26–0.30); PPL 0.32 (0.32–0.38); PPW 0.40 (0.36–0.41); GL 1.24 (1.24–1.38); TL 5.10 (5.10–5.56); CI 96 (92.45–96.87); SI 66.66 (66.66–71.42); OI 27.08 (26–28.57). Medium to large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 13–14 ommatidia. Scutum longitudinally striate, regular to irregular striae going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal striae mostly regular striae on anepisternum and katepisternum, interspaces distinguishable. Longitudinal striae mostly irregular on axilla, interspaces distinguishable. Scutos-

cutellar sulcus inconspicuous. Scutellum with same sculpture of scutum. Transverse striae on propodeum (DV). Lateral surface of mesosoma with vermicular striae directed to propodeal spine. Wings as in Fig. 81A.

MALE (first description) (n=2) (Fig. 23A–C): HL (0.73–0.74); HW (0.64–0.65); ML (0.40–0.42); SL (0.22–0.24); MOD (0.30); PNW (0.74–0.78); WL (1.24); PL (0.54–0.56); PW (0.22–0.23); PPL (0.30–0.31); PPW (0.30–0.32); GL (1.04–1.22); TL (4.26–4.48); CI (86.48–89.04); SI (34.37–36.92); OI (46.15–46.87). Brownish body, darker gaster, lighter appendices. Mandible with 4 teeth. Anepisternum and katepisternum mostly with longitudinal striae. Scutellum with irregular to slightly vermicular striae, thicker than scutum striae, interspaces distinguishable. Propodeum with irregular striae assuming multiple directions, interspaces distinguishable. Propodeal lobe rounded. Petiole dorsum partly smooth and partly covered with irregular striae assuming multiple directions, interspaces distinguishable. Postpetiole mostly smooth. Gaster smooth. Wings as in Fig. 82A.

**Etymology.** This species was named in honor of Luigi Balzan (1865–1893), an Italian naturalist and professor at National Institute, Asuncion, Paraguay, who collected the type specimen.



**FIGURE 21.** Worker of *Hylomyrma balzani* (MZSP67322). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 22.** Queen of *Hylomyrma balzani* (MZSP67322). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Comments.** Emery (1894) only described the worker of *Tetramorium balzani*. While visiting MSNG, we found a worker and queen pinned together and labeled “typus”. The original description gives a worker size range, but there were no other workers in the collection, and Emery may have mistakenly included the queen in the measurements or the other worker(s) from this series is missing. We designate the worker as lectotype.

Borgmeier's (1937) original description of *Lundella speciosa* makes reference to the similarity between *L. speciosa* (RJ, Brazil) and *L. balzani* (Argentina, Paraguay). *Lundella speciosa* was separated from *L. balzani* by the larger body (vs. smaller), bicolored integument—blackish mesosoma, light-brown appendices (vs. brownish), and longer propodeal spine (vs. shorter). Brown (1953) synonymized *Lundella* under *Hylomyrma*, and Kempf (1960) considered *Hylomyrma balzani* as a senior synonym of *H. speciosa* based on the study of more than 100 specimens (workers and queens) from Argentina, Brazil (PR, RJ, RS, and SC), and Paraguay. According to Kempf (1960), the range of morphological variation observed in *H. balzani* specimens from the south and southeast regions of Brazil included body measures, propodeal spine length, and the bicolored integument of *H. speciosa*.

The lectotype of *H. balzani* is concolorous, the propodeal spine is short, there is microsculpture associated with the macrosulpture (rugose striae) laterally on the mesosoma, and the postpetiolar dorsum and base of tergum IV have longitudinal striae. The lectotype of *L. speciosa* is bicolored, the propodeal spines are longer, there is no mi-

crosculpture, and both the postpetiole and tergite IV are smooth. The material gathered for this research, especially specimens from Brazil (BA, CE, RJ, and SP), shows that some characteristics used by Emery and Borgmeier to define these two species can be observed in a single specimen. Thus, we corroborate the synonym proposed by Kempf (1960). The rugose striae characteristic of many *H. balzani* are weaker in some specimens from different localities in Brazil (Itambé Leoncio, Ibirapitanga, Lauro de Freitas, Lomanto Júnior, Maracás, Mata de São João, Milagres, São João do Paraíso, and Gurupá Mirim, BA; Sooretama, ES; Recife, PE; Itatiaia, RJ; Xaxim, SC; and Areia Branca, and São Cristóvão, SE). Moreover, the sculpture of the propodeal dorsum of these specimens is subopaque and slightly marked, and the sculpture of the petiolar node dorsum can show regular striae forming semi-ellipses. Consequently, these specimens partly resemble *H. reitteri*, which presents regular to irregular striae that are longitudinal on the mesosomal dorsum and that are transverse on the propodeal dorsum.



**FIGURE 23.** Male of *Hylomyrma balzani* (MZSP67323). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

*Hylomyrma balzani* and *H. reitteri* have broad distributions (Figs. 84, 85), occurring sympatrically in Paraguay (Alto Paraná department) and in many localities of Brazil. Both species have been recorded in the same fauna inventory, but in different samples (Santa Teresa, ES; Lavras, and Viçosa, MG; Estrada Velha Guaricana, Irati, Laranjeiras, Morretes, Rondon, and Tuneiras do Oeste, PR; Rio de Janeiro, and Teresópolis, RJ; Nova Petrópolis, and 5km N of Progresso, RS; Nova Teutônia, and Seara, SC; Botucatu, and Jundiaí, SP, Brazil). Both species were also found in the same sample in Santa Teresa, ES (Winkler 24), Chapecó (Coll. Kempf n°2655, Coll. Borgm. Nr. 6501) and Nova Teutônia (13628, 6869), SC, and Frederico Westphalen, RS (5546). *Hylomyrma balzani* can be distinguished from *H. reitteri* (characteristic in parentheses) by the rugose striae on the mesosoma (vs. regular to irregular striae), the rugose striae on the petiole (vs. irregular striae), and the ventral surface of petiole with transverse striae (vs. smooth surface). The winged queens of both species are very similar, differing only in the laterodorsal sculpture of

the propodeum. In *Hylomyrma balzani* this region presents rugose striae, whereas *H. reitteri* has regular to irregular striae in this region.

Specimens of *H. lopesi* have been identified as *H. balzani*, especially due to the similarity of the sculpture on gena, petiole and postpetiole, and the similar shape of the petiole and postpetiole. But both species can be distinguished by the rugose striae on the mesosoma of *H. balzani* and the regular striae on the mesosoma of *H. lopesi*. The distribution of these species cover a broad area in Brazil, both co-occurring in Botucatu (SP) and Milagres (BA). *Hylomyrma balzani* is more restricted to eastern portions of Brazil, from northeast to southern regions (Fig. 84), whereas *H. lopesi* is distributed mainly in the center of Brazil from northern (state of Pará) to southern (state of São Paulo) regions (Fig. 89).

*Hylomyrma balzani* is similar to *H. primavesi*, a species known only from higher elevations in Serra do Cipó, MG, Brazil (Fig. 88). *Hylomyrma balzani* can be distinguished from *H. primavesi* by the smaller body, TL 4.27–5.23 mm, WL 1.10–1.39 mm (vs. larger, TL 5.32–5.78 mm, WL 1.34–1.48 mm); and the indistinct promesonotal junction and metanotal groove (vs. both distinct).

There is considerable variation among *H. balzani* specimens, mainly because of the presence of intercastes. Out of the 11 *Hylomyrma* species with intercastes, *H. balzani*, *H. lopesi*, and *H. reitteri* present the larger phenotypic plasticity associated with head and mesosoma modifications. Intercastes with one inconspicuous central ocellus usually have two darker regions on the head similar to the ocelli location of winged queens. Intercastes with a more conspicuous central ocellus may also have these two darker regions on the head; they also have the metanotal groove distinguished by a slight to well-marked depression. In intercastes with three ocelli, gradual changes in the mesosoma are observed. The 3-ocelli intercaste from Vargito, BA, Brazil, bears also a slight differentiation of the mesonotum in scutellum and prescutellum, and of the metanotum. The specimens from Maranguape, CE, Brazil, in addition to the characteristics described above, present the promesonotal suture (specimens W49, Mg50W), and also the insertion wing region in the mesosoma, as observed in winged queens (specimen P1).

**Distribution.** *Hylomyrma balzani* is known from northern Argentina (Misiones province) to northeastern Brazil, also occurring in Paraguay (Fig. 84).

**Natural history.** There is no information on the collection method or in which phytophysiology most known specimens were sampled. Specimens from Brazil inhabit Atlantic forest areas and forested enclaves in the Central-West region (in Serra da Bodoquena, MS). Most specimens were collected with Winkler extractors, and a few were sampled with pitfall traps, honey baits, and Berlese-Tüllgren funnels. Apart from the presence of intercastes, and possibly ergatoids (a few intercastes have more queen-like traits), there is no further information available regarding the biology of *H. balzani*.

**Additional material examined** (278 workers, 39 queens, 2 males, 30 intercastes): **ARG[ARGENTINA]: Misiones:** Est. Exp. Loreto, 10.v.1932, Dr. A.A. Ogloblin [leg.], #1957 (1I 1Q) [MZSP]; same data, Sammlung[collection] Dr. F. Santschi Kairouan (1I) [NHMB]; same except 30.vi.1932, Sammlung[collection] Dr. F. Santschi Kairouan, #1973 (1I) [NHMB]. **BR[BRAZIL]: AL[Alagoas]:** Quebrangulo, 31.viii.99, 0919S, 3628W, Santos J.R.M. dos [leg.] (3W) [MZSP]; same data, 1283 (3W 1Q) (MZSP67322) [MZSP]; Res. Pedra Talhada, 05.viii.99, Col. D.S. Santos, 637(3W 1Q) [CEPLAC]; Murici, ESEC Murici, ICMBio, 09°14'57.04"S, 35°47'28.88"W, 23.ix.2014, Lorenzo E.P. col. (1W) [UFGD]; **BA[Bahia]:** Maracás, Faz. M<sup>a</sup> Inácia, Mata Cipó, 24–29.xi.1990, Brandão, Diniz & Oliveira col., peneira + troncos caídos (13W 3I) [MZSP]; same data (2W) [UTLP]; same except peneira, #1 (6W) [MZSP]; isca - mel, dia - solo, 20 (1W) [MZSP]; berlese (1W) [MZSP]; emergido de formigueiro artificial (1M) [MZSP]; Lençóis, 25.iii.2001, Santos J.R.M., 34 (3W) [CEPLAC]; Cachoeira, 11.12.[19]93, J.H.C. Delabie [leg.], 4733 (5W) [CEPLAC]; Mata São João, Reserva Sapiranga, 12°33'29.3"S, 33°02'35.2"W, 21–28.vii.2001, Silva R.R., Brandão C.R.F. cols., Winkler 30 (3W) [MZSP]; same except Winkler 22 (1W covered with gold) [MZSP]; Winkler 28 (3W) [MZSP]; Winkler 4 (3W) [MZSP]; Winkler 6 (1W) [MZSP]; Winkler 17 (1W) [MZSP]; Winkler 5 (1Q) [MZSP]; Itambé, Área A, 25.07.[20]03, 145976S, 0404153W, Santos J.R.M. [leg.], Mata-W (3W) [CEPLAC]; same data (1Q) (MZSP67324) [MZSP]; same data (1W 1Q) [DZUP]; same except Área B, 151734S, 0402740W, 19.07.[20]03 (1W 1Q) [CEPLAC]; Maraú-Tremembé, 07.06.97, Santos J.R.M. dos [leg.], Mata-W-A4 (2W) [CEPLAC]; Itororó, 11.08.[20]00, 14°58'28"S, 40°03'01"W, Santos J.R.M. dos [leg.], 637 (1W) [CEPLAC]; Vargito, 22.03.[19]99, 1524S, 03933W, Santos J.R.M. dos [leg.], 1283 (1W 1I) [CEPLAC]; Itambé Leoncio, 14.35.67S, 040.20.23W, 06.08.[20]03, Santos J.R.M. dos [leg.], Mta (2W) [CEPLAC]; Ibirapitanga, A2, 141139S, 0392523W, 22.04.[19]97, Santos J.R.M. dos [leg.], Mata—W, 1283 (4W) [CEPLAC]; same data (1M) (MZSP67323) [MZSP]; Lomanto Júnior, 14.48.57S, 039.S29.S02W, 17.11.[19]97, Santos J.R.M. dos [leg.], Mata-

A6, 1283 (2W 1Q) [CEPLAC]; São João do Paraíso, 153854S, 392630W, 17.09.[19]99, Santos J.R.M. dos [leg.], 637 (2W) [CEPLAC]; Gurupá Mirim, Fazenda Esperança, 05.ii.2009, Col. Marques T. & estagiários, Floresta Atlântica, Parcela, Arm. 7, Estrato Sol. (1W) [CEPLAC]; Lauro de Freitas, Busca Vida, 12°51'51"S, 38°16'11"W, vi-x.2010, Travassos, M.L.O. col., #5641, I1448 (1W) [CEPLAC]; Milagres, área 3, S12°54.411', W39°50.863', 29.vii.2010, Ulysséa, M.A., Medina, A.M. e Campos, E.M. leg., Caatinga Arbórea, serapilheira, winkler, W33 (1W) [MZSP]; same except 17.i.2011, W137 (6W 1Q) [MZSP]; 17.i.2011, W127 (1Q 2W) [MZSP]; área 1, S12°54.542', W39°51.279', 12–16.vii.2010, T4F,2H1 (1W) [MZSP]; área 1, S12°54.542', W39°51.279', 13.vii.2010, W6 (1W) [MZSP]; área 1, S12°54.542', W39°51.279', 10.i.2011, W108 (1W) [MZSP]; área 1, S12°54.542', W39°51.279', 23.x.2010, W62 (1Q) [MZSP]; área 1, S12°54.542', W39°51.279', 10.i.2011, W121 (1W covered with gold) [MZSP]; **CE[Ceará]**: Maranguape, ±875m, 03°53'S, 38°43'W, viii.2003, Y. Quinet [leg.], P1 (1W 1I) [MZSP]; same except W49 (1W 2I) [MZSP]; W50 (2W) [MZSP]; Trilha Gavião, 3°54'S 38°43'W, ±890m, 15.vii.2004, N. Hites col., Winkler, Mata úmida de altitude/Brejo, Mg50W (1I) [MZSP]; Guaramiranga, Pq. Tr., ±900m, 04°16'S, 38°56'W, 28.ii.2002, Y. Quinet [leg.], W44 (1W) [MZSP]; same except W46 (1W) [MZSP]; 25.ii.2002, W65 (2W) [MZSP]; 2.iii.2002, P27 (1W) [MZSP]; Pacoti, 415S, 3855W, Mata do Hotel Remanso, alt 700m, 2001, Nathalie Hites [leg.], Mata secundária, TP-3(D) 250 (1W) [CEPLAC]; **ES[Espírito Santo]**: Santa Teresa, 900m, 23.fev.67, W.L. Brown col., mt. for. (1W) [MCZC]; Estação Biológica Santa Lucia, 19°58'09"S, 40°32'15"W, 20–24.i.2002, Schoereder J.H. & Ribas C.R. cols., Winkler 37 (1I) [MZSP]; same except Winkler 18 (2W) [MZSP]; Winkler 30 (1W 1Q) [MZSP]; Winkler 24 (1W) [MZSP]; Winkler 1 (1W 1Q) [MZSP]; Winkler 33 (1W) [MZSP]; Winkler 49 (1W 1I) [MZSP]; Sooretama, REBIO Sooretama, 19°04'21"S, 39°56'57"W, 14–15.v.2002, Schoereder, J.H. & Ribas, C.R. cols., Winkler 39 (3I) [MZSP]; same except Winkler 3 (2W) [MZSP]; Winkler 38 (1I) [MZSP]; Winkler 37 (1W) [MZSP]; Winkler 21 (1Q) [MZSP]; **GO[Goiás]**: Ouro Verde, Faz. Boa Vista, 16°17'54.5"S, 49°12'42.6"W, 20–24.i.2005, Silva R.R. col., Winkler 38 (1W) [MZSP]; Cavalcante, Serra da Contenda, 13°42'03.6"S, 47°27'51.9"W, 16.x.2004, Silva R.R. & Dietz B.H. cols., Mata Ciliar, Winkler 12 (1W) [MZSP]; **[MG]Minas Gerais**: Parque Estadual do Rio Doce, Trilha da Lagoa Preta, Elev.280m, 19°47'49"S, 42°34'38"W, 28.viii.2005, TEAM exped. Col., Floresta Atlântica Estacional Semidecidual, ITLP 3.10 Mini-winkler (1W) [MZSP]; same except TLP 2.1 (1W) [MZSP]; TLP 2.3 (1W) [MZSP]; TLP 2.1 (1W) [MZSP]; TLP 1.2 (1W) [MZSP]; 23–24.viii.2005, Trilha da Garapa Torta, TGT 1.1 (1W) [MZSP]; 30.xi.05, LP2-4 (1W) [MZSP]; 30.xi.05, LP2-3 (1W) [MZSP]; Marlieria, Parque Estadual do Rio Doce, Trilha da Garapa Torta, 280m, -19.796944, -42.577222, 24.viii.2005, TEAM exped. Col., Floresta Estacional Semidecidual, GT2-7 (1W) [MZSP]; same except Trilha da Lagoa Preta 30.xi.2005, LP3-2 (1W) [MZSP]; Lavras, Fragmento, 06–12.2002, Santos M.S. & Dias N.S. [leg.] (2W 1Q) [CEPLAC]; Serra do Cipó, i/2013, PEMII1, Coletor M.C. Anjos, Winkler (1W) [UFMG]; Serra do Cipó, próx. Cachoeira da Capivara, entrada p/ estátua “Juquinha”, 1354m, -19.253306, -43.552531, 13.v.2016, J. Chaul & S. Epifânio [leg.], epigaeic, Jcwinkler#019 (1Q 10W) [MZSP]; same except 1351m, 19.252982, -43.551787, epi+hypogaeic, Jcwinkler#023 (2W) [MZSP]; Conceição do Mato Dentro, Serra da Serpentina, 18–28.iii.09, Silva R.R. leg. (1W) [DZUP]; Viçosa, UFV, Mata da Biologia, 706m, 20°45'26.67"S, 42°51'39.07"W, iii.2013, J. Chaul col., winkler, UFV LABECOL n°000137 (1Q) [MZSP]; same except 20°45'26"S, 42°51'49"W, 17.viii.2014, winkler of rotten log, UFV LABECOL n°000134 (1W) [MZSP]; Bairro Cristais, 20°46'S, 42°50'W, 20.iv.2013, Jesus & Chaul [leg.], winkler, JC0007, UFV LABECOL n°000136 (1Q) [MZSP]; **MT[Mato Grosso do Sul]**: Ivinhema, Someco, 2005, S. Almeida Lare, Stela, UEMS (1W) [CEPLAC]; **MS[Mato Grosso do Sul]**: Bonito, PARNA Serra da Bodoquena, Faz. Harmonia, 21°17'09.8"S, 56°41'45.5"W, 08–17.x.2006, Silvestre R. et al. col., 4<sup>a</sup> exp., Winkler A-05, Hym-00461-F (1I) [UFGD]; [Ponta Porã], Mata Ciliar do Rio Dourados, Fazenda Paineirinha, 22°07'20.1"S, 55°38'25.5"W, 20/04/[20]07, Silvestre et al. col., A-11 (1I) [MZSP]; same except A-02 (1W) [UFGD]; A-18 (1W) [MZSP]; A-05 (1W) [UFGD]; **PB[Paraíba]**: Conde, APA Tambaba, 07°22'05.69"S, 34°48'39.05"W, 24.viii.2014, Brisa Lunar P. Tavares col. (1W 1Q) [UFGD]; **PE[Pernambuco]**: Recife, Horto Dois Irmãos, 08°00'32"S, 34°56'40"W, 15–24.vii.2002, Silva R.R. & Eberhardt F. cols., Winkler 5 (3W) [MZSP]; same except Winkler 13 (1W); Winkler 14 (1I); Winkler 9 (1W); Winkler 1 (2W); Winkler 17 (1Q) [MZSP]; **PR[Paraná]**: Rondon, iv.1965, F. Plaumann [leg.], 4772 (1W) [MZSP]; Laranjeiras, iv.1965, F. Plaumann [leg.], 4551 (1W) [MZSP]; Foz do Iguaçu, Pq. Nac. Iguaçu, 6–8.i.1997, Pinto-da-Rocha e Casari [leg.] (1W) [MZSP]; Pinhão, UHE Segredo, Ribeirão Estreito, 24.i.1992, R.P. da Rocha [leg.], berlese (2W) [MZSP]; same data (2W) [JTLC]; Rib. Estreito, 20.iii.1992, Rocha & Barreto, Berlese (2W) [MZSP]; Porto Vitória, 700m, 26°10'–51°12', x.1959, F. Plaumann [leg.], 3199 (2W) [MZSP]; same data (1W 1Q) [MCZC]; Morretes, Parque Estadual do pau-Ôco, 25°34'33.5"S, 48°53'19.5"W, 6–11.v.2002, Silva R.R. & Dietz B.H. cols., Winkler 51 (1W 1I) [MZSP]; same except Winkler 22

(1W) [MZSP]; Winkler 29 (2W) [MZSP]; Estrada Velha Guaricana, ca Cachoeira das Mulas, -25.7303° 49.0911°, 10.iv.2017, R. López & J. Lattke [leg.], 3812 (1W) [DZUP]; same except 3833 (1W) [DZUP]; 3811 (1W) [DZUP]; 3818 (1W) [MZSP]; Tuneiras do Oeste, Reserva Biológica de Perobas, 23°50'5.64"S, 52°45'37.52"W, 18.ix.2015, Busanello, D. & Caron, E. cols. (4W) [DZUP]; REBIO das Perobas, 540m, 23°50'S, 52°45'W, 18.ix.2015, E. Caron col., winkler (2W) [DZUP]; Palotina, Parque Estadual São Camilo, 24°19.276"S, 53°55.247'W, 23.ix.2015, Busanello, D. & Caron, E. cols. (3W) [DZUP]; Iratí, Guamirim, Fz. Arroio Grande, Talhão 15-AII, 25°35'36.11"S, 50°49'12.06"W, 09.x.2014, Marques, C.G.P., Falbot, L. Col., Serapilheira, Funil de Berlese (1W) [DZUP]; **RJ|Rio de Janeiro**: Nova Iguaçu, ReBio Tinguá, BRE, 2.ii.2002, Ext. Winkler, A07 (1W) [MZSP]; same except A03 (1W) [MZSP]; A01 (1W) [MZSP]; A08 (1W) [MZSP]; 4.ii.2002, A42 (1W) [MZSP]; Teresópolis, P.N. Serra dos Órgãos, 23–28.xi.1999, Dietz, Silva & Rocha cols., Winkler (1W) [MZSP]; Itatiaya[Itatiaia], Borgmeier [leg.], gesiebt[shifted], 10.i.56 (3W) [MZSP]; P.N. Itatiaia, 846m, 22°27'08.56"S, 44°36.'55.74'W, 20.i.2015, Lasmar et al. col. (5W) [DZUP]; same except 1136m, 22°25'51.62"S, 44°36.'57.36'W (2W) [DZUP]; Rio de Janeiro, Floresta da Tijuca, D. Federal, 25.i.1960, C.A.C Seabra [leg.], Coleção Campos Seabra (1W) [MZSP]; **RS|Rio Grande do Sul**: 5km north of Progresso, Linha Araçá, near Rio Fão, 300–400m, 52°20'W, 29°10'S, 04.v.1999, Leg. J. Bihm, Secondary Forest, soil sifting, Winkler 1 qm (2W, one covered with gold) (MZSP67434) [MZSP]; same except 29.iv.1999 (1W 1Q) [MZSP]; Frederico Westphalen, UF Santa Maria, 04.xi.2008, Granzotto F. [leg.], #5546 (3W 2Q) [CEPLAC]; N. Petrópolis, Lat 29°20', Long 51°12', xi.1959, F. Plaumann [leg.], 3222 (2W 1Q) [MZSP]; **SC|Santa Catarina**: Chapecó, v.1957, Plaumann col., Col. Kempf n°2655 (5W 3I) [MZSP]; same except viii.1960 (3W) [MZSP]; xii.1957, Coll. Borgm. Nr. 6501 (3W 1Q) [MZSP]; Concórdia, ix.1959, F. Plaumann [leg.], 8297 (2W) [MZSP]; same except vii.1958, 2732 (6W) [MZSP]; Nueva[Nova] Teutonia, Fritz Plaumann [leg.] (3W 1Q) [IFML]; same except vi.1960, 8173 (1W) [MZSP]; vi.1961, 6868 (5W 1Q) [MZSP]; vi.1961, 6869 (1Q) [MZSP]; 300–500m, 27°11'B, 52°23'L, iv.1976, 13627 (7W 1Q) [MZSP]; iv.1976, 13628 (1W) [MZSP]; 1961 (1W) [MHNG]; vi.1959 (2W) [MZSP]; ix.1959, 3491 (6W) [MZSP]; vi.1957 (3W 2Q) [MZSP]; viii.1957 (1W) [MZSP]; vii.1957 (1Q) [MCZC]; x.1954 (1W) [MZSP]; xi.1954 (1Q) [MZSP]; Seara, 24°07'S, 52°18'W, vi–vii.1999, Rogério R. Silva, col., solo, Winkler (1W) [MZSP]; same except viii.1958 (2W) [MZSP]; viii.1958, 2740 (2W) [MZSP]; vii.1958, 2709 (2W) [MZSP]; v–xii.1998, Transecto I, Winkler (1Q) [MZSP]; Linha Facão [near S. Carlos], v.1957, F. Plaumann (2W 1Q) [USNM]; same data (1Q) [MZSP]; Xaxim, cat., Plaumann [leg.] (1W) [MZSP]; Xanxerê, xii.1957, Plaumann [leg.] (1W) [MZSP]; **SE|Sergipe**: Areia Branca, E.E. da Serra de Itabaiana, 10°45'54"S, 37°19'57.4"W, 19–25.v.2003, Silva R.R., Dietz B.H. & Ferreira L.S. cols., Winkler 25 (2W) [MZSP]; S.[São] Cristóvão, 10°54.3'S, 37°11.7'W, 31.i.2014, Almeida, R.P.S. Leg., IFS, Área APP, Parcela 9, 36 (2W) [DZUP]; **SP|São Paulo**: Cajuru, Faz. Santa Carlota, 21°17'S, 47°18'W, 24/04/1993, R. Silvestre [leg.], isca mel, dia solo, VI-13 (1W) [MZSP]; same except 11/6/1993, isca sardinha, dia solo (4W 1I) [MZSP]; Botucatu, 11-03-1988, Forti L.C. & Rinaldi I.M.P. col., Armadilha de solo, Forti #08 (1W) [MZSP]; same except 13-10-1987, Forti #18 (1W) [MZSP]; 13-10-1987, Forti #19 (1W) [MZSP]; 07-07-1987, Forti #33 (1W) [MZSP]; 07-10-1986, Forti #45 (1W) [MZSP]; 03-11-1986, Forti #49 (1W) [MZSP]; 08-02-1988, Forti #09 (1W) [MZSP]; 10-09-1987, Forti #20 (1W) [MZSP]; 04-04-1988, Forti #29 (1Q) [MZSP]; Jundiaí, Serra do Japi, 23°13'S, 46°58'W, iii.2011, T. Postali col., pitfall, #1579 (1W) [MZSP]; **TO|Tocantins**: Palmeirante, 07°52'25.3"S, 47°57'07.4"W, 10-15.xii.2001, Albuquerque & Silva cols., Mata Ciliar/Cerradão, Transecto I, Winkler 06 (1W) [MZSP]. **PARAGUAY**: Balzan [leg.] (1Q) [MSNG]. **Alto Parana**: [San Alberto], Puerto Sta. Teresa, 3.xi.79, C. Dlouhy [leg.], 47 (1I) [MHNG]; Arroyo Itaba Guazu, 4.xi.79, J-L. Perret [leg.] (1W) [MHNG]; **Canendeyú**: Ype Jhu, 28.x.82, V. Mahnert [leg.], 39 (2W) [MHNG]; R. Carapa-R. Alto Parana, 2.xi.79, C. Vaucher [leg.], 46 (1I) [MHNG]; same except F. Baud et al. of MHN-Geneva, 46 (1W 1I) [MHNG]; **Concepción**: [Azote'y], Arroyo Azotey, 10.x.79, J-L. Perret (1W) [MHNG]; **Itapúa**: San Benito, 29.x.82, V. Mahnert [leg.], 82/17 (3W) [MHNG]; nr. Caicisa[Compañía Aceitera de Itapúa Comercial y Industrial S.A.], Arroyo Tembey, 6.xi.82, F. Baud et al. of MHN-Geneva, forest, leaf litt. & wood, wickler apparatus (1Q 4W 2I) [MHNG].

### *Hylomyrma blandiens* Kempf, 1961

Figures 24, 25, 26, 80A, 80F, 82F, 84 (map)

*Hylomyrma blandiens* Kempf, 1961: 500 (W, Q). Holotype: SURINAM[E: Saramacca]: Dirkshoop, v.1959, I.v.d. Drift col., [soil sample from primary forest], 27-iiicd-10 (1W) (ANTWEB-1008990 MZSP67313) [MZSP] [examined]. Paratype: SURINAM[E: Saramacca]: La Poule, viii.1959, I.v.d. Drift col., [soil sample from shrub on sand], 31-xivb-8 (1Q) (MZSP67314) [MZSP] [examined].

**Diagnosis.** Head dorsum with regular and longitudinal striae, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent, interspaces distinguishable; mesosoma covered with regular to irregular striae of variable thickness, interspaces indistinguishable; dorsal margin of petiole discontinuous, dorsum with same striation of mesosoma lateral; subtriangular projection on mesoventral surface of petiole; subpostpetiolar process weak, subtriangular; transverse striae on profemur posterior surface; protibia extensor surface striate; long striae on tergum of first gastral segment.

**Redescription.** WORKER (n=4) (Fig. 24A–C): HL 0.92 (0.90–0.96); HW 0.86 (0.82–0.89); ML 0.54 (0.54–0.56); SL 0.62 (0.58–0.64); MOD 0.24 (0.20–0.24); PNW 0.63 (0.62–0.64); WL 1.22 (1.20–1.23); PSL 0.20 (0.20–0.27); PL 0.54 (0.54–0.55); PW 0.24 (0.23–0.25); PPL 0.32 (0.32–0.34); PPW 0.32 (0.32–0.33); GL 0.96 (0.96–1.06); TL 4.50 (4.50–4.69); CI 93.47 (89.36–92.70); SI 72.09 (65.16–76.19); OI 27.90 (22.47–27.90). Midsized. Integument subopaque, except for the shiny gaster. Brownish body, lighter appendices (yellowish). Thin and mostly unbranched setae (Fig. 80A), long to midsized, suberect to subdecumbent; few branched setae with 2–3 or multiple short branches of equal size, especially on petiole (Fig. 80F).



**FIGURE 24.** Worker of *Hylomyrma blandiens* (MIZA0021679). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 25.** Queen of *Hylomyrma blandiens* (MIZA0021683). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus striate, with regular and longitudinal striae, being 4 thicker striae, interspaces indistinguishable. Frontal triangle with 1 sagittal stria. Scape short, not reaching head posterior margin; apical antennomere shorter than the 3 previous antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, small-sized, larger diameter with 10 ommatidia. Regular and longitudinal striae on head dorsum, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent, interspaces between thicker striae in part smooth and in part filled with thinner striae. Head lateral and laterodorsal regions with regular and longitudinal striae converging to eye margin, interspaces indistinguishable; gena striate, irregular and semicircular striae circumscribe the torulus, not reaching eye margin, being 2–3 thicker striae, interspaces distinguishable. Interspaces between striae on head ventral surface indistinguishable.

Mesosoma covered with regular to irregular striae, thinner striae (microsculpture) of variable thickness superimposed on thicker striae (macrosculpture), interspaces indistinguishable. Transverse striae on pronotum anterior region continuing on lateral surface; longitudinal striae on pronotum posterior region and mesonotum; thinner striae (microsculpture) superimposed on thicker striae (macrosculpture) on mesosoma lateral, striation in part continuing transversely on propodeum dorsum and in part directed to propodeal spine. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, acute dorsal tooth slightly longer than the blunt ventral tooth; dorsal tooth length slightly longer than  $\frac{1}{2}$  of propodeal spine length. Propodeal spine midsized, straight (LV), divergent (DV), sculptured. Profemur covered with regular and transverse striae. Regular and longitudinal striae on protibia extensor surface.

Dorsal margin of petiole discontinuous. Subtriangular projection on mesoventral surface of petiole. Convex node; regular and transverse striae on ventral and anterior surfaces, interspaces distinguishable; striae on anterior surface and dorsoanterior region continuing on lateral surface; irregular striae of variable thickness on dorsal surface, drop-shaped or semicircular, interspaces indistinguishable. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, subtriangular.

First gastral segment striation similar to postpetiole striae; long striae on tergum, longer than postpetiole length; sternite striation covering the laterobasal region.



**FIGURE 26.** Male of *Hylomyrma blandiens* (USNMENT00537690). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

QUEEN (n=4) (Fig. 25A–C): HL 0.88 (0.88–1); HW 0.84 (0.84–0.94); ML 0.58 (0.56–64); SL 0.63 (0.62–0.68); MOD 0.26 (0.24–0.27); PNW 0.70 (0.70–0.84); WL 1.30 (1.30–1.50); PSL 0.22 (0.22–0.31); PL 0.58 (0.56–0.62); PW 0.25 (0.25–0.28); PPL 0.36 (0.36–0.41); PPW 0.37 (0.37–0.41); GL 1.16 (1.16–1.30); TL 4.86 (4.86–5.43); CI 95.45 (92.39–95.45); SI 75 (72.94–75); OI 30.95 (27.95–30.95). Medium to large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 12 ommatidia. Striae on scutum longitudinal, regular to irregular, going from an anterior central point towards transcutal suture, interspaces indistinguishable; thinner striae (microsculpture) between thicker striae (macrosculpture). Longitudinal striae of variable thickness on anepisternum and katepisternum, mostly regular on anepisternum and irregular on katepisternum, interspaces indistinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral surface of mesosoma with irregular striae directed to propodeal spine. Wings unknown.

MALE (first description) (n=1) (Fig. 26A–C): HL 0.72; HW 0.64; ML 0.43; SL 0.22; MOD 0.28; PNW 0.66; WL 1.20; PL 0.54; PW 0.22; PPL 0.32; PPW 0.30; GL 1.12; TL 4.33; CI 88.88; SI 34.37; OI 43.75. Brownish body, lighter appendices (yellowish), darker gaster. Mandible with 5–6 teeth. Interspaces between head dorsum striation smooth.

Scutum mostly smooth anteriorly and covered with regular to irregular and thinner striae posteriorly. Anepisternum and katepisternum mostly covered with longitudinal, regular and thinner striae, interspaces distinguishable. Scutellum with regular to slightly irregular striae, thicker than scutum striae, interspaces distinguishable. Propodeum with irregular striae assuming multiple directions, interspaces distinguishable. Propodeal lobe subquadrate. Petiole and postpetiole mostly covered with longitudinal, regular and thinner striae, interspaces distinguishable. Tergum of first gastral segment with same striation of postpetiole, striae restricted to basal region. Wings as in Fig. 82F.

**Etymology.** *Blandus* (Latin) = smooth tongue, flattering, friendly.

**Comments.** *Hylomyrma blandiens*, *H. dentiloba*, and *H. jeronimae* have similar morphology. *Hylomyrma blandiens* was described based on two specimens (worker and queen), and *H. dentiloba* based on one worker. *Hylomyrma blandiens* has a broad distribution in northwestern South America, from Bolivia to French Guiana (Fig. 84), whereas *H. dentiloba* and *H. jeronimae* are restricted to Central America (Figs. 84, 86).

*Hylomyrma blandiens* can be distinguished from *H. dentiloba* (characteristic in parentheses) in the distinguishable interspaces on head dorsum striation (vs. indistinguishable interspaces), the convex dorsal margin of mesonotum (vs. straight), the propodeal spine slightly longer than the dorsal tooth of propodeal lobe (vs. shorter), and the striae length on the first gastral segment similar to the postpetiole length (vs. shorter than the postpetiole length). *Hylomyrma blandiens* can be distinguished from *H. jeronimae* in the regular striae on the mesial region of head dorsum in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent (vs. regular to irregular striae and divergent), the drop-shaped eye (vs. reniform), the longitudinal striation on the mesosomal dorsum (vs. striae assuming multiple directions), the discontinuous dorsal margin of petiole (vs. continuous), and the striae on the tergum of the first gastral segment extending up to its first third (vs. restricted to its basal region). Also, *H. blandiens* resembles *H. macielae* in the regular divergent-convergent striae on the mesial region of head dorsum, and the indistinguishable interspaces on the mesosomal striation. *Hylomyrma blandiens* can be distinguished from *H. macielae* in the longitudinal striae on the mesosomal dorsum (striae assuming multiple directions in *H. macielae*). The western limit of the distribution of *H. blandiens*, the east side of The Andes in Ecuador and Colombia (Fig. 84), overlaps in part with the distribution of *H. macielae* (Fig. 86).

There is morphological variation across the range of *H. blandiens*. Specimens from Ecuador have longer propodeal spines than elsewhere in the range. Specimens from Ecuador and Tachira, Venezuela, have a more pronounced mesoventral projection on the petiole. Striae on the mesial area of the head dorsum vary from being longitudinal to somewhat angled, divergent anteriorly and convergent posteriorly.

**Distribution.** This species is widespread in northwest South America (Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, and Venezuela) and Trinidad (Trinidad and Tobago) (Fig. 84).

**Natural history.** *Hylomyrma blandiens* specimens are usually collected in samples of sifted leaf-litter in tropical rainforest. One *Hylomyrma blandiens* nest with 24 specimens (3Q 21W) was collected by M.A. Ulysséa in a fallen twig on the ground in the Peruvian Amazon (Madre de Dios, Estación Biológica Villa Carmen). Apart from the specimens, plant remains and parts of a Curculionidae imago were also found inside the nest, but there were no larvae or pupae.

**Additional material examined** (202 workers, 32 queens, 1 male): **BOLIVIA: Cochabamba:** 109k E Cochabamba at Lagunitas, 17°06'22"S, 65°40'57"W, 01.ii.99, R. Anderson, Mont. evergreen forest, litter, #18644 (2W) [MZSP]; #18636 (2W) [MZSP]; **La Paz:** Caranari, Sara Ana, 410msnm, 12.xii.2011, A. Aduviri col., Bosque, Berlese (1W) (CBF–Hym(For)-004761) [CBF]; **[department unknown]:** Rio Negro, Jan 1921–22, W.M. Mann collector, Mulford BioExpt[Biological Exploration] (2W) [USNM]. **BRAZIL: AC[Acre]:** Porto Walter, 08°15'31.2"S, 72°46'37.1"W, 05.ii–17.iv.1997, J. Caldwell, *Bufo typhonius*, #12688 (2W) [CEPLAC]; same except #13529 (1Q) [CEPLAC]; #13529 (1W) [DZUP]; **AM[Amazonas]:** Manaus, Dimona Station, INPA, 100ha Plot, 130m, 60.09414°W, 2.34121°S, 16.i.2009, J. Sosa-Calvo, rainforest, leaf litter, Winkler sample, JSC090116-LS05 (1W) [USNM]; same except JSC090116-LS06 (1W) [USNM]; 104m, 60.09687°W, 2.35365°S, 13.i.2009, JSC090113-LS07 (2W) [USNM]; PNJ Rio Carabinani, mar. Esq., Cachoeira Paredão, 2°10'20"S, 61°32'22"W, 29.vii–1.viii.1995, A. Santos col., F. Primária 2, Arm. Pitfall (3) (1W) [INPA]; Presidente Figueiredo, I. Pe Inchado, L. Balbina, 1°54.45'S, 59°29.75'W, 25/02/[19]94, [M.] Queiroz col., mata secundária, serapilheira (1W) [MPEG]; same except 1992/[19]94 [CEPLAC]; **MT[Mato Grosso]:** Alta Floresta, Frag. 155-C2, 56°25'49"E, 88°95'55"N, 11.vi.2008, Castuera L.O. (1W) [MZSP]; same except Frag. 151-B3, R.E. Vicente col., winkler (1Q) [MZSP]; **RO[Rondônia]:** Porto Velho, Área Abunã, A11P1, 09°38'05.6"S, 65°27'11.2"W, 17–27.vii.2013, Mazão G.R. & Probst R.S. cols. (1W) [DZUP]; same except A10P2, 09°35'53.1"S, 65°22'00.1"W, 17–27.vii.2013, Mazão G.R. & Probst R.S. cols.

(1W) [DZUP]; A11P4, 09°38'05.6"S, 65°27'11.2"W, 4–17.i.2012, Dattilo, W.F. & Mazão, G.R. cols. (1W) [MZSP]; A12P1, 09°36'29.7"S, 65°22'40.7"W, 17–30.vi.2012, Sanhudo, C.E.D. & Andriolli, F.S. cols. (2W, one worker just petiole, postpetiole and gaster) [MZSP]; A12P1, 04–18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (5W) [MZSP]; A12P3, 09°36'29.7"S, 65°22'40.7"W, 04–18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (3W) [MZSP]; A12P4, 09°36'29.7"S, 65°22'40.7"W, 04–18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (3W) [MZSP]; Porto Velho, Área Caiçara, C1P3, 09°26'14.6"S, 64°49'58.2"W 17–27.vii.2013, Mazão G.R. & Probst R.S. cols. (1W) [DZUP]; same except C1P4, 09°26'31"S, 64°51'40"W, 02–16.x.2013, Mazão G.R. & Mendonça R.T.T. cols. (1W) [DZUP]; C3P4, 09°26'46.8"S, 64°49'31.1"W, 4–18.ix.2012, Vicente R.E. & Oliveira J. cols. (1W) [DZUP]; C3P1, 17–30.vi.2012, Sanhudo, C.E.D. & Andriolli, F.S. (1W) [MZSP]; C1P4, 09°26'14.6"S, 64°49'58.2"W, 04–18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (1W) [MZSP]; C3P1, 09°26'41"S, 64°49'39"W, 02–16.x.2013, Mazão G.R. & Mendonça R.T.T. cols. (1W) [DZUP]; Porto Velho, Área Mutum, M5P1, 09°35'29.5"S, 65°02'57.6"W, 4–18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (1W) [MZSP]; same except M6P1, 09°35'56"S, 65°02'59"W, 17–27.vii.2013, Mazão G.R. & Probst R.S. cols. (1W) [DZUP]; M6P2, 09°36'27"S, 65°02'55"W, 2–16.x.2013, Mazão G.R. & Mendonça R.T.T. cols. (1W) [DZUP]; M8P1, 09°37'42.9"S, 65°03'27.8"W, 4–18.ix.2012, Vicente R.E. & Oliveira J. cols. (4W) [DZUP]; M8P2, 09°37'42.9"S, 65°03'27.8"W, 4–18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (1W) [MZSP]; Ouro Preto do Oeste, 28.iii.1985, J. Dias, Res. INPA n°0170 (1W) [INPA]. **COLOMBIA: Caquetá:** [Puerto] Solano, PNN [Serranía de] Chiribiquete, R. Sararamano, B. Verde military, 300m, 0°10'48"N, 72°37'24"W, 9.iv.2000, E. González leg., Winkler 14 (1W) [IHVL]; same except 17.iv.2000, Winkler 2 (1W) [IHVL]. **ECUADOR: Orellana:** Tiputini Biodiversity Station, Jan.2004–Jan.2006, A.L. Mertl col., dissertation 2009, litter nest, tropical rainforest, terra firme (1W) [MCZC]; **Napo:** 20km S of Tena, 600m, 11 Jul 1976, S. & J. Peck, B360 (2W) [MCZC]. **FRENCH GUIANA: [Cayenne]:** Kaw. Mt., Amazon Nature Lodge, 950', 52°12.349'W, 4°33.426'N, T. Schultz, U. Mueller & J. LaPolla, 2° forest, leaf litter, Winkler sample, TRS050719-01-LS14 (1W) [USNM]; same except TRS050719-01-LS10 (3W 1Q) [USNM]; TRS050719-01-LS15 (1W) [USNM]; TRS050719-01-LS17 (1W) [USNM]; Nouragues Field Station, XII Trail, 39m, 52°40.57'W, 4°5.325'N, 27.vii.2005, T.R. Schultz, J.S. LaPolla & D. Price, 1° forest, litter sample, Winkler sample, TRS050727-02-LS12 (2W) [USNM]; same data (1M) (USMENT00537690) [USNM]; Nouragues Natural Reserve Station, 102km SW of Cayenne, lat 4.08799, lon -52.67978, 145m, 21.viii-1.ix.2018, Rainforest, Ant Course 2018 (2W) [MZSP]; Nouragues, 4°05'20"N, 52°40'28"O, 100–140m, 25.iii.2006, Jérôme Orivel (+autres), Fourmis de litière, Winkler, GPWTr10 (1Q) [MZSP]; **[Saint Laurent du Maroni]:** Mari-passoula, 21/23.vi.2000, Delabie, Durou, Dejean, Corbara & Giberneau [leg.], Winkler (1W) [CEPLAC]. **GUYANA: [Upper Demerara-Berbice]:** Mabura Hill, camp at end of rd. from Georgetown to Letham Rd., 64m, 58°41.982'W, 5°9.313'N, 29.x.2002, J.S. LaPolla et al., 1° forest, litter sample, JSL021029-01-LS20 (1W) [USNM]; JSL021029-01-LS15 (1W) [USNM]; same except JSL021029-01-LS08 (1Q) [USNM]; **Upper Takutu-Upper Essequibo:** Acarai Mts., nr. Romeo's Camp, 273m, 58°56.761'W, 1°23.122'N, 10.x.2006, T.R. Schultz & J. Sosa-Calvo, 1° forest swamp, leaf litter, Winkler sample, JSC061010-LS08 (3W) [USNM]; same except 263m, 58°56.772'W, 1°23.136'N, JSC061010-LS07 (1W) [USNM]; 268m, 58°56.799'W, 1°23.216'N, JSC061010-LS01 (2W 1Q) [USNM]; 314m, 58°56.787'W, 1°23.137'N, JSC061010-LS06 (1W) [USNM]; 293m, 58°56.804'W, 1°23.171'N, JSC061010-LS04 (2W 1Q) [USNM]; 303m, 58°56.808'W, 1°23.191'N, JSC061010-LS03 (2W 1Q) [USNM]; 280m, 58°56.806'W, 1°23.193'N, JSC061010-LS02 (1W) [USNM]. **PERU: Cusco:** Estac. Biol. Villa Carmen, trail 12, 800m, 12.869.043, -71.407.11 ±300m, 8.viii.2013, M.A. Ulysséa col., rainforest, [nest in] rotten log (3Q 7W) [MZSP]; same data (14W) (MZHY101) [MZSP]; same data (2W) (MZHY180, MZHY2015) [MZSP]; same except 5–15.viii.2013, Ant Course 2013 (1W) [MZSP]; same data (3W) [DZUP]; **Loreto:** Ramón Castillo, 5km NW Letícia, 23Feb1972, S. & J. Peck, forest, litter, berlesete, 231 (7Q 23W, one worker covered with gold) [MZSP]; same data (18W 2Q) [MCZC]; **Madre de Dios:** 202m, 32.34k SW Puerto Maldonado, 12°49'36.9"S, 69°22'16.9"W, 28.vii.2012, W. & E. Mackay, mini-Winkler litter extraction, Tropical rain forest, tierra firme, reddishbrn clay, #25167 (1W) [UTLP]; same data (1W covered with gold) (MZSP67435) [MZSP]; same except #25168 (1W 1Q) [UTLP]; #25168 (1W 1Q) [MZSP]; #25170 (1W) [MZSP]; 230m, 26.vii.2012, #25137 (1W) [MZSP]; Los Amigos Field Station, Trail 6, 277m, 70°6'3.1W, 12°34'8.4S, 6.x.2004, T.R. Schultz, C. Marshall & J. Sosa-Calvo, 1° forest, litter sample, =JSC041006-16, TRS041006-01-LS-16 (2W) [USNM]; Inkaterra, Reserva Amazónica, 11.vii.2012, 19L 0494117-19L 0494099, 8614232-8614050, B.M. Jimenez col., B/GW8S (4W) [UNMSM]; same except 8.vii.2012, 19L 0494901-19L 0494572, 8614342-8613832, AW2 seca (3W) [MZSP]; AW14S (3W) [UNMSM]; 5.vii.2015, 19L 0494646-19L 0494557, 8614458-8614648, DW14S (4W) [MZSP]; Reserva Nacional Tambopata, Sachavacayoc, 210m, 12°51'21"S, 69°21'43"W, 19–31.vii.2010, J. Chaul col., Neotropical Ant Course

(1W) [MZSP]; Tambopata, 15km NE Puerto Maldonado, Cuzco Amazonica, 200m, 20.vi.89, S.P. Cover & J.E. Tobin cols, CA-483, camp. sifted litter from compost pile by trail to zone I (3W) [MCZC]. **SURINAME: Sipaliwini:** Nassau Mts., 514m, 54°36.24.3W, 4°49'1.9N, 3.xi.2005, J. Sosa-Calvo & R. Badal, 1° forest, litter sample, tall forest, high leaf litter decomposition, JSC051103-01-LS11 (1W) [USNM]; same except JSC051103-01-LS19 (1W) [USNM]; JSC051103-01-LS10 (1W) [USNM]; JSC051103-01-LS18 (1W) [USNM]; JSC051103-01-LS13 (1W) [USNM]; JSC051103-01-LS09 (1Q) [USNM]. **[TRINIDAD AND TOBAGO]: TRINIDAD: [Arima]:** Arima Valley, Windblow Ridge, 1800', 5.15.88, Cover, Moffett, T-44, secondary forest, rotten stick (4W) [MCZC]; **[Couva-Tabaquite-Talaro]:** Arena Forest, mid Barker Trace, 5 Nov 2003, Wetterer, #239 (1W) [MCZC]; N Balata Branch, 31 Oct 2003, Wetterer, #218 (1W) [MCZC]; Arena & Brazil Rds, 5 Nov 2003, Wetterer, #241 (1W) [MCZC]; W Racoon Ride, 31 Oct 2003, Wetterer, #216 (1W) [MCZC]; 0.6km ESE HQ, 9 July 2004, J.K. Wetterer, #478 (1W) [MCZC]; **[Princes Town/Rio Calro-Mayaro]:** Victoria-Mayaro Res., 2km N gate, 3 Nov 2003, Wetterer, #235 (1Q) [MCZC]; **[Rio Claro-Mayaro]:** 17km SE Rio Claro, 28 July 2004, J.K. Wetterer, #533 (1Q) [MCZC]; **[Rio Claro-Mayaro/Sangre Gandre]:** Nariva Swamp, 23.iv.35, N.A. Weber, 140 (6W) [MCZC]; **[San Juan-Laventille]:** North Cost Rd., 4km from Saddle, 22 Nov 2003, Wetterer, #249 (1W 1Q) [MCZC]; 3km N Saddle, 2 Nov 2003, Wetterer, #226 (1Q) [MCZC]; **[Sangre Grande]:** Tamana nr cave, 12 July 2004, J.K. Wetterer, #505 (1Q) [MCZC]; **[Tunapuna-Piarco]:** Blanchisseuse Rd., 2km N Asa Wright, 30 Oct 2003, Wetterer, #212 (1W) [MCZC]; La Veronica, 5.7km up road, 19 June 2004, J.K. Wetterer, #452 (1W) [MCZC]. **VENEZUELA: Amazonas:** Rio Mavaca Cam, 65°06'W, 02°02'N, 16–27.iii.89, Phipps-FUDEC Exped. by Amer. Mus. Nat. Hist., D.A. Grimaldi col. (1W) [MCZC]; **Tachira:** Las Cuevas, 44km WNW Sn. Cristobal, 7°48'N, 71°46'W, 500m, 29.viii.1988, col. J. Lattke, hojarasca tamizada (1W) [MIZA]; Uribante-Capiro, 1217 (4W) [MIZA]; Media Libra, Rio Negro Rd past Puente Santa Elena, 600–630m, 10 Dec. 1985, J. Latke & W.L. Brown (1W) [MIZA]; **Aragua:** P.N.H. Pittier, Valle Sta. María, 3.8km SSW Cumboto, 615m, 10°22'N, 67°49'W, 31.viii.2003, E. Rodríguez, A. Grotto & J. Lattke, Fila El Viento, Bosque Seco, Ex hojarasca, 2803 (1W) (MIZA0021688 MZHY220) [MZSP]; same except 2797 (1W) (MIZA0021690) [MIZA]; 2799 (1W) (MIZA0021692 MZHY198) [MZSP]; 2802 (2Q 1W, worker covered with gold) (MIZA0021687, MIZA0021691, MIZA0021689) [MIZA]; **BA[Barinas]:** 17km SW Cdad Bolivia, 240m, 8°04'N, 70°48'W, 27.viii.87, J. Lattke, 1162 (2W) [MIZA]; **Sucre:** 7km S. El Pilar, <10m, 29.vii.1987, S. & J. Peck, hojarasca tamizada (2W 1Q) (MIZA0021679, MIZA0021683) [MIZA]; **Zulia:** El Tucuco, 51km SO de Machiques, 420m, 8.ix.1984, J. Lattke leg., em hojarasca (1Q) (MIZA0021693) [MIZA].

### *Hylomyrma columbica* (Forel, 1912)

Figures 27, 28, 85 (map)

*Pogonomyrmex (Hylomyrma) columbicus* Forel, 1912: 16 (W). Holotype: COLOMBIA: [Magdalena: Sierra Nevada de Santa Marta, Road between Dibulla and] San Antonio, A. Forel (1W) (CASENT0907676) [MHNG] [examined]. Combination in *Hylomyrma* by Kempf, 1973: 234.

**Diagnosis.** Regular and longitudinal striae on head dorsum, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent; irregular to regular striae of variable thickness on mesosoma dorsum, interspaces indistinguishable; mesonotum and metanotal groove region with semicircular striae; dorsal margin of petiole discontinuous, transverse striae on anterior region of dorsal surface continuing on lateral surface; subtriangular projection on mesoventral surface of petiole; subpostpetiolar process weak, convex; transverse striae on profemur posterior surface; protibia extensor surface striate; long striae on tergum of first gastral segment.

**Redescription.** WORKER (n=4) (Fig. 27A–C): HL 0.92 (0.92–1); HW 0.89 (0.89–0.94); ML 0.56 (0.56–0.62); SL 0.59 (0.59–0.70); MOD 0.21 (0.21–0.24); PNW 0.62 (0.62–0.66); WL 1.19 (1.19–1.26); PSL 0.22 (0.22–0.24); PL 0.57 (0.54–0.60); PW 0.26 (0.24–0.26); PPL 0.32 (0.32–0.36); PPW 0.35 (0.35–0.36); GL 0.91 (0.91–1.08); TL 4.50 (4.50–4.86); CI 96.47 (94–97.91); SI 65.85 (65.85–74.46); OI 24.39 (24.39–26.66). Small-sized. Shiny integument. Brownish body, yellowish appendices. Thin and unbranched setae, long to short, suberect to subdecumbent.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–10 regular, longitudinal and thick striae, interspaces between thicker striae filled with thinner striae. Fontal triangle with 1 sagittal stria. Scape short, not reaching head posterior margin; apical antennomere with equal length or slightly shorter than 3

previous antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, mid-sized, larger diameter with 12 ommatidia. Regular and longitudinal striae on head dorsum, mesial striae in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent/parallel, interspaces between thicker striae filled with thinner striae. Striae of variable thickness on head lateral and laterodorsal regions converging to eye margin, interspaces indistinguishable; gena striate, 6–7 regular and semicircular striae circumscribe the torulus, almost reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 27.** Worker of *Hylomyrma columbica* (COLOMBIA: on fiber plant from Colombia at Quarantine, Washington DC, 27July1916 [USNM]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 28.** Queen of *Hylomyrma columbica* (COLOMBIA: [La] Guarija: R. Don Diego, 25-50m, 18.june.1976, forest leaf litter, W.L. Brown & R.C. Kugler [leg.] [MCZC]). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Irregular to regular striae of variable thickness on mesosoma dorsum, interspaces indistinguishable; striae assume multiple directions; transverse striae on pronotum anterior region (DV) continuing on lateral surface; pronotum posterior region, mesonotum, and metanotal groove region (immediate anterior to transverse carina) with semicircular striae; part of the irregular striae on mesepisternum continuing on propodeum, and part is directed to propodeal spine. Mesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth longer and acute than the shorter and blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  of propodeal spine length. Propodeal spine midsized, straight (LV), divergent (DV), sculptured on base. Thin striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur covered with irregular to regular transverse striae. Protibia extensor surface entirely covered with regular and longitudinal striae.

Dorsal margin of petiole discontinuous. Subtriangular projection on mesoventral surface of petiole. Convex

node; striae of variable thickness, interspaces indistinguishable; regular and transverse striae on anterior surface and on anterior region of dorsal continuing on lateral surface, striae weakly marked; middle and posterior regions of dorsal surface with longitudinal striae; transverse striae on ventral surface weakly marked. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex.

First gastral segment striation similar to postpetiole striae; long striae on tergum, longer than postpetiole length; sternite striation covering the laterobasal region.

**QUEEN** (first description) (n=1) (Fig. 28A–C): HL 0.96; HW 0.92; ML 0.60; SL 0.66; MOD 0.27; PNW 0.78; WL 1.38; PSL 0.28; PL 0.62; PW 0.28; PPL 0.38; PPW 0.42; GL 1.18; TL 5.12; CI 95.83; SI 71.74; OI 29.34. Mid-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 15 ommatidia. Longitudinal and regular striae of variable thickness on scutum going from an anterior central point towards transcutal suture, interspaces between thicker striae filled with thinner striae. Longitudinal striae of uniform thickness on anepisternum and katepisternum, interspaces indistinguishable. Longitudinal and mostly regular striae on axilla, interspaces indistinguishable. Scutoscutellar sulcus inconspicuous. Scutellum with the same sculpture as scutum. Transverse striae on propodeum (DV), interspaces indistinguishable. Lateral surface of mesosoma with mostly regular striae directed in part to propodeal dorsum and in part to propodeal spine, interspaces indistinguishable. Wings unknown.

**MALE** Unknown.

**Etymology.** The name is in reference to the species type locality, Colombia.

**Comments.** The sculpture on the mesosomal dorsum of *H. columbica* is similar to *H. dolichops* and *H. montana*. *Hylomyrma columbica* differs from *H. dolichops* (characteristic in parentheses) in the regular striae on the mesial region of head dorsum in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent/parallel (vs. vermicular and divergent striae on anterior two-third of mesial area, irregular and parallel on the upper third), and the drop-shaped eye (vs. reniform). *Hylomyrma columbica* can be distinguished from *H. montana* in the combination of the regular striae on the mesial region of head dorsum in part directed to the posterior margin and in part anteriorly divergent and posteriorly convergent/parallel (vs. regular to irregular striae and divergent), the discontinuous dorsal margin of petiole (vs. continuous), and the long striae on tergum of the first gastral segment (vs. short striae). All three are allopatric in northwestern South America, but occur in nearby areas near the border between Colombia and Ecuador. *Hylomyrma dolichops* has a broader distribution (Brazil, Colombia, Ecuador, and Venezuela) (Fig. 87), whereas *H. columbica* occurs in Colombia and in western Venezuela (Fig. 85), and *H. montana* has been recorded in Costa Rica, Panama and Ecuador (Fig. 83).

**Distribution.** This species is only known from Colombia and western Venezuela (Fig. 85).

**Natural history.** Specimens are frequently found in leaf-litter samples with Winkler extractors or Berlese-Tüllgren funnels, which suggests that this species nests in the leaf-litter, fallen logs, rotten wood, or inside natural cavities of the superficial soil layers. Also, two specimens were found among plant fibers, which were sourced from Colombia, in a quarantine station in the USA, suggesting that workers may forage on vegetation.

**Additional material examined** (12 workers, 1 queen): **COLOMBIA:** on fiber plant from Colombia at Quarantine, Washington DC, 27 July 1916, E.R. Sasser collector (2W, one covered with gold) [USNM]; **Huila:** 4k NE Rivera, 30 Dec 1986, W. Mackay, pitfall trap, forest area, #9039 (1W) [MZSP67315] [MZSP]; **[La] Guarija:** R. Don Diego, 25–50m, 18.june.1976, W.L. Brown & R.C. Kugler [leg.], forest leaf litter (3W 1Q) [MCZC]; **Mag.[Magdalena]:** Pueblito - limite sur, Parque Tayrona, 210–360m, 26.i.78, C. Kugler col., berlese (1W) [MCZC]; Pueblito, Tayrona PK., 360m, 11.xi.76, R.C. Kugler & W.L. Brown cols., leaf litter (1W) [MCZC]; **Meta:** 1km E. La Macarena, Caño Morrocoy, 260m, 12.jan.77, C. Kugler col., litter berlesate (1W) [MCZC]; same except 25.iv.1976 (1W) [MCZC]. **VENEZUELA: Zulia:** El Tucuco, Dto. Perijá, 6.ix.1984, cols. J. Lattke, E. Rubio (1W) [MZHY192] [MZSP]; 54km ESE Yaracal, Falcon, 935m, Cerro Los Caracoles, 10.8718 –69.0274°, 24.iii.2002, J. Lattke, 2482 (1W) [DZUP].

### *Hylomyrma dandarae* Ulysséa new species

Figures 29, 83 (map)

Holotype: COLOMBIA: Caquetá: San José de Fragua, R. Turayaco, 1250m, 10–15.ix.2000, E.L.G. [leg.], W5 (1W) [IHVL].

Paratypes: same data as holotype (1W covered with gold) [IHVL]; (1W) (MZHY210) [MZSP]; same except 1500m,

07–10.ix.2000 (1W) [MCZC]; Putumayo: Mocoa, 01°08'N, 76°38'W, Los Mayos, 1800m, i.1999, E. González leg., winkler 11 (1W covered with gold) [IHVL]; same except winkler 10 (1W covered with gold) [MZSP]; winkler 1 (1W) [IHVL]; winkler 14 (2W, one covered with gold) (MZSP67317, MZSP67318) [MZSP]; caida, T1T10 (1W) [MCZC].

**Diagnosis.** Irregular striae on head dorsum diverge to posterior margin; rugose striae on mesosoma and petiole; promesonotal junction and metanotal groove distinguishable by a slight depression and altered sculpture; dorsal margin of petiole discontinuous; transverse striae on node ventral surface weakly marked; profemur posterior surface smooth; protibia extensor surface striation weakly marked; striation on tergum of first gastral segment restricted to base.

**Description.** WORKER (n=3) (Fig. 29A–C): HL (0.98–1.04); HW (0.92–1); ML (0.61–0.64); SL (0.70–0.74); MOD (0.20–0.22); PNW (0.65–0.68); WL (1.30–1.40); PSL (0.27–0.30); PL (0.60–0.62); PW (0.25–0.26); PPL (0.34–0.40); PPW (0.36–0.38); GL (1.10–1.20); TL (4.96–5.30); CI (93.87–96.15); SI (73.95–76.09); OI (21.73–22.91). Midsized. Shiny integument. Bicolored body, brownish with lighter leg. Thin and unbranched setae, long to midsized, suberect to subdecumbent.



**FIGURE 29.** Holotype worker of *Hylomyrma dandarae* (COLOMBIA: Caquetá: San José de Fragua, R. Turayaco, 1250m, W5, 10-15.ix.2000, E.L.G. [IHVL]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8 striae, regular and longitudinal striae converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 1 sagittal stria or 1 stria subdivided towards the posterior margin. Short scape, not reaching

head posterior margin; apical antennomere slightly shorter than 3 previous antennomeres together. Frontal carina straight. Eye oval, small-sized, larger diameter with 9 ommatidia. Irregular and longitudinal striae on head dorsum, divergent towards posterior margin, interspaces between thicker striae filled with thinner striae. Head lateral and laterodorsal regions with thin and regular striae converging to eye margin, interspaces indistinguishable; anterior part of laterodorsal region with few irregular and longitudinal striae connecting the region posterior to frontal carina with eye margin; gena striate, 4–6 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with rugose striae of uniform thickness, transverse on pronotum anterior region (DV), longitudinal in other regions (DV), interspaces between rugose striae smooth. Promesonotal junction and metanotal groove distinguishable by a slight depression (LV) and altered sculpture (DV). Transverse carina inconspicuous. Dorsal margin of mesosoma slightly discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and sharper than the shorter and blunt ventral tooth; dorsal tooth length around  $\frac{1}{3}$ , shorter than propodeal spine length. Propodeal spine midsized, straight or apex curved downwards (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur mostly smooth. Protibia extensor surface entirely striate.

Dorsal margin of petiole discontinuous. Convex projection on mesoventral surface of petiole. Convex node; transverse striae on ventral and anterior surfaces weakly marked; rugose striae on lateral and dorsal surfaces. Postpetiole and subpostpetiolar process partly covered with regular and longitudinal striae, weakly marked or smooth; subpostpetiolar process weak, convex.

First gastral segment striae similar to postpetiole striae; longitudinal striae on tergum shorter than postpetiole length; sternite smooth.

QUEEN Unknown.

MALE Unknown.

**Etymology.** The epithet *dandarae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. This species is named in honor of Dandara (?–1694), a leader and warrior in the resistance against slavery during the Brazilian colonial period. She was part of the “*Quilombo dos Palmares*”, the largest settlement of African and Afro-Brazilian peoples who escaped enslavement.

**Comments.** *Hylomyrma dandarae* is similar to *H. adelae*, *H. mariae*, and *H. wachiperi* with respect to the sculpture of the head dorsum and mesosoma, and the profile of the mesosoma. *Hylomyrma dandarae* can be distinguished from *H. adelae* (characteristics in parentheses) based on the following characters: oval eye (vs. drop-shaped), irregular divergent-longitudinal striae on the head dorsum (vs. rugose striae), distinct promesonotal junction and metanotal groove (vs. both indistinct), and tergum of the first gastral segment with short striae (vs. long striae). The two species occur allopatrically in Bolivia (Fig. 83), *H. adelae* in Cochabamba and *H. dandarae* in La Paz. *Hylomyrma dandarae* differs from *H. mariae* in the oval eye (vs. drop-shaped), the longer petiolar node (vs. shorter), and the short striae on tergum of the first gastral segment restrict to its first third (vs. long striae). Also, both species occur in nearby geographic areas, *H. dandarae* in the south (Fig. 83) and *H. mariae* in the center and north of Colombia (Fig. 88). *Hylomyrma dandarae* can be distinguished from *H. wachiperi* in the irregular striae on the head dorsum (vs. regular striae), the rugose striae on the mesosomal dorsum (vs. irregular striae), the distinct metanotal groove (vs. indistinct), the short propodeal spine (vs. long), and the tergum of the first gastral segment with long striae (vs. short striae). *Hylomyrma wachiperi* occurs in Peru whereas *H. dandarae* occurs in Bolivia and Colombia.

There is morphological variation across the range of *H. dandarae*. The shape of the propodeal spines vary from being entirely straight to having a downwardly curved apex. The specimens from La Paz, Bolivia, have irregular and transverse striae on the petiolar dorsum.

**Distribution.** *Hylomyrma dandarae* is known from only three localities, two in southwest Colombia and one in La Paz, Bolivia (Fig. 83).

**Natural history.** This species inhabits sites at elevations from 1250 to 2048 m. Specimens were collected with pitfall traps and winkler extractors, which suggests that workers forage on the forest floor, and that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (2 workers): **BOLIVIA:** La Paz: Nor Yungas, Coripata, Altuspata, 2048m, 8198991S, 639994W, 5.iii.2009, borde del bosque, trampa pitfall, Beatriz Mamani col. (1W) (CBF–Hym(For)-004762) [CBF]. **COLOMBIA: Putumayo:** Mocoa, 01°08'N, 76°38'W, Los Mayos, 1800m, i.1999, E. González leg., winkler 10 (1W) (MZHY222) [MZSP].

## *Hylomyrma dentiloba* (Santschi, 1931)

Figures 30, 31, 80D, 81G, 86 (map)

*Lundella dentiloba* Santschi, 1931: 271 (W). Holotype: PANAMA: France Field, 2.vi.30, [A.] Bierig [leg.], Sammlung [collection] Dr. F. Santschi Kairouan (1W) (CASENT0913528) [NHMB] [examined]. Combination in *Hylomyrma* by Kempf, 1960: 430.

**Diagnosis.** Head dorsum with regular and longitudinal striae, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent, interspaces distinguishable; mesosoma covered with regular to irregular and adjacent striae of variable thickness; dorsal margin of petiole discontinuous, dorsum with same striation of mesosoma lateral; subtriangular projection on mesoventral surface of petiole; subpostpetiolar process weak, convex; transverse striae on profemur posterior surface; protibia extensor surface striate; striation on tergum of first gastral segment restricted to base.

**Redescription.** WORKER (n=4) (Fig. 30A–C): HL 0.85 (0.84–0.92); HW 0.76 (0.76–0.84); ML 0.52 (0.52–0.60); SL 0.55 (0.54–0.60); MOD 0.21 (0.21–0.22); PNW 0.55 (0.55–0.62); WL 1.12 (1.10–1.20); PSL 0.15 (0.15–0.16); PL 0.52 (0.52–0.58); PW 0.22 (0.22–0.26); PPL 0.27 (0.27–0.32); PPW 0.32 (0.31–0.34); GL 0.85 (0.85–1.08); TL 4.15 (4.15–4.65); CI 89.70 (89.70–91.30); SI 72.13 (70.23–75); OI 27.87 (25–26.31). Small to midsized. Subopaque integument, except for the shiny gaster. Head, antennae and mesosoma light brown; yellowish leg; brownish petiole, postpetiole and gaster. Thin and mostly unbranched setae, long to midsized, suberect to subdecumbent; few branched setae with 2–3 or multiple short branches of equal size (Fig. 80D), specially on gaster.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with regular and longitudinal striae, being 6–7 thicker striae, interspaces indistinguishable. Frontal triangle with 2–3 striae. Scape short, not reaching head posterior margin; apical antennomere shorter than 3 previous antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye reniform, midsized, larger diameter with 11 ommatidia. Striae of variable thickness on head dorsum regular to irregular, longitudinal, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent, interspaces indistinguishable. Head lateral and laterodorsal regions with same striation of head dorsum, striae converging to eye margin; anterior part of laterodorsal region with few striae connecting the region posterior to frontal carina with eye margin; gena striate, irregular and semicircular striae circumscribe the torulus, not reaching eye margin, interspaces indistinguishable. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with regular to irregular striae, thinner striae (microsculpture) of variable thickness superimposed on thicker striae (macrosculpture), interspaces indistinguishable. Striation assumes multiple directions; transverse striae on pronotum anterior region (DV) continuing on lateral surface in part towards propodeal spine and in part transversely on propodeum; longitudinal striae on posterior region of pronotum and mesonotum. Promesonotal junction indistinct. Metanotal groove distinguishable by a slight depression (LV). Transverse carina inconspicuous. Dorsal margin of mesosoma slightly discontinuous, mesosoma somewhat straight (mesosoma flattened dorsally). Propodeal lobe bidentate; both teeth blunt, dorsal tooth slightly longer than ventral tooth. Propodeal spine short, straight (LV), divergent (DV), sculptured, and shorter than dorsal tooth of propodeal lobe. Procoxa striae of uniform thickness; regular and transverse striae on C2 and C3. Profemur and protibia mostly covered with regular striae, transverse on profemur, longitudinal on protibia.

Dorsal margin of petiole discontinuous. Convex node; regular striae on anterior, lateral and dorsal surfaces, interspaces indistinguishable; interspaces distinguishable on node ventral surface; transverse striae on anterior surface continuing longitudinally on lateral surface; longitudinal striae of variable thickness on dorsal surface. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex.

First gastral segment striation similar to postpetiole striae; short striae on tergum, shorter than  $\frac{1}{2}$  of postpetiole length; laterobasal region of sternite covered with striation.

QUEEN (first description) (n=4) (Fig. 31A–C): HL (0.92–0.95); HW (0.82–0.88); ML (0.54–0.58); SL (0.58–0.62); MOD (0.24–0.26); PNW (0.75–0.78); WL (1.32–1.38); PSL (0.22–0.24); PL (0.60–0.63); PW (0.27–0.30); PPL (0.32–0.34); PPW (0.39–0.42); GL (1.08–1.12); TL (4.79–4.98); CI (89.13–93.61); SI (68.18–70.73); OI (27.90–30.48). Midsized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 12–13 ommatidia. Striae of variable thickness, longitudinal, regular to irregular on scutum, going from an anterior central point towards transcutal suture; thinner striae (microsculpture)

between thicker striae (macrosculpture). Longitudinal and mostly regular striae of variable thickness on anepisternum and katepisternum, interspaces indistinguishable. Axilla and scutellum with the same sculpturing pattern as scutum. Irregular striae of variable thickness on propodeum, transverse in DV, directed in part to propodeal dorsum and in part to propodeal spine of lateral surface of mesosoma, interspaces indistinguishable. Wings as in Fig. 81G.

MALE Unknown.

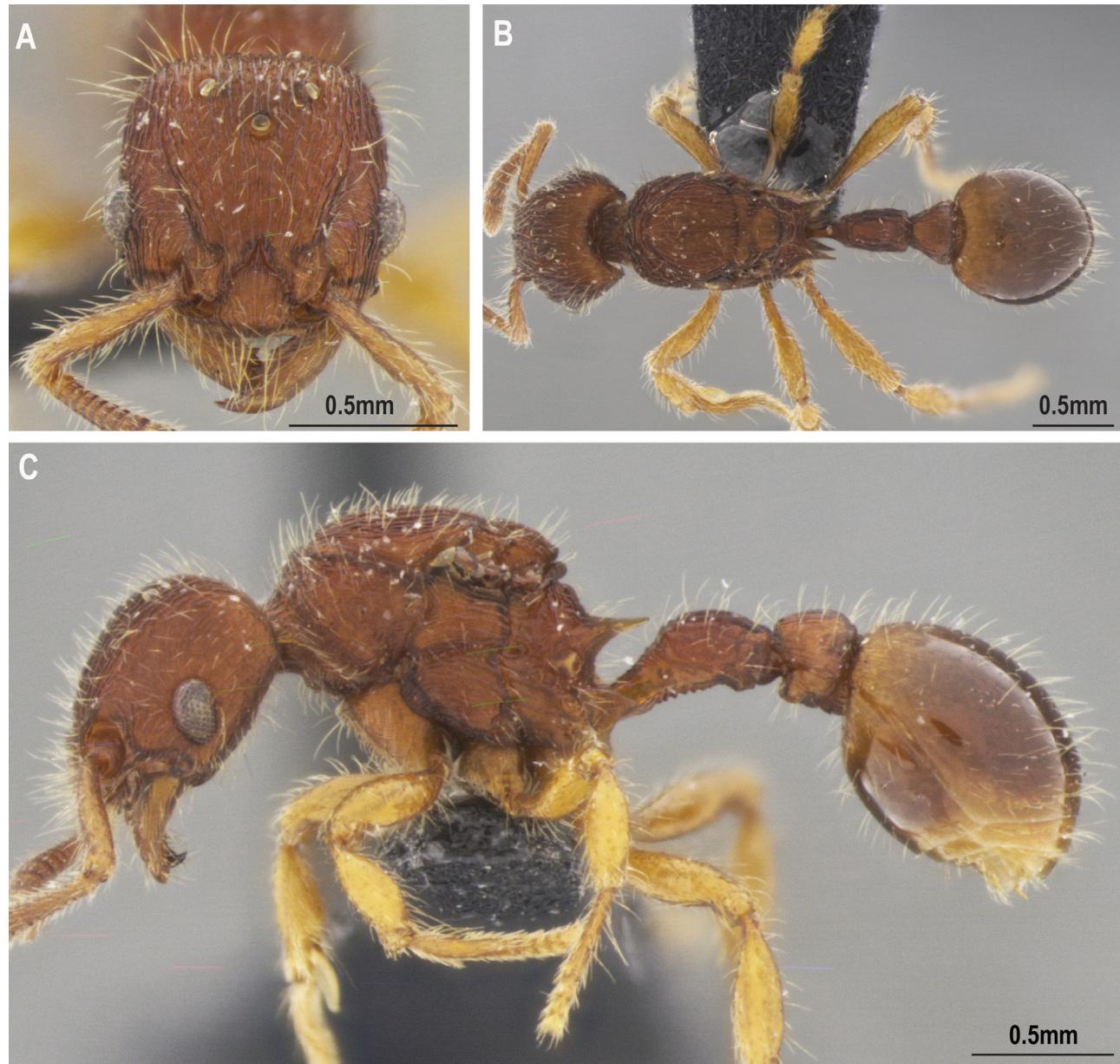


**FIGURE 30.** Worker of *Hylomyrma dentiloba* (MZSP67320). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

**Etymology.** *Dens*, -*entis* (Latin) = tooth; *lobus* (Latin) and *lobos* (Greek) = rounded projection or protuberance.

**Comments.** *Hylomyrma dentiloba* is similar to *H. blandiens*, *H. jeronimae*, and *H. macielae*. *Hylomyrma dentiloba* and *H. jeronimae* are restricted to Central America (Figs. 84, 86), co-occurring in Barro Colorado Island, Panama, whereas *H. blandiens* shows a broad distribution in northwestern South America, from Bolivia to French Guiana (Fig. 84), overlapping in part with the area of distribution of *H. macielae* (south Colombia and the center-north of Ecuador) (Fig. 86). *Hylomyrma dentiloba* can be distinguished from *H. blandiens* (characteristic in parentheses) in the indistinguishable interspaces on head dorsum striation (vs. distinguishable), the straight dorsal margin of mesonotum (vs. convex), the propodeal spine shorter than the dorsal tooth of propodeal lobe (vs. slightly longer),

and the striae length on the first gastral segment shorter to the postpetiole length (vs. similar than the postpetiole length). *Hylomyrma dentiloba* can be distinguished from *H. jeronimae* in the regular striae on the mesial region of the head dorsum in part directed towards the posterior margin and in part anteriorly divergent and posteriorly convergent (vs. regular to irregular striae and divergent), the drop-shaped eye (vs. reniform), the longitudinal striae on the mesosomal dorsum (vs. striae assuming multiple directions), and the discontinuous dorsal margin of petiole (vs. continuous). *Hylomyrma dentiloba* can be distinguished from *H. macielae* in the drop-shaped eye (vs. oval), and the straight dorsal margin of the mesonotum (vs. convex).



**FIGURE 31.** Queen of *Hylomyrma dentiloba* (MZSP67321). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

In molecular analysis, the specimens of *H. dentiloba* from Barro Colorado Island were separated into two clusters: (*H. cf. dentiloba* sp.1 (*H. plumosa* (*H. cf. dentiloba* sp.2, *H. versuta*))) (Pierce *et al.* 2017). After observing the images of *H. cf. dentiloba* sp.1 (CASENT0636001) from Costa Rica, we understand that this morphospecies is *H. jeronimae n. sp.* and that *H. cf. dentiloba* sp.2 is the true *H. dentiloba*. The voucher specimens of sp.2 still need to be examined. Also, Pierce *et al.* (2017) stated that *H. dentiloba* and *H. versuta* are morphologically identical, being differentiated only in their geographical distribution. The authors use *H. dentiloba* to refer to *H. dentiloba*-like material from the Osa Peninsula of Costa Rica south through Panama, and *H. versuta* for material from the Atlantic slope

of Costa Rica northward. However, we found that *H. dentiloba* (the *H. cf. dentiloba* sp.2) can be distinguished from *H. versuta* in the striation with indistinguishable interspaces on the head dorsum (vs. striation with distinguishable interspaces), the mesosoma and petiolar node covered by thinner striae with indistinguishable interspaces superimposed on irregular and thicker striae (vs. thinner striae with indistinguishable interspaces between irregular and thicker striae), the profemur covered with regular and transverse striae weakly marked (vs. predominantly smooth), the protibia mainly covered with regular and weakly marked striae (vs. predominantly smooth), and the shorter striae on tergum of the first gastral segment (vs. longer striae). *Hylomyrma dentiloba* can be distinguished from *H. jeronimae* (the *H. cf. dentiloba* sp.1) as mentioned in the previous paragraph.

**Distribution.** *Hylomyrma dentiloba* distribution is restricted to Panama Canal Zone (Fig. 86).

**Natural history.** The species inhabits sites at elevations from 90 to 100 m. Some specimens were sampled in leaf-litter, which suggests that this species nests between leaves, in fallen logs, rotten wood, or inside natural cavities of the superficial soil layers.

**Additional material examined** (48 workers, 8 queens): **PANAMA:** C[anal] Z[one], Barro Colorado I., 27.ii.1976, A. Newton, leaf litter, forest floor (2W) [MCZC]; same locality, June-Oct-1943, Zetek -5105, Lot 43-16534 (9W 3Q) [USNM]; same data (2W, one worker covered with gold) (MZSP67320) [MZSP]; (1W) [IHVL]; (2W 1Q) [IFML]; same locality, i.1960, W.L. Brown, E.S. McCluskey, B-43 (2W) [MCZC]; (1W) [MZSP]; same locality, Apr-May-42, J. Zetek n°4953 (3W) [USNM]; (1W) [CASC]; same locality, vii.1941, JasZetek n°4852, Lot n°41-20631 (1Q) (MZSP67321) [MZSP]; **Colón:** San Lorenzo, IBISCA, W13115, F3-May05, T146-19 (2W) [CEPLAC]; same data (1W) (MZHY201) [MZSP]; same except W13057, F2-May05, T145-12 (3W) [CEPLAC]; W13044, F1-May05, T154-50 (3W) (MZSP67473, MZHY216) [MZSP]; W13090, F2-May05, T145-12 (3W) [CEPLAC]; San Lorenzo Forest, 30.xii.2004, 9°17'N, 79°58'W, Dejean, Orivel, Corbara, Aberlenc, Leponce, B2, W12585, Winkler (1W) [CEPLAC]; same except B1, W12521 (1W 1Q) [DZSP]; F3, W12305 (1Q) [MZSP]; Punta de Los Chivos, W. side Gatun Lake, 3km SW Gatun, 100m, 3-9.july.1979, W.L. Brown col., forest (10W 1Q) [MCZC]; Gigante Peninsula, 90m, 9.11363 -79.85430 ±1km, june.2010-july.2011, T.P. Sumnicht col., Wet forest, ex leaf litter (1W) (CASENT0643420) [MZSP].

### *Hylomyrma dolichops* Kempf, 1973

Figures 32, 33, 80G, 87 (map)

*Hylomyrma dolichops* Kempf, 1973: 239 (W, Q). Holotype: COLOMBIA: Amaz.[Amazonas]: 7km NW Letícia, 20–25 Feb 1972, #230, forest litter, berlesate, S. & J. Peck [leg.] (1W) (MCZ35419) [MCZC] [examined]. Paratypes: same data as holotype (2W 1Q) (MCZ35419) [MCZC] [examined]; (3W 1Q) (MZSP67325, MZSP67326, MZSP67327) [MZSP] [examined].

**Diagnosis.** Anterior half of head dorsum with vermicular and divergent striae; posterior half with irregular and parallel striae; large and reniform eye; striae of variable thickness on mesosoma, interspaces indistinguishable; semicircular striae on mesonotum and metanotal groove region; dorsal margin of petiole discontinuous; profemur posterior surface mostly smooth; striae on protibia extensor surface weakly marked; long striae on tergum of first gastral segment; body with branched setae with multiple branches of equal size and lobed at tip.

**Redescription.** WORKER (n=4) (Fig. 32A–C): HL (0.92–1.04); HW 0.98 (0.94–1); ML 0.62 (0.62–0.68); SL 0.68 (0.62–0.72); MOD 0.32 (0.28–0.33); PNW 0.72 (0.70–0.78); WL 1.38 (1.30–1.44); PSL 0.42 (0.36–0.46); PL 0.69 (0.66–0.78); PW 0.31 (0.27–0.31); PPL 0.42 (0.40–0.46); PPW 0.40 (0.37–0.42); GL 1.32 (1–1.32); TL 5.43 (4.90–5.43); CI 98 (98–102.17); SI 69.38 (65.95–70); OI 32.65 (29.78–33). Medium to large-sized. Subopaque to shiny integument. Brownish to light brown body, darker head and gaster. Thin, unbranched and branched setae, long to short, suberect to subdecumbent; branched setae with multiple short branches of equal size and lobed at tip (Fig. 80G); unbranched setae mostly on head.

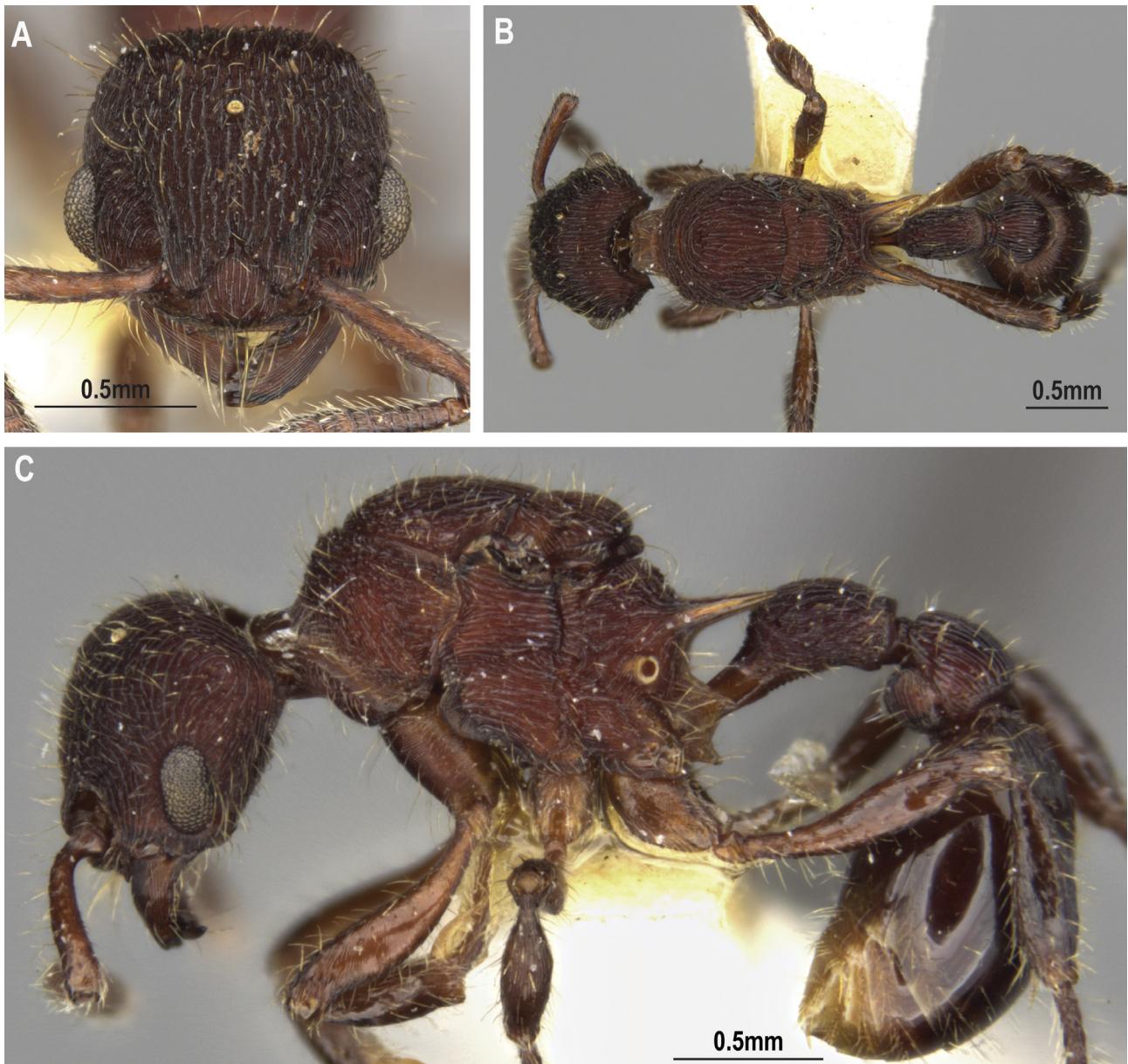
Head subquadrate; posterior margin straight. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 6–8 regular, longitudinal and thick striae, interval between thicker striae filled with thinner striae. Frontal triangle with 1 stria subdivided towards the posterior margin. Short scape, not reaching head posterior margin; apical antennomere with equal length to previous 3 antennomeres together, or slightly shorter. Frontal carina straight. Eye reniform, large-sized, larger diameter with 17 ommatidia. Longitudinal striae on head dorsum, vermicular and divergent striae on anterior half,

irregular and parallel on posterior half; interspaces between thicker striae filled with thinner striae. Striation on lateral and laterodorsal regions of the head converging to eye margin; regular striae on head lateral and lateroventral regions, irregular to vermicular on laterodorsal region; gena striate, 6–9 regular and semicircular striae circumscribe the torulus, almost reaching eye margin. Interspaces between striae on head ventral surface striation indistinguishable.

Irregular to regular striae of variable thickness on mesosoma dorsum assuming multiple directions, striae forming swollen regions, interspaces indistinguishable; pronotum mostly covered with transverse striae continuing on lateral surface; semicircular striae on dorsum of mesonotum, metanotal groove region (immediate anterior to transverse carina) and propodeum. Irregular striae on lateral of pronotum and mesepisternum continuing on propodeum lateral and reaching the propodeal spine. Promesonotal junction and metanotal groove indistinct. Transverse carina inconspicuous. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, acute dorsal tooth with similar length of blunt ventral tooth; dorsal tooth length shorter than  $\frac{1}{2}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Thin striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur covered with irregular to regular transverse striae weakly marked. Protibia extensor surface entirely covered with regular and longitudinal striae.



**FIGURE 32.** Worker of *Hylomyrma dolichops* (COLOMBIA: Nariño: Orito, Territorio Kofan, 00°30'N, 77°13'W, 700m, Bosque Winkler 7, 28.ix.1998 [IHVL]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 33.** Paratype queen of *Hylomyrma dolichops* (MCZ35419). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Dorsal margin of petiole discontinuous. Node elongated, convex; adjacent striae of variable thickness; regular and transverse striae on anterior surface continuing on lateral surface; irregular to vermicular longitudinal striae on lateral and dorsal surfaces; transverse striae on ventral surface weakly marked. Postpetiole and subpostpetiolar process with regular and longitudinal striae, interspaces indistinguishable; subpostpetiolar process prominent, convex.

First gastral segment striation similar to postpetiole striae; long striae on tergum, shorter than postpetiole length; sternite striation covering the laterobasal region.

QUEEN (n=2, paratypes) (Fig. 33A–C): HL 1.02–1.06; HW 1.02; ML 0.56–0.66; SL 0.72; MOD 0.34; PNW 0.86–0.88; WL 1.50–1.62; PSL 0.40; PL 0.72–0.74; PW 0.34; PPL 0.43–0.48; PPW 0.44–0.46; GL 1.36–1.42; TL 5.59–5.98; CI 96.22–100; SI 70.58; OI 33.33. Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 18–20 ommatidia. Longitudinal, regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces indistinguishable. Longitudinal striae of uniform thickness on anepisternum and katepisternum, mostly regular on anepisternum and irregular on katepisternum, interspaces indistinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse and regular striae on propodeum (DV), interspaces

indistinguishable. Lateral surface of mesosoma with mostly irregular striae directed to propodeal spine, interspaces indistinguishable. Wings unknown.

MALE Unknown.

**Etymology.** *Dolichops* (Greek, *dolichos* = kidney-bean) is certainly a reference to the reniform eye of this species.

**Comments.** *Hylomyrma dolichops* is similar to *H. columbica* regarding the sculpture of the mesosomal dorsum, but the former is easily distinguished from the latter by the branched setae, whose branches are lobed at the tip (Fig. 80G). *Hylomyrma columbica* has unbranched setae. Also, *Hylomyrma dolichops* differs from *H. columbica* (characteristic in parentheses) in the presence of vermicular and divergent striae on anterior two-third of mesial area on head dorsum, irregular and parallel on the upper third (vs. regular striae on the mesial region in part directed towards posterior margin and in part anteriorly divergent and posteriorly convergent/parallel), and the reniform eye (vs. drop-shaped). The two species are allopatric; *Hylomyrma dolichops* shows a broader distribution (Brazil, Colombia, Ecuador, and Venezuela) (Fig. 87), whereas *H. columbica* occurs in Colombia and in western Venezuela (Fig. 85). Regarding morphological variation, three specimens from Orito, Colombia, are considerably larger than those described in the type series, although all other diagnostic characteristics are invariant.

**Distribution.** This species is known from Brazil, Colombia, Ecuador, and Venezuela (Fig. 87).

**Natural history.** All specimens examined were collected in leaf-litter of tropical rainforest, at elevations ranging from 260 to 700 m, which suggests that nests are located between leaves, in fallen logs, rotten wood, or inside natural cavities of the superficial soil layers.

**Additional material examined** (7 workers): **BR[BRAZIL]: AC[Acre]:** Mâncio Lima, P.N. da Serra do Divisor, 260m, 7°27'9.22"S, 73°39'58.24"W, 15–18.xi.2016, R.M. Feitosa, T.S. Silva & A.C. Ferreira cols. (2W) [DZUP]. **COLOMBIA: Nariño:** Orito, Territorio Kofan, 700m, 00°30'N, 77°13'W, 28.ix.1998, E.L. González leg., Bosque, Winkler 7 (1W) [IHVL]; same data (1W) (MZHY197) [MZSP]; same except 29.ix.1998, caída, T2T6 (1W covered with gold) [IHVL]. **ECUADOR: Orellana:** Tiputini Biodiversity Station, Jan2004–Jan2006, A.L. Mertl col., dissertation 2009, litter nest, tropical rainforest, terra firme (1W) [MCZC]. **VEN[VENEZUELA]: Amazonas:** San Carlos de R. Negro, 11.oct.1981, L. Carling col., SCRN HR/JV (1W) [MCZC].

### *Hylomyrma immanis* Kempf, 1973

Figures 34, 35, 36, 80B, 82E, 88 (map)

*Hylomyrma immanis* Kempf, 1973: 241 (W, Q). Holotype: COLOMBIA: Amaz.[Amazonas]: 7km NW Letícia, 20–25 Feb 1972, #230, forest litter, berlesate, S. & J. Peck [leg.] (1W) (MCZ35420) [MCZC] [examined]. Paratypes: same data as holotype (6W 1Q) (MCZ35420) [MCZC] [examined]; (7W) (MZSP67328, MZSP67329, MZSP67330, MZSP67331, MZSP67332) [MZSP] [examined]. GUYANA: [Cuyuni-Mazaruni]: Betw R. Cuyuni & R. Mararuni, Br, 8.ix.1935, N.A. Weber col., #357 (1W) (MCZ35420) [MCZC] [examined].

**Diagnosis.** Large-sized; subopaque integument; body with thin striae (microsculpture) superimposed on vermicular and longitudinal striae (macrosculpture), macrosculpture absent on postpetiole and gaster, interspaces between thin striae indistinguishable; propodeal spine long; dorsal margin of petiole continuous, convex; dorsal margin of postpetiole subtriangular; subpostpetiolar process prominent, subtriangular; profemur posterior surface and protibia extensor surface striae; very long striae on tergum of first gastral segment.

**Redescription.** WORKER (n=9) (Fig. 34A–C): HL 1.20 (1.10–1.28); HW 1.15 (1.10–1.28); ML 0.78 (0.74–0.88); SL 0.84 (0.82–0.98); MOD 0.28 (0.24–0.30); PNW 0.80 (0.77–0.90); WL 1.56 (1.51–1.75); PSL 0.44 (0.36–0.58); PL 0.73 (0.68–0.82); PW 0.28 (0.27–0.30); PPL 0.36 (0.36–0.45); PPW 0.38 (0.36–0.42); GL 1.34 (1.24–1.44); TL 5.97 (5.67–6.47); CI 95.83 (95.76–101.61); SI 73.04 (70.50–79.64); OI 24.34 (21.81–24.77). Large-sized. Subopaque integument, except for the shiny gaster. Dark brown head and mesosoma, other body parts lighter. Many thin and unbranched setae (Fig. 80B), long to midsized, erect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of medium teeth laterally; median area of clypeus with clypeus centrally striate, 2–4 regular, longitudinal and thicker striae (macrosculpture) covered with thinner striae (microsculpture), interspaces between thin striae indistinguishable. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere shorter than previous 3 antennomeres together. Frontal

carina straight. Eye drop-shaped, midsized, larger diameter with 13 ommatidia. Head dorsum with thin striae (microsculpture) superimposed on vermicular and longitudinal striae (macrosculpture), interspaces between thin striae indistinguishable. Head lateral and laterodorsal regions with same striation of head dorsum, striae converging to eye margin; gena striate, irregular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma sculpture similar to head dorsum. Promesonotal junction indistinct. Transverse carina inconspicuous (LV). Metanotal groove discernible by a slight depression (LV). Dorsal margin of mesosoma slightly discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and acute than the shorter and blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  shorter than propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur covered with irregular to regular striae, mostly transverse on anterior and dorsal surfaces, longitudinal on apical region. Protibia entirely covered with regular and longitudinal striae.

Dorsal margin of petiole continuous, convex; sculpture similar to mesosoma; ventral surface regular and smooth. Longitudinal and adjacent striae on postpetiole and subpostpetiolar process; dorsal margin of postpetiole subtriangular; subpostpetiolar process prominent, subtriangular.

First gastral segment striation similar to postpetiole striae; long striae on tergum,  $1\frac{1}{2} \times$  longer than postpetiole length; sternite striation covering entirely the basal region.



**FIGURE 34.** Worker of *Hylomyrma immanis* (MZSP67469). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 35.** Paratype queen of *Hylomyrma immanis* (MCZ35420). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

QUEEN (n=7) (Fig. 35A–C): HL 1.13 (1.13–1.36); HW 1.06 (1.06–1.36); ML 0.73 (0.73–0.92); SL 0.82 (0.82–1); MOD 0.29 (0.28–0.36); PNW 0.90 (0.90–1.08); WL 1.62 (1.62–2.08); PSL 0.40 (0.39–0.50); PL 0.71 (0.71–0.94); PW 0.28 (0.28–0.35); PPL 0.42 (0.42–0.52); PPW 0.39 (0.39–0.51); GL 1.46 (1.46–1.74); TL 6.07 (6.07–7.54); CI 93.80 (93.80–101.50); SI 77.35 (69.23–73.77); OI 27.35 (23.73–27.05). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 14–15 ommatidia. Vermicular striae on scutum going from an anterior central point towards transcutal suture, interspaces indistinguishable. Longitudinal striae of uniform thickness on anepisternum and katepisternum, mostly regular, interspaces indistinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus

conspicuous. Transverse striae on propodeum (DV). Lateral surface of mesosoma with vermicular striae directed in part to propodeal dorsum and in part to propodeal spine, interspaces indistinguishable. Wings unknown.

MALE (first description) (n=4) (Fig. 36A–C): HL (0.98–1.04); HW (0.82–90); ML (0.58–0.63); SL (0.30–0.34); MOD (0.35–0.36); PNW (0.90–0.98); WL (1.70–1.84); PL (0.78–0.85); PW (0.29–0.30); PPL (0.44–0.52); PPW (0.42–0.43); GL (1.34–1.48); TL (5.96–6.26); CI (83.67–90.81); SI (35.95–37.77); OI (40–42.68). Brownish body, yellowish appendices, darker gaster. Mandible with 6 teeth. Scutum covered with striae, striae mostly longitudinal, regular to irregular, interspaces distinguishable. Anepisternum and katepisternum mostly covered with longitudinal, regular and thinner striae, interspaces distinguishable. Scutellum with irregular to vermiculated-areolated striae, thicker than scutum striae, interspaces distinguishable. Propodeum with irregular striae assuming multiple directions, interspaces distinguishable. Propodeal lobe subquadrate. Petiole mostly covered with longitudinal and irregular striae, interspaces indistinguishable. Postpetiole with longitudinal and anastomosed striae. First gastral tergum striate on basal region. Interspaces between striae smooth. Wings as in Fig. 82E.



**FIGURE 36.** Male of *Hylomyrma immanis* (MZSP67333). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

**Etymology.** The name refers to the species size (Latin, *immanis* = large, huge). *Hylomyrma immanis* is the largest species of the genus.

**Comments.** *Hylomyrma immanis* and *H. praepotens* are the largest species in the genus (TL 5.67–6.47 mm, WL 1.51–1.58 mm). Both have a long propodeal spine, and an elongated and continuous dorsal margin of the petiole, but *H. immanis* is easily distinguished by the subopaque integument (shiny in *H. praepotens*), and the body covered by thin striae with interspaces indistinguishable (thick striae with interspaces distinguishable in *H. praepotens*). *Hylomyrma immanis* is more easily sampled than *H. praepotens*, the former has a broad distribution in the center-north

of South America (Fig. 88), whereas the latter is only known from two localities in Colombia, two in Ecuador, and one in Brazil (Fig. 90). Both species co-occur in a locality 7 km NW of Letícia, Amazonas, Colombia.

**Distribution.** This species is widely distributed in northwest South America (Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, and Venezuela), Trinidad (Trinidad and Tobago), and in eastern portions of Brazil (Fig. 88).

**Natural history.** This species inhabits forested areas in Atlantic and other tropical rainforests of South America. Most specimens were sampled in leaf-litter with winkler extractors, which suggests that *H. immanis* nests between leaves, in fallen logs, rotten wood, or inside natural cavities of the superficial soil layers.

**Additional material examined** (194 workers, 30 queens, 4 males): **BOLIVIA: Cochabamba:** Villa Tunari, 67.5k E Valle Sajta, 17°06'19"S, 64°46'57"W, 6.ii.99, R. Anderson, Lowland rain forest, litter, #18525 (2W) [MZSP]; same except 07.ii.99, #18528 (1W) [MZSP]; **La Paz:** Caranavi, Saraana [Sara Ana], 410m, 1.xi.2011, col. A. Aduviri, Bosque, Berlese (1W) [CBF]. **BRAZIL: AC[Acre]:** Mâncio Lima, P.N. da Serra do Divisor, 245m, 7°26'17.19"S, 73°39'27.39"W, 15–18.xi.2016, R.M. Feitosa, T.S. Silva & A.C. Ferreira cols. (3W) [DZUP]; same except 260m, 7°27'9.22"S, 73°39'58.24"W (1W) [DZUP]; **AL[Alagoas]:** Murici, ESEC Murici, ICMBio, 23.ix.2014, 09°14'57.04"S, 35°47'28.88"W, Lorenzo E.P. col. (2W) [UFGD, MZSP]; **AM[Amazonas]:** PNJ Rio Carabinani, mar. esq., Cachoeira Paredão, 2°10'20"S, 61°32'22"W, 29.vii–1.viii.1995, A. Santos col., F. Primária 2, Arm. Pitfall (4) (1W) [INPA]; Manaus, BR174 km46-EEST, 8.v.1991, Eq. A.Y. Harada, isca sardinha, mata, 115 (1W) [INPA]; Pres[idente] Figueiredo, Terra-firme, Ig. Poraque, 1°54'57"S, 59°26'94"W, 23/04/94, Queiroz col., Mata primária, Arm. de solo (1W) [MPEG]; **BA[Bahia]:** Aritaguá, 14°39'39"S, 39°04'33"W, 05/x/1998, Col. J.C.S. Carmo & J.R.M. Santos, 477 (3W) [CEPLAC]; Jaguaripe, 9-03-[19]94, Nascimento I.C., 4817 (4W) [CEPLAC]; Ilhéus, Mata da Boa Esperança, 14°47'47"S, 09°03'56"W, 09.ix.2000, Santos J.R.M. col., Winkler 30 (1W) [MZSP]; same except Winkler 7 (1W) [MZSP]; Winkler 8 (1W) [MZSP]; Winkler 11 (1W) [MZSP]; Winkler 16 (1W) [MZSP]; Winkler 12 (1W) [MZSP]; Winkler 20 (1W) [MZSP]; Winkler 3 (1W) [MZSP]; Winkler 48 (3W) [MZSP]; Ilhéus-Banco do Pedro, 12.i.98, 144051S, 0391524W, Santos J.R.M. dos, Carmo J.C.S. do, Mata W-A23 (3W) [CEPLAC]; Mata São João, Reserva Sapiranga, 12°33'29.3"S, 33°02'35.2"W, 21-28.vii.2001, Silva R.R., Brandão C.R.F. cols., Winkler 40 (2W) [MZSP]; same except Winkler 38 (1W) [MZSP]; Winkler 27 (1W) [UFGD]; Winkler 44 (1W covered with gold) [MZSP]; Winkler 45 (1W) (MZSP67469) [MZSP]; Winkler 41 (2W) [MZSP]; Winkler 41 (1W 1Q) (MZSP67335) [MZSP]; Porto Seguro, E.E. Pau Brasil, 16°23'33"S, 39°10'99"W, 16.vi.2000, Santos J.R.M., Soares J.C. cols., Winkler 31 (1W) [MZSP]; same except Winkler 27 (3W) [MZSP]; Winkler 12 (1W) [MZSP]; Winkler 44 (1W) [MZSP]; Travessão, 14°08'13"S, 39°16'39"W, 28/04/1997, Santos J.R.M. (3W) [CEPLAC]; Ubaitaba, 14°15'01"S, 39°19'27"W, 10-11/04/1997, Col. J.C.S. Carmo (2W 1Q) [CEPLAC]; Una, 15°16'45"S, 39°05'29"W, 29/09-22/11/1996, Santos J.R.M. (1W) [CEPLAC]; same data (1Q 1M) (MZSP67334) [MZSP]; **MA[Maranhão]:** Açailândia, Horto Faz. Pompéia, 04°52'30"S, 47°17'40"W, 12-22.vi.2006, Silva R.R. & Feitosa R.M. cols., Winkler 4 (1W) [MZSP]; same except 13-22.vi.2006, Winkler 04 (1W) [MZSP]; Winkler 01 (1W) [MZSP]; **MT[Mato Grosso]:** Sinop, 55°37'W, 12°31'S, x.1974, Alv. & Roppa, 12568 (1W) [MZSP]; same except 12567 (2M) (MZSP67333) [MZSP]; Alta Floresta, Frag. 67—C8, 58°82'36"E, 89°19'35"N, 8.v.2008, Castuera L.O. (3W) [MZSP]; Novo Mundo, P.E. Cristalino, xi.2012, R.E. Vicente col., (PPBIO), parc.9, pitfall 7 (1W) [MZSP]; parc.2, pitfall 4 (1W) [MZSP]; **PA[Pará]:** Belém, Utinga Forest Preserve, 45m, 48.42876°W, 1.41739°S, 3.ii.2009, J. Sosa-Calvo, rainforest, Winkler sample, JSC090203-LS03 (2W) [USNM]; same except JSC090203-LS05 (1Q) [USNM]; Monte Dourado, Área 75, 0°42.38-146"S, 52°42.10102"W, 27-29.iv.2011, Marsh C.J. col., Floresta primária, Pt. PS-P04, ? (1W) [MZSP]; Jari, Amazônia, corte-seletivo, 0°53'S 52°36'W, 2011, Silva E.A. col., estrato EPI, parcela 21, pto B (1W) [DZUP]; same except parcela 7, pto F (1W) [DZUP]; **PE[Pernambuco]:** Recife, Horto Dois Irmãos, 08°00'32"S, 34°56'40"W, 15-24.vii.2002, Silva R.R. & Eberhardt F. cols., Winkler 27 (1W) [MZSP]; same except Winkler 38 (1W) [UTLP]; Winkler 40 (2W) [MZSP]; Winkler 44 (1W) [MZSP]; Winkler 50 (1W) [MZSP]; Winkler 45 (1W) [MZSP]; Winkler 18 (3W) [MZSP]; Winkler 15 (3W 1Q) [MZSP]; Winkler 14 (2W) [MZSP]; Winkler 12 (2W) [MZSP]; Winkler 4 (2W) [MZSP]; Winkler 26 (1W) [MZSP]; Winkler 16 (2W 1Q) [MZSP]; Winkler 2 (1Q) [MZSP]; Winkler 19 (1Q) [MZSP]; Winkler 46 (1Q) [MZSP]; Timbaúba, Engenho Água Azul, 07°36'05.56"S, 35°22'30.51"W, 15.vi.2013, Lorenzo E.P. col. (3W) [UFGD]; **RO[Rondônia]:** Porto Velho, UHE SAE, Módulo Jiráu, 09.43726°S, 064.68475°W, 09.i.2011, C.E.D. Sanhudo col. (1W) [MZSP]; same locality, Área Abunã, A10P1, 09°35'48"S, 64°21'56"W, 2-16.x.2013, Mazão G.R. e Mendonça R.T.T. cols. (2W 1Q) [DZUP]; same except A10P3, 09°35'53.1"S, 65°22'00.1"W, 04-18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (1W) [MZSP]; A11P2, 09°38'05.6"S, 65°27'11.2"W, 04-18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (1Q 3W) [MZSP]; A12P2,

09°36'38"S, 65°22'05"W, 2-16.x.2013, Mazão G.R. e Mendonça R.T.T. cols. (1W) [DZUP]; Porto Velho, Área Caiçara, C1P4, 09°26'31"S, 64°51'40"W, 2-16.x.2013, Mazão G.R. e Mendonça R.T.T. cols. (1W) [DZUP]; same except C3P2, 09°26'46.8"S, 64°49'31.1"W, 4-18.ix.2012, Vicente R.E. e Oliveira J. cols. (2W 1Q) [DZUP]; 04-18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (3W) [MZSP]; C3P4, 09°26'46.8"S, 64°49'31.1"W, 17-30.vi.2012, Sanhudo, C.E.D. & Andriolli, F.S. (2W) [MZSP]; 04-18.ix.2012, M.A. Ulysséa & L.P. Prado (5W) [MZSP]; Porto Velho, Área Mutum, M7P2, 09°35'25"S, 65°04'08"W, 11-19.v.2010, R.R. Silva & R.M. Feitosa cols. (1W) [MZSP]; same except M7P3, 09°35'41.6"S, 65°03'54.2"W, 4-18.ix.2012, Vicente R.E. e Oliveira J. cols. (1W) [DZUP]; M7P4, 09°35'41.6"S, 65°03'54.2"W, 17-27.vii.2013, Mazão G.R. e Probst R.S. cols. (1W) [DZUP]; 04-18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (1W) [MZSP]; SE[**Sergipe**]: Sta. Luiza do Itanhy, Crasto, 11°22'39.3"S, 37°25'07.4"W, 29.vii-03.viii.2001, Silva R.R., Brandão C.R.F., Winkler 15 (1W) [MZSP]; same except Winkler 2 (1W) [MZSP]; Winkler 34 (2W) [MZSP]; Winkler 38 (1W) [MZSP]; Winkler 46 (2W) [MZSP]; Winkler 20 (2W) [MZSP]; Winkler 47 (3W) [MZSP]; Winkler 48 (1W) [MZSP]; Winkler 17 (2W) [MZSP]; Winkler 28 (1W) [MZSP]; Winkler 34 (3W) [MZSP]; Winkler 1 (1W 1Q) [MZSP]. **COLOMBIA: Caquetá:** [Puerto] Solano, PNN [Serranía de] Chiribiquete, R. Sararamano, B. Verde military, 300m, 0°10'48"N, 72°37'24"W, 9.iv.2000, E. González leg., Winkler 14 (3W) [IHVL]; **Amazonas:** Araracuara, 300m, G. Ganghi (1W) [IHVL]; **Guaviare:** RN Nukak Maku, Cñ Cucuy Cr Moyano, Rebalse, 02°10'40"N, 71°11'25W, feb. 96, F. Fernandez F.E. (1W) [IHVL]; **Nariño:** Orito, Territorio Kofan, 700m, 00°30'N, 77°13'W, 29.ix.1998, E.L. González leg., Bosque caída, T2T4 (1W) [IHVL]. **ECUADOR: Napo:** 20km S of Tena, 600m, 11Jul 1976, S. & J. Peck, B360 (2W) [MCZC]; **[Sucumbíos]:** Cuyabeno, 12/10-05/11/94, J.P. Caldwell, #10427 (1W) [CEPLAC]. **FRENCH GUIANA: [Cayenne]:** Nouragues Field Station, H Trail, 108m, 52°40.856'W, 4°5.108'N, 1.viii.2005, T.R. Schultz, J.S. LaPolla, D. Price, 1° forest, litter sample, Winkler sample, TRS050801-03-LS12 (1W 1Q) [USNM]; Nouragues Natural Reserve Station, 102km SW of Cayenne, lat 4.08799, lon -52.67978, 145m, 21.viii-1.ix.2018, Rainforest, Ant Course 2018 (1W) [MZSP]; Nouragues, 4°04'58"N, 52°40'28"O, 120-160m, 29.iii.2006, Jérôme Orivel (+autres), Fourmis de litière, FLWTr45 (1W 1Q) [MZSP]; **[Saint Laurent du Maroni]:** Maripassoula, 21/23.vi.2000, Delabie, Durouh, Dejean, Corbara & Giberneau [leg.], Winkler (1Q) [CEPLAC]; Mitaraka, Pente, 2.238226N -54.45203W, 03.iv.2015, J. Orivel & F. Petitclerc cols., Winkler 48h, Transect A, Plot P2, Point 2MI15-0374-27 (1W) [ECOFOG]. **GUYANA: [Cuyuni-Mazaruni]:** Calm Water Creek, along Essequibo River nr. Bartica, 58°37.16'W, 6°28.06'N, 24.ix.2002, J.S. LaPolla, 1° forest, litter sample, =020923-7, JSL020923-01-LS03 (1W) [USNM]; same except =020923-6, JSL020923-01-LS02 (1W 1Q) [USNM]; =020923-5, JSL020923-01-LS01 (1W) [USNM]; =020923-10, JSL020923-01-LS06 (1W) [USNM]; =020923-9, JSL020923-01-LS05 (1W) [USNM]; **[Potaro-Siparuni]:** Iwokrama For. Res., White-water Camp, 60m, 58°50.992'W, 4°43.89'N, 5.xi.2002, J.S. LaPolla et al., 1° forest, litter sample, =021105-1-LS13, JSL021105-01-LS13 (1W) [USNM]; same except =021105-1-LS17, JSL021105-01-LS17 (2W) [USNM]; =021105-1-LS18, JSL021105-01-LS18 (1W) [USNM]; =021105-1-LS20, JSL021105-01-LS20 (2W) [USNM]; =021105-1-LS9, JSL021105-01-LS09 (1W) [USNM]; Dicymbe Forest, 717m, 59°54.63'W, 5°17.76'N, 6.x.2002, T.R. Schultz, J. LaPolla, C. Marshall, R. Williams, Dicymbe forest, litter sample, TRS021006-01-LS18 (1Q) [USNM]; **[Upper Demerara-Berbice]:** Mabura Hill, camp at end of rd. From Georgetown to Letham Rd., 64m, 58°41.982'W, 5°9.313'N, 29.x.2002, J.S. LaPolla et al., 1° forest, litter sample, JSL021029-01-LS10 (1W) [USNM]; same except JSL021029-01-LS15 (1W 1Q) [USNM]; JSL021029-01-LS17 (1W) [USNM]; JSL021029-01-LS14 (1W) [USNM]; JSL021029-01-LS14 (1Q) [USNM]; **Upper Takutu-Upper Essequibo:** Acarai Mts., nr. Romeo's Camp, 293m, 58°56.804'W, 1°23.171'N, 10.x.2006, T.R. Schultz & J. Sosa-Calvo, 1° forest, litter sample, Winkler sample, JSC061010-LS04 (2W 2Q 1M) [USNM]; same except 314m, 58°56.787'W, 1°23.137'N, JSC061010-LS06 (1Q) [USNM]. **PERU: Loreto:** Campamento San Jacinto, 11.july.1993, R. Leschen, #86, rainforest, flower fall, berlasete (4W) [MCZC]; **Madre de Dios:** Los Amigos Field Station, Trail 6, Huangana, 277m, 70°6'3.1W, 12°34'8.4S, 6.x.2004, T.R. Schultz, C. Marshall, J. Sosa-Calvo, 1° forest, litter sample, =JSC041006-20, TRS041006-01-LS-20 (2W 1Q) [USNM]; same except =JSC041006-16, TRS041006-01-LS-16 (1W) [USNM]; Trail 3, =JSC041009-10, TRS041009-01-LS-10 (1W) [USNM]; Trail 3, =JSC041009-18, TRS041009-01-LS-18 (1W) [USNM]; Trail 3, =JSC041009-05, TRS041009-01-LS-05 (1W) [USNM]; Trail 3, =JSC041009-04, TRS041009-01-LS-04 (2W 1Q) [USNM]; across River from Cocha Cashu, 19.90°S, 71.36°W, 23 Sept. 1999, D.W. Davidson, Ex sifted litter, FAS—000948 (1W) [UNMSM]; Pto[Puerto] Maldonado, nr. Lake Sandoval, 260m, 13-16.vi.81, C. Kugler & R.R. Lambert cols., 1°(?) for., in sandy soil, berl. lf. lit. (4W 1Q) [MCZC]; **Cusco:** Est. Biol. Villa Carmen, 590m, 5-15.viii.2013, -12.902437° -71.407672° ±30m, Ant Course 2013, bamboo forest, secondary vegetation, KAM #422 (1W) [MZSP]. **[TRINIDAD AND TOBAGO]:** **TRINIDAD: [Rio Claro-Mayaro/Sangre Gandre]:** Nariva

Swamp, 22.iv.35, N.A. Weber, 139 (1W) [MCZC]; **[Princes Town]**: 13.5km E Preau, 27 July 2004, J.K. Wetterer, #528 (1W) [MCZC]; **[Sangre Grande]**: 2km NW Howson, 12 July 2004, J.K. Wetterer, #506 (1Q) [MCZC]; **[Couva-Tabaquite-Talaro]**: Arena Forest, Barker Trace, 20 May 2004, J.K. Wetterer, #416 (1W) [MCZC]; N Balata Branch, 31 Oct 2003, Wetterer, #218 (1Q) [MCZC]; **[Tunapuna-Piarco]**: Mt. Tucuche, 25.vi.76, J. Noyes, QCAZ I 57120 (1W) [MZSP]; Blanchisseuse Rd., 2km N Asa Wright, 30 Oct 2003, Wetterer, #212 (1W) [MCZC]. **VENEZUELA: Amazonas**: Alto Rio Siapa, 495m, 01°42'50"N, 64°33'40"O, 8.ii.89, J. Lattke (1Q) [MIZA]; same except 4.ii.89 (1Q) [MIZA].

### *Hylomyrma jeronimae* Ulysséa new species

Figures 37, 38, 80F, 84 (map)

Holotype: PANAMA: [Panamá Oeste]: Cerro Campana, 950m, [ca. 8.73°N, 79.97°W (Branstetter, 2013)], 5.vi.95, R. Anderson [leg.], wet mountain, forest litter, #17833 (1W) [MCZC]. Paratypes: same data as holotype, #17833 (7W) (MZSP67337, MZSP67338) [MZSP]; #17833 (1Q) (MZSP67336) [MZSP]; #17754 (1W) [UTEP]; #17754 (2W) [USNM]; #17754 (2W, one covered with gold, without gaster) [DZUP]; 14-23.ii.1976, leaf litter, forest floor, A. Newton [leg.] (10W) (MCZENT00525548, MCZENT00525550, MCZENT00525555, MCZENT00525547, MCZENT00525493, MCZENT00525551, MCZENT00525552, MCZENT00525549, MCZENT00525494, MCZENT00525546) [MCZC]. COSTA RICA: Puntarenas: 10k W Rincón, 22.vi.1997, 180m, 8°42'N, 83°31'W, R. Anderson [leg.], ridge for., litter extr., 18689B (2W) (MZSP67339, MZSP67340) [MZSP]; 17k NE Rincón, 21.vi.1997, 250m, 8°45'N, 83°25'W, R. Anderson [leg.], lowland for., litter extr., 18685D (1W) [CASC]; same except 18685D (1W covered with gold) (MZSP67341) [MZSP]; 18685A (1W) (MZSP67342) [MZSP]; 24.vi.1997, 8°45'30"N, 83°25'00"W, lowland for., litter, 18689 (1W) (MZHY204) [MZSP].

**Diagnosis.** Regular to irregular striae on head dorsum diverge towards posterior margin; irregular striae of variable thickness on mesosoma assuming multiple directions, interspaces indistinguishable; reniform eye; metanotal groove distinguishable by a slight depression (LV) and altered sculpture (DV); dorsal margin of petiole continuous, convex, dorsum and lateral with same striation of mesosoma; subpostpetiolar process weak, convex; profemur posterior surface and protibia extensor surface weakly striate; striation on tergum of first gastral segment restricted to base.

**Description.** WORKER (n=3) (Fig. 37A–C): HL (0.88–0.90); HW (0.80–0.82); ML (0.52–0.53); SL (0.56–0.58); MOD (0.25–0.26); PNW (0.57–0.58); WL (1.12); PSL (0.21–0.24); PL (0.56–0.57); PW (0.20); PPL (0.28–0.29); PPW (0.29–0.30); GL (0.93–1.06); TL (4.31–4.47); CI (90.90–92.13); SI (68.29–72.50); OI (30.48–32.50). Small-sized. Subopaque integument, except for the shiny gaster. Light brown body, darker gaster, yellowish leg. Many thin and branched setae, long to midsized, suberect to subdecumbent, 2–4 short branches of equal size arising from the main axis (Fig. 80F).

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with regular and longitudinal striae, being 6–9 thicker striae, interspaces indistinguishable. Frontal triangle with 3 striae. Short scape, not reaching head posterior margin; apical antennomere shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye reniform, midsized, larger diameter with 11 ommatidia. Regular to irregular and longitudinal striae on head dorsum, divergent towards posterior margin, interspaces between thicker striae filled with thinner striae. Head lateral and laterodorsal regions with same striation of head dorsum, striae converging to eye margin; gena striate, irregular and semicircular striae circumscribe the torulus, not reaching eye margin, being 4–6 thicker striae, interspaces indistinguishable. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with regular to irregular striae, thinner striae (microsculpture) superimposed on thicker striae (macrosculpture), interspaces between thinner striae indistinguishable. Striation assumes multiple directions; transverse striae on pronotum anterior region (DV) continuing on lateral surface in part towards propodeal spine and in part transversely on propodeum; pronotum posterior region, mesonotum and metanotal groove with semi-elliptical to V-shaped striae. Promesonotal junction indistinct. Metanotal groove discernible by a slight depression (LV) and altered sculpture (DV). Transverse carina well-marked. Dorsal margin of mesosoma slightly discontinuous, convex. Propodeal lobe bidentate, acute dorsal tooth slightly longer than blunt ventral tooth; dorsal tooth length slightly shorter than propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured. Procoxa striae of uniform thickness; regular and transverse striae on C2 and C3. Profemur and protibia covered with irregular to regular striae, transverse on profemur, longitudinal on protibia.

Dorsal margin of petiole continuous, convex; transverse striae on entire ventral surface, interspaces distinguishable; first third of dorsal surface smooth; striation of its second third continuing on lateral surface; regular to irregular striae of variable thickness on last third of dorsal surface and lateral surface, last third of dorsal surface with semicircular striae, interspaces indistinguishable. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex, striation weakly marked.

First gastral segment striation similar to postpetiole striae; short striae on tergum, shorter than postpetiole length; sternite striation covering the laterobasal region.

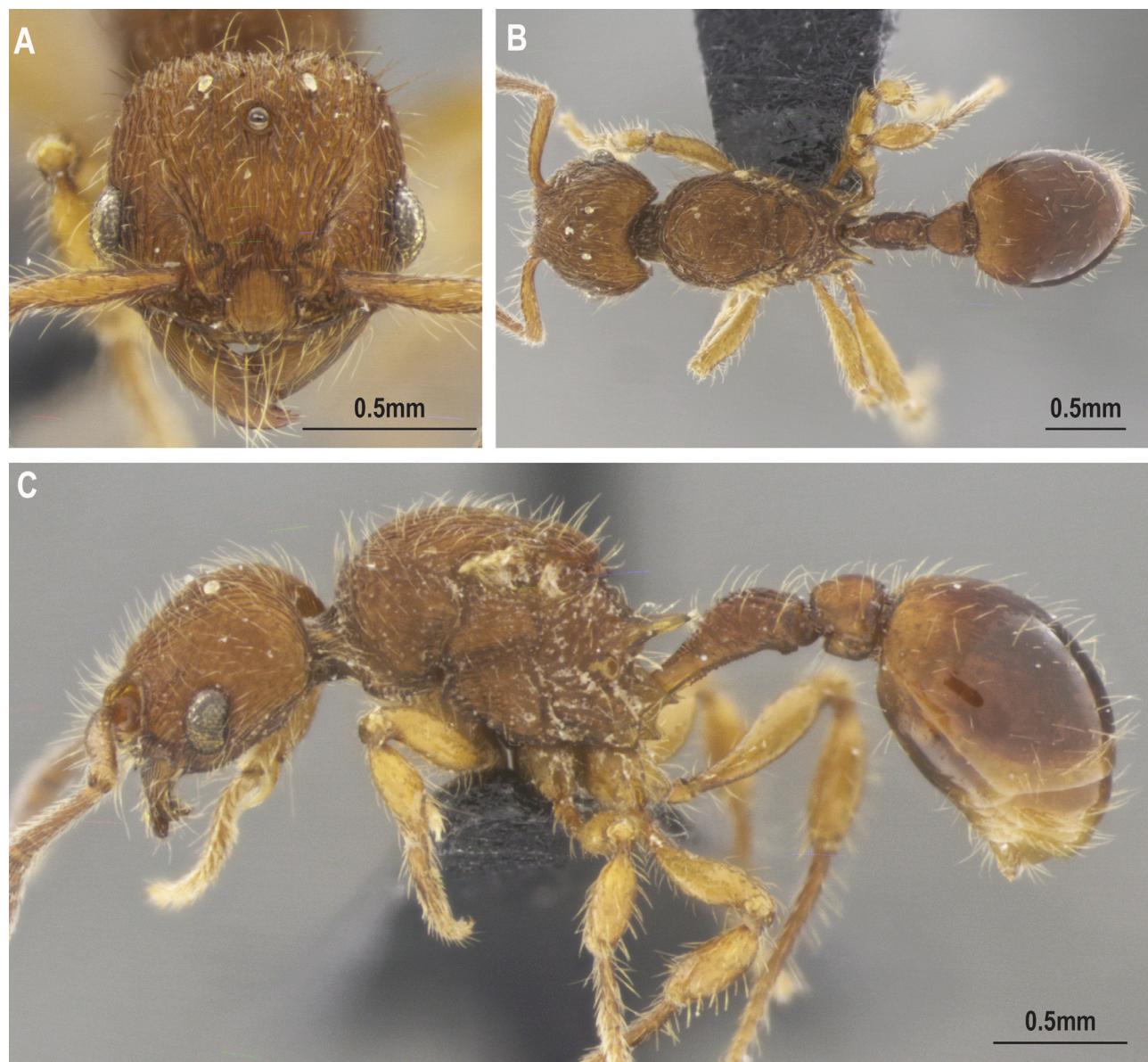


**FIGURE 37.** Holotype worker of *Hylomyrma jeronimae* (PANAMA: #17833 [MCZC]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

QUEEN (n=3) (Fig. 38A–C): HL (0.94); HW (0.88–0.89); ML (0.55–0.62); SL (0.60–0.62); MOD (0.28–0.29); PNW (0.78–0.82); WL (1.38–1.40); PSL (0.28); PL (0.64–0.66); PW (0.26); PPL (0.33–0.34); PPW (0.37–0.38); GL (1.20–1.28); TL (5.08–5.18); CI (93.61–94.68); SI (68.18–70.45); OI (31.46–32.95). Midsized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 14–15 ommatidia. Longitudinal, regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces indistinguishable. Longitudinal and mostly regular striae on anepisternum and katepisternum, interspaces indistinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus

conspicuous. Transverse and regular striae on propodeum (DV). Lateral surface of mesosoma with irregular to vermicular striae directed in part to propodeal dorsum and in part to propodeal spine. Wings unknown.

MALE Unknown.



**FIGURE 38.** Paratype queen of *Hylomyrma jeronimae* (MZSP67336). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Etymology.** The epithet *jeronimae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. The specific epithet is named after Jerônima Mesquita (1880–1972), a Brazilian feminist, pioneer of the women's suffrage in Brazil. She also advocated for the equality of rights and opportunity of women, and co-founder, along with Berta Lutz (1894–1976) and Stella Guerra Duval (1879–1971), of the League for the Intellectual Emancipation of Women in 1918 (which was subsequently named Brazilian Federation for Women's Progress).

**Comments.** *Hylomyrma jeronimae* is similar to *H. blandiens*, *H. dentiloba* and *H. macielae*. *Hylomyrma jeronimae* and *H. dentiloba* are restricted to Central America (Figs. 84, 86), co-occurring in Barro Colorado Island, Panama, whereas *H. blandiens* has a broad distribution in northwestern South America, from Bolivia to French Guiana (Fig. 84), overlapping in part with the area of distribution of *H. macielae* (south Colombia and the center-north of Ecuador) (Fig. 86). *Hylomyrma jeronimae* can be distinguished from *H. blandiens* and *H. dentiloba* (characteristic of both in parentheses) by the regular to irregular, and divergent striae on the mesial region of head dorsum (vs.

regular striae in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent), the reniform eye (vs. drop-shaped), the striation on the mesosoml dorsum assuming multiple directions (vs. longitudinal striation), the continuous dorsal margin of petiole (vs. discontinuous), and the striae on tergum of the first gastral segment restrict to its basal region (vs. extending up to its first third). *Hylomyrma jeronimae* and *H. macielae* share the adjacent striae on the mesosoma, but the former differs from the latter in the reniform eye (vs. oval), and the continuous dorsal margin of petiole (vs. discontinuous).

After observing the images of *H. cf. dentiloba* sp.1 (CASENT0636001) from Costa Rica (Pierce *et al.* 2017), we understand that this species is *Hylomyrma jeronimae* n. sp. The authors stated that *H. dentiloba* and *H. versuta* are morphologically identical, being differentiated only in their geographical distribution. However, *H. jeronimae* (the *H. cf. dentiloba* sp.1) can be distinguished from *H. versuta* in the striation on the mesosomal dorsum assuming multiple directions (vs. longitudinal striation), the striae interspaces on the mesosoma indistinguishable (vs. distinguishable), and the continuous dorsal margin of petiole (vs. discontinuous). Also, we indicate five morphological differences between *H. jeronimae* and the true *H. dentiloba* (the *H. cf. dentiloba* sp.2) in the previous paragraph.

**Distribution.** This species occurs in Costa Rica and Panama (Fig. 84).

**Natural history.** *Hylomyrma jeronimae* inhabits forested areas at elevations ranging from 180 to 950 m. Most known specimens were collected in the leaf-litter, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (42 workers, 3 queens): **CR[COSTA RICA]: Punt.[Puntarenas]:** Osa Penn[Peninsula] C. Helado, 17k NE Rincón, 24.vi.97, R. Anderson, #18689 (2W) (MZHY204) [MZSP]; **San Jose:** 68km PanamHw 3 de Jun. Boq., 10.ii.96, R. Anderson, litter ex. Forest Adjacent to *Sphagnum* bug[bog], Sample C, #17750 (3W) [MZSP]. **PANAMA: [Panamá Oeste]:** Cerro Campana, 950m, 5.vi.95, R. Anderson, #17834 (4W) [MZSP]; same except #17835 (3W) [MZSP]; #17836 (2W) [MZSP]; #17836 (3W) [IHVL]; #17836 (1W) [USNM]; #17836 (1W) [DZUP]; #17753 (7W 1Q) [MZSP]; #17753 (2W) [UTEP]; 900m, #17755 (2W, one worker just petiole, postpetiole and gaster) (MYZH219) [MZSP]; #17756 (12W 2Q) [MZSP].

### *Hylomyrma lispectorae* Ulysséa new species

Figures 39, 40, 80D, 81E, 84 (map)

Holotype: ECUADOR: Pichincha: 4km E Santo Domingo de los Colorados, 8.vii.1976, J. & J. Peck [leg.] (1W) (MCZENT00524651) [MCZC]. Paratypes: same locality, [no date and collector], (1Q) (MCZENT00524649) [MCZC]; same data as holotype (1W) (MCZENT00524652 MZSP67343) [MZSP]; (1Q) (MCZENT00524647 MZSP67345) [MZSP]; (3W 3Q) (MCZENT00524641, MCZENT00524642, MCZENT00524643, MCZENT00524646, MCZENT00524648, MCZENT00524650) [MCZC]; same except 520m, 22 June 1975, S. & J. Peck [leg.], rainfor., B-304 (1W) (MCZENT00524670) [CASC]; (1W) (MCZENT00524667) [DZUP]; (1W) (MCZENT00524669) [IHVL]; (7W 1Q) (MCZENT00524654, MCZENT00524655, MCZENT00524656, MCZENT00524658, MCZENT00524660, MCZENT00524661, MCZENT00524663, MCZENT00524668) [MCZC]; (1W) (MCZENT00524653 MZSP67346) [MZSP]; (1W, one covered with gold) (MCZENT00524659 MZSP67347) [MZSP]; (1Q) (MCZENT00524662 MZSP67344) [MZSP]; (1W) (MCZENT00524666) [USNM]; 4km SE Santo Domingo, 1976, for., litter, berl.42, S. & J. Peck [leg.] (9W) (MCZENT00524649) [MCZC]; same data (1W) (MCZENT00525534 MZSP67349) [MZSP].

**Diagnosis.** Vermicular striae on head dorsum diverge towards posterior margin, interspaces between thicker striae filled with thinner striae; mesosoma covered with irregular to vermicular striae of variable thickness, interspaces indistinguishable; dorsal and ventral teeth of propodeal lobe blunt; mesosoma notably convex, metanotal groove discernible by a slight depression (LV) and altered sculpture (DV); dorsal margin of petiole continuous, convex, with irregular, longitudinal and anastomosed striae on dorsum; postpetiole smooth; subpostpetiolar process smooth, weak, convex; profemur posterior surface and protibia extensor surface smooth; striation on tergum of first gastral segment restricted to base; striae very short.

**Description.** WORKER (n=6) (Fig. 39A–C): HL (0.94–1.04); HW (0.88–0.96); ML (0.60–0.68); SL (0.66–0.72); MOD (0.20–0.23); PNW (0.61–0.68); WL (1.20–1.36); PSL (0.30–0.34); PL (0.62–0.73); PW (0.24–0.26); PPL (0.32–0.36); PPW (0.33–0.36); GL (1.04–1.08); TL (4.77–5.21); CI (88.46–93.61); SI (70.83–78.26); OI (22.72–24.44). Midsized. Shiny integument. Brownish body, yellowish leg (except for coxa) and antenna. Thin and branched setae, midsized to short, suberect to subdecumbent, 2 short branches of equal size diverging from the main axis (Fig. 80D).

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 7–8 irregular, longitudinal and thick striae converging to a point on the anterior margin, interspaces between thicker striae filled with thinner striae. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 11 ommatidia. Vermicular and longitudinal striae on head dorsum, divergent towards posterior margin, interspaces between thicker striae filled with thinner striae. Head lateral and laterodorsal regions with vermicular striae converging to eye margin; gena striate, 3 irregular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 39.** Paratype worker of *Hylomyrma lispectorae* (MZSP67343). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 40.** Paratype queen of *Hylomyrma lispectorae* (MZSP67344). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Mesosoma covered with vermicular striae of variable thickness, interspaces indistinguishable; mostly transverse striae on pronotum anterior region (DV), striation continues on lateral surface; semicircular striae on mesonotum; striae on propodeum lateral directed mainly to propodeum dorsum. Dorsal margin of mesosoma slightly discontinuous, notably convex. Promesonotal junction indistinct. Transverse carina inconspicuous. Metanotal groove discernible by a slight depression (LV) and altered sculpture (DV). Propodeal lobe bidentate, dorsal tooth slightly longer than ventral, both blunt; dorsal tooth length  $\frac{1}{3}$  shorter than propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Procoxa striae of variable thickness; irregular and transverse striae on C2 and C3. Profemur mostly smooth. Protibia smooth.

Dorsal margin of petiole continuous, convex; transverse striae on ventral surface from petiole spiracle until posterior end of petiole; first third of dorsal surface smooth; lateral and posterodorsal surfaces mostly with irregular longitudinal and anastomosed striae. Postpetiolar process smooth, weak, convex.

Longitudinal striae on tergum first gastral segment, striation short, weakly marked, restricted to base, striae length equivalent to  $\frac{1}{4}$  of postpetiole length; sternite smooth.

QUEEN (n=3) (Fig. 40A–C): HL (1–1.06); HW (0.94–0.98); ML (0.63–0.70); SL (0.72–0.80); MOD (0.24–0.26); PNW (0.84–0.88); WL (1.44–1.54); PSL (0.32–0.36); PL (0.70–0.76); PW (0.29–0.30); PPL (0.34–0.40); PPW (0.40–0.42); GL (1.20–1.32); TL (5.34–5.78); CI (92.45–94.11); SI (75–81.63); OI (25.53–26.53). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 13–14 ommatidia. Longitudinal, regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces indistinguishable. Longitudinal, regular to irregular striae on anepisternum and katepisternum, some vermicular striae on katepisternum, thinner striae between thicker striae. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral surface of mesosoma with vermicular striae directed to propodeal spine. Wings as in Fig. 81E.

MALE Unknown.

**Etymology.** The epithet *lispectorae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -ae to the last name of a female person. The specific epithet is named after Clarice Lispector (1920–1977), born Chaya Pinkhasovna Lispector, a Ukrainian-Brazilian novelist, poetess, and short story writer—“*Liberdade é pouco. O que eu desejo ainda não tem nome*”.

**Comments.** This species is easily distinguished from most of its congeners, but it is very similar to *H. montana* regarding the shape of mesosoma, and the sculpture and shape of the procoxa, petiole, postpetiole, and gaster. Also, the two species are sympatric, co-occurring in two Ecuadorian localities: Centro Científico Río Palenque, and 4 km E of Santo Domingo de los Colorados (Figs. 83, 84). *Hylomyrma lispectorae* can be distinguished from *H. montana* (characteristic in parentheses) in the dorsum of head and mesosoma by the vermicular striae of variable thickness with indistinguishable interspaces (vs. irregular striae of uniform thickness with distinguishable interspaces), and the notably convex dorsal margin of mesosoma (vs. somewhat straight).

**Distribution.** *Hylomyrma lispectorae* is known from Colombia and Ecuador (Fig. 84).

**Natural history.** This species occurs in tropical rainforest areas at altitudes below 600 m. Specimens were collected in leaf-litter with Winkler extractors and Berlese-Tüllgren funnels, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (15 workers, 4 queens): **COLOMBIA: Valle del Cauca[Cauca]:** PNN Gorgona, Playa Palmera, W78°12'21.4", N2°56'7.9", 28msnm, 24-26.ii.2011, Stephany Valdes col., Winkler (2W) (MZSP67437, MZHY217) [MZSP]. **ECUADOR: Los Ríos:** C.C.R. Palenque, 79°45'10"W, 01°25'56"S, 10JUN1980, S. Sandoval, QCAZ I 57121 (1W) [MZSP]; same except 01JUN1980, QCAZ I 114014 (1Q) [UTPL]; 29MAY1980, T. DeVries, QCAZ I 114005 (1Q) [QCAZ]; 29m, 05MAR1979, T. DeVries, QCAZ I 57123 (1W) [QCAZ]; QCAZ I 114006 (1W) [QCAZ]; QCAZ I 114007 (1W) [MZSP]; QCAZ I 114002 (1W) [QCAZ]; QCAZ I 114004 (1W) [QCAZ]; 02MAR1979, QCAZ I 114009 (1W) [MZSP]; QCAZ I 114013 (1Q) [MZSP]; 29MAY1980, QCAZ I 114003 (1W) [QCAZ]; 220m, 79°00'W, 00°54'S, 24FEB1977, QCAZ I 57124 (1W) [MZSP]; 79°45'10"W, 01°25'56"S, 29m, 24FEB1977, QCAZ I 114010 (1W) [MZSP]; 01MAR1979, QCAZ I 57122 (1W) [MZSP]; 2FEB1977, QCAZ I 114011 (1W) [QCAZ]; 47km S Sto. Domingo, Rio Palenque Sta. (1Q) (MCZENT00525485) [MCZC]; **Namabí:** 78km NE Chone, 450m, 9.vi.1976, S. & J. Peck, B-345 (1W) (MCZENT00525491) [MCZC].

### *Hylomyrma longiscapa* Kempf, 1961

Figures 41, 42, 43, 80I, 81D, 82D, 83 (map)

*Hylomyrma longiscapa* Kempf, 1961: 498 (W). Holotype: SURINAM[E: Saramacca]: Dirkshoop, v.1959, I.v.d. Drift col., 10.iii a-2 (1W) (ANTWEB-1008991 MZSP67350) [MZSP] [examined]. Paratype: SURINAM[E]: Vank, viii.1959, I.v.d. Drift col., 32.xvii a-5 (1W) (MCZ31531) [MCZC] [examined].

**Diagnosis.** Regular and longitudinal striae on head dorsum, parallel towards posterior margin; long scape; vermicular striae on mesosoma; dorsal margin of petiole discontinuous; ventral surface entirely covered with transverse striae; postpetiole with regular and longitudinal striae slightly anastomosed and thick; subpostpetiolar process sculptured on laterobasal region, midbasal region smooth; long striae on tergum of first gastral segment; body with many branched setae; branches of equal size; unbranched setae predominate in the gaster.

**Redescription.** WORKER (n=6) (Fig. 41A–C): HL 0.92 (0.85–0.94); HW 0.80 (0.77–0.82); ML 0.58 (0.54–0.60); SL 0.81 (0.74–0.85); MOD 0.25 (0.22–0.28); PNW 0.58 (0.54–0.60); WL 1.20 (1.10–1.22); PSL 0.28 (0.25–0.32);

PL 0.54 (0.50–0.58); PW 0.18 (0.18–0.20); PPL 0.29 (0.28–0.32); PPW 0.29 (0.26–0.30); GL 1.12 (1.04–1.12); TL 4.65 (4.33–4.78); CI 86.95 (86.95–90.58); SI 101.25 (95–103.66); OI 31.25 (28.20–34.14). Small to midsized. Shiny integument. Bicolored body, brownish with lighter leg. Many branched setae, midsized to short, branches of equal size (Fig. 80I), suberect to subdecumbent; unbranched setae predominate in the gaster.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–10 regular and longitudinal striae converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 2 striae. Long scape, surpassing head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 11 ommatidia. Regular and longitudinal striae on head dorsum, parallel towards posterior margin, interspaces between thicker striae filled with thinner striae, anastomosed striae on posterior region. Sculpture on head lateral and laterodorsal regions converge to eye margin; laterodorsal region predominantly with longitudinal striae; lateral and lateroventral region mainly with anastomosed striae; gena striate, 6–8 regular and semicircular striae circumscribe the torulus, almost reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 41.** Worker of *Hylomyrma longiscapa* (MZSP67351). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 42.** Queen of *Hylomyrma longiscapa* (MZSP67351). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Mesosoma covered with vermicular striae of uniform thickness, interspaces smooth. Promesonotal junction distinguishable by a slight depression (LV); metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and sharper than shorter and blunt ventral tooth; dorsal tooth shorter than  $\frac{1}{3}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur and protibia smooth.

Dorsal margin of petiole discontinuous; ventral surface entirely covered with transverse striae. Node with regular and transverse striae on anterior surface, striation on anterior surface continuing transversely on lateral surface to ventral surface, weakly marked; vermicular striae on dorsal surface. Postpetiole covered with regular and longitudinal striae slightly anastomosed and thick; subpostpetiolar process with same sculpture of postpetiole on laterobasal region, but weakly marked, midbasal region smooth; subpostpetiolar process weak, straight.

First gastral segment striation similar to postpetiole striae, longitudinal striae on tergum  $1\frac{1}{2} \times$  the postpetiole length; sternite striation restricted to laterobasal region, weakly marked.

QUEEN (first description) (n=3) (Fig. 42A–C): HL (0.86–0.94); HW (0.80–0.84); ML (0.59–0.60); SL (0.76–0.78); MOD (0.24–0.27); PNW (0.62–0.67); WL (1.28–1.34); PSL (0.28–0.30); PL (0.57–0.62); PW (0.19–0.22);

PPL (0.32–0.33); PPW (0.30–0.32); GL (1.17–1.20); TL (4.76–5); CI (89.13–93.02); SI (92.68–97.50); OI (30–32.92). Medium to large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 14–15 ommatidia. Striae on scutum anastomosed anteriorly and irregular posteriorly, going from an anterior central point towards transcutal suture. Longitudinal and regular striae on anepisternum and irregular to vermicular on katepisternum, interspaces distinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral surface of mesosoma with irregular to vermicular striae directed in part to propodeal dorsum and in part to propodeal spine. Wings as in Fig. 81D.

MALE (first description) (n=1) (Fig. 43A–C): HL 0.66; HW 0.79; ML 0.46; SL 0.28; MOD 0.32; PNW 0.72; CMS 1.33; PSL 0.08; PL 0.60; PW 0.22; PPL 0.34; PPW 0.32; GL 1.34; TL 4.73; CI 119.70; SI 35.44; OI 40.50. Light brown body, yellowish appendices. Mandible with 6 teeth. Scutum anterior region smooth, posterior region covered with mostly longitudinal, regular to irregular striae, interspaces distinguishable. Anepisternum and katepisternum covered with longitudinal and regular striae, thinner than those on scutum, interspaces distinguishable. Scutellum with mostly irregular striae, thicker than scutum striae, interspaces distinguishable. Propodeum with irregular striae assuming multiple directions, interspaces distinguishable. Propodeal lobe rounded. Petiole mostly covered with longitudinal and irregular striae, interspaces distinguishable. Postpetiole with longitudinal and regular striae. Gaster smooth. Wings as in Fig. 82D.



**FIGURE 43.** Male of *Hylomyrma longiscapa* (MZSP67353). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

**Etymology.** The specific epithet *longiscapa* (Latin, *longus* = long and *scapus* = stem) refers to the relatively long antennal scape of this species.

**Comments.** *Hylomyrma longiscapa* is similar to *H. marielleae* regarding the body size and the sculpture pattern. However, *H. longiscapa* can be easily distinguished from *H. marielleae* (characteristic in parentheses) in the thin and light setae (vs. thick and dark), and the transverse striae on the ventral surface of petiole well-marked (vs. weakly marked). Both species have broad distribution in the center-north of South America, however *H. longiscapa* occurs in many localities in eastern portions of Brazil (from northeast to southeast regions) (Fig. 83) where *H. marielleae* does not occur (Fig. 85).

The type specimens (Surinam) have one central ocellus. This character, together with the larger body size [HL (0.92–0.98); HW (0.80–0.86); ML (0.58–0.66); SL (0.76–0.90); MOD (0.23–0.28); PNW (0.58–0.64); WL (1.16–1.30); PSL (0.28–0.32); PL (0.56–0.60); PW (0.18–0.23); PPL (0.33–0.36); PPW (0.29–0.32); GL (1.06–1.20); TL (4.65–5.08); CI (86.95–89.58); SI (95–104.65); OI (28.75–32.55)], and the promesonotal junction discernible by a more pronounced depression, likely indicate the specimens are intercastes. Intercastes were also sampled in Brazil, Ecuador, Peru, and Venezuela. Specimens from Brazil (Novo Jardim, TO) have a spine on the mesoventral surface of petiole.

**Distribution.** This species occurs from central to northern South America (Brazil, Ecuador, French Guiana, Peru, and Venezuela) (Fig. 83). The distribution of *H. longiscapa* is broader than that of *H. marielleae*, especially because the distribution of the former spans the Atlantic forest in Brazil, while the latter is more restricted to the Amazonian region. Both species occur in Madre de Dios, Peru; Napo, Ecuador; and Mato Grosso, Pará, and Tocantins, all three in Brazil.

**Natural history.** This species inhabits forested areas in the Atlantic forest (Northeast Brazil), tropical rainforest (Amazon), “Cerrado” (Brazilian savanna), and semideciduous forest enclaves in the Atlantic forest biome (Minas Gerais, Brazil). Specimens are frequently found in leaf-litter samples, which suggests that this species nests in the leaf-litter, fallen logs, rotten wood, or inside natural cavities of the superficial soil layers. Except for the presence of intercastes, there is no further information available regarding the biology of *H. longiscapa*.

**Additional material examined** (104 workers, 12 queens, 1 male, 13 intercastes): **BRAZIL: BA[Bahia]:** Au-relio Leal, L. do Banco, Mata, 26/05/1997, Col. J.C.S. Carmo & J.R.M. Santos, 637 (1W 1Q 1M) (MZSP67353) [MZSP]; Andaraí, Mata Carrasco (Castanha), 13–14.xii.1990, Brandão, Diniz & Oliveira, folhiço (8W, one covered with gold) (MZSP67436) [MZSP]; same except 105 (1Q) [MZSP]; 104 (1W 3Q 2I) [MZSP]; Ilhéus-Castelo Novo, 26.04.[20]00, 143912S, 391139W, Santos, J.R.M. dos, Mata-A24 (3W) [CEPLAC]; Ilhéus-Banco do Pedro, 12.01.[19]98, 144051S, 0391524W, Santos J.R.M. dos, Carmo J.C.S. do, Mata W-A23, 61 (3W) [CEPLAC]; Ilhéus, CEPEC, 10.[19]96, Santos, J.R.M., #5156 (5W) [CEPLAC]; same except 27.01.[19]95, col. D. Agosti, MZSP67352 (1W 1Q) [MZSP]; km22 Ilhéus-Itabuna, CEPED-Área Zoolog., x.[19]86, J. Delabie leg., 61 (1W) [MZSP]; Mata da Boa Esperança, 14°47'47"S, 09°03'56"W, 09.ix.2000, Santos J.R.M. col., Winkler 28 (1W) [MZSP]; Itapebí, M. Rio Pardo, 16.07.[19]97, Santos J.R.M. (3W) [CEPLAC]; Ibicaraí, km41, 145375S, 0392901W, 21.11.[19]98, Santos J.R.M. dos, 61 (1W 1Q) [CEPLAC]; Itacaré-Taboquinha, 20/12/[19]96, Santos J.R.M. dos, 61 (3W 1Q) [CEPLAC]; Itapitanga, 30.05.97, 14°25'22"S, 39°33'54"W, Santos J.R.M dos, 61 (1W) [CEPLAC]; Maraú-Tremenbé, 07.06.[19]97, Santos J.R.M dos, MATA-W-A4, 61 (3W) [CEPLAC]; Arataca, 25.05.[19]99, 151649S, 0392331W, Santos J.R.M dos, Mata A47, 61 (1W) [CEPLAC]; Mata São João, Reserva Sapiranga, 12°33'29.3"S, 33°02'35.2"W, 21-28.vii.2001, Silva R.R., Brandão C.R.F. cols., Winkler 49 (1W) [MZSP]; same except Winkler 43 (3W) [MZSP]; Winkler 46 (1W) [MZSP]; Winkler 34 (1Q) [MZSP]; Winkler 51 (1W) [MZSP]; Serra Grande, 14°27'05"S, 39°02'34"W, 28/04/1997, Carmo J.C.S., 61 (3W) [CEPLAC]; Una, 151104S, 0390056W, 24.08.[19]98, Santos J.R.M. dos, A45, 61 (2W) [CEPLAC]; Unacau, 150521S, 39°1742W, 11.02.2000, Santos J.R. dos, A43, 61 (3W) [CEPLAC]; Lençóis, Chap[ada] Diamantina, 25.iii.2001, Santos J.R.M., 5, 61 (2W) [CEPLAC]; Coaraci, 14°38'S, 39°33'W, 30/09/2002, Santos J.R.M. Dos, Mata, Winkler (1W 2I) [CEPLAC]; **GO[Goiás]:** Serranópolis, Faz. São Cristovão, 817m, 18°5'32.87"S, 52°2'23.85"W, 10.i.2009, Gilmar G. Santos col., Frag. 03, M.W. Ponto 23 (9W) [DZUP]; same except Ponto 06 (6W) [DZUP]; Jataí, Faz. Sta. Gerturdes, 876m, 17°50'07"S, 51°43'04"W, 02.ii.2009, G.G. Santos col., Frag. 01, M.W. Ponto 13 (1W) [DZUP]; same except Ponto 19 (2W) [DZUP]; **MA[Maranhão]:** Açailândia, Horto Faz. Pompéia, 04°52'30"S, 47°17'40"W, 13-22.ii.2006, Silva R.R. & Feitosa R.M. cols., Winkler 17 (1W) [MZSP]; **[MG]Minas Gerais:** Parque Estadual do Rio Doce, Trilha da Garapa Torta, Elev.280m, 19°47'49"S, 42°34'38"W, 23-24.viii.2005, TEAM exped. Col., Floresta Atlântica Es-

tacional Semidecidual, TGT 4.7 Mini-winkler (1W) [MZSP]; Marlaria, Parque Estadual do Rio Doce, Trilha da Lagoa Preta, 280m, -19.796944, -42.577222, 30.xi.2005, TEAM exped. Col., Floresta Atlântica Estacional Semi-decidual, LP2-6 (1W) [MZSP]; same except 25.viii.2005, LP1-6 (1W) [MZSP]; **MT[Mato Grosso]**: Claudia, Acampamento módulo 1, iv.2014, Vicente, R.E., coleta manual (1W) [MZSP]; **PA[Pará]**: Novo Repartimento, Faz. Aratau, 25-26.vi.2003, A.M. Elizabeth (1W 2I) [CEPLAC]; **PE[Pernambuco]**: Recife, Horto Dois Irmãos, 08°00'32"S, 34°56'40"W, 15-24.vii.2002, Silva R.R. & Eberhardt F. cols., Winkler 11 (1W) [MZSP]; same except Winkler 8 (1W) [MZSP]; Winkler 49 (1W) [MZSP]; Winkler 46 (1W) [MZSP]; **RO[Rondônia]**: Porto Velho, Área Mutum, M5P4, 09°35'29.5S, 65°02'57.6"W, 04-18.ix.2012, Ulysséa, M.A. & Prado, L.P. cols. (2W) [MZSP]; **SE[Sergipe]**: Sta. Luiza do Itanhé, Crasto, 11°22'39.3"S, 37°25'07.4"W, 29.vii-03.viii.2001, Silva R.R., Brandão C.R.F., Winkler 30 (5W) [MZSP]; same except Winkler grande 18a (2W) [MZSP]; Areia Branca, E.E. da Serra de Itabaiana, 10°45'54"S, 37°19'57.4"W, 19-25.v.2003, Silva R.R., Dietz B.H. & Ferreira L.S. cols., Winkler 29 (2W) [MZSP]; same except Winkler 46 (1W) [MZSP]; Winkler 24 (2W 1Q) (MZSP67351) [MZSP]; Winkler 29 (1W 1Q) [MZSP]; Winkler 36 (1Q) [MZSP]; **TO[Tocantins]**: Goiatins, 07°56'28.9"S, 47°09'31.3"W, 03-08.v.05, Silva R.R. & Dietz B.H., Winkler 12 (1W) [MZSP]; same except Winkler 11 (1W 1I) [MZSP]; Novo Jardim, 10°50'26.9"S, 46°41'11.7"W, 09.x.2004, Vereda, Silva R.R. & Dietz B.H., Winkler 26 (2I) [MZSP]. **ECUADOR**: **Napo**: Limoncocha, 280m, 00°24"S, 76°36'W, 4.viii.1973, Lois Morales, 237, Colony F-563 (1W 1I) [MZSP]. **GUYANE FRANÇAISE**: **[Saint-Laurent-du-Maroni]**: Maripasoula, Mitaraka Mts, Pente, 2.238226N -54.45203W, 04.iii.2015, J. Orivel & F. Petitclerc cols., Winkler 48h, A-P2-8, MI15-0380-26 (1W) [ECOFOG]. **PERU**: **Madre de Dios**: Los Amigos Field Station, Trail 9 at 725m mark, 291m, 70°6'17.39W, 12°34'26.69S, 2.x.2004, T.R. Schultz, C. Marshall, J. Sosa-Calvo, 1° forest, litter sample, =CJM041002-04, TRS041002-01-LS04 (1W 1I) [USNM]; same except =CJM041002-06, TRS041002-01-LS06 (1I) [USNM]. **VENEZUELA**: **Zulia**: Dto. Perija, El Tucu, 6.ix.1984, cols. J. Lattke, E. Rubio (1W) [MIZA]; El Tucu, 51km SO de Machiques, 24.vi.1979, R.W. Brooks, A.A. Grigarick, J. McLaughlin, R.O. Schuster (1I) [MIZA].

### *Hylomyrma lopesi* Ulysséa new species

Figures 2B, 44, 45, 80E, 80J, 89 (map)

Holotype: BRAZIL: MA[Maranhão]: Estreito, Fazenda Itaueiras, 06°31'54.4"S, 47°22'16"W, 07-13.i.2005, Silva R.R. & Silvestre R. cols., Winkler 25, MZSP67354 (1W) [MZSP]. Paratypes: same data as holotype (1W) (MZSP67355) [MZSP]; same except Winkler 36 (1Q) (MZSP67356) [MZSP]; Winkler 34 (1W) (MZSP67357) [MZSP]; 01-09.vi.2005, Silva R.R. & Feitosa R.M. cols., Winkler 23 (1W) (MZSP67358) [MZSP]; Winkler 14 (1W) (MZSP67359) [MZSP]; Winkler 1 (1W) (MZSP67360) [MZSP]; Winkler 8 (1W) (MZSP67361) [MZSP]; Winkler 5 (1W) (MZSP67362) [MZSP]; Winkler 2 (1W) (MZSP67363) [MZSP]; Winkler 4 (1W) (MZSP67364) [MZSP]; Winkler 24 (1W) (MZSP67365) [MZSP]; 12-22.vi.2006, Silva R.R. & Feitosa R.M. cols., Winkler (2W) [USNM]; Winkler 11 (1W) [DZUP]; Winkler 15 (1W) [DZUP]; Winkler 10 (1W) [MCZC]; Winkler 07 (1W) [MCZC]; Winkler 06 (2W) [IHVL]; Winkler 14 (1W 1Q) [CASC]; 12-22.vi.2006, Winkler, Resíduo 2 (1W 1Q) (MZSP67366) [MZSP]; 13-22.ii.2006, Winkler, Resíduo (1W 1Q) (MZSP67367) [MZSP]; Estreito, Fazenda Planalto, 06°35'59.3"S, 47°24'50.4"W, 07-13.i.2005, Silva R.R. & Silvestre R. cols., Winkler 8 (1W) (MZSP67368) [MZSP]; same except Winkler 10 (1W) (MZSP67369) [MZSP]; Winkler 5 (1W) (MZSP67370) [MZSP]; Winkler 4 (1W) (MZSP67371) [MZSP]; Winkler 2 (1W 1Q) (MZSP67372) [MZSP]; 01-09.vi.2005, Silva R.R. & Feitosa R.M. cols., Winkler 1 (1W) (MZSP67373) [MZSP]; Winkler 2 (1W) (MZSP67374) [MZSP]; Winkler 5 (1W) (MZSP67375) [MZSP]; Winkler 8 (2W) (MZSP67376) [MZSP]; Winkler 9 (1W) (MZSP67377) [MZSP]; Winkler 3 (1W) (MZSP67378) [MZSP]; 12-22.vi.2006, Silva R.R. & Feitosa R.M. cols., Winkler (2W 1Q) (MZSP67379) [MZSP]; 13-22.ii.2006, Silva R.R. & Feitosa R.M. cols., Winkler 8 (1W) (MZSP67380) [MZSP]; Winkler 11 (2W 1Q) (MZSP67381) [MZSP]; Winkler 06 (1W 1Q) (MZSP67382) [MZSP]; Winkler 12 (1W) (MZSP67383) [MZSP]; Winkler 10 (1W) (MZSP67384) [MZSP]; SP[São Paulo]: Matão, Fazenda Cambuhy, Mata da Virgínia, Winkler, 21°37'35.5"S, 48°33'24.8"W, 17-22.iv.2015, M.A. Ulysséa & L.P. Prado cols., A1P3W3 (1W covered with gold) (MZSP67385) [MZSP]; 21°37'33.56"S, 48°32'13.11"W, 30.iii-03.iv.2016, M.A. Ulysséa col., A1P2W4 (1Q) (MZSP67386) [MZSP].

**Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin; mesosoma covered with regular, longitudinal and thick striae, interspaces distinguishable; striae on lateral of propodeum directed to propodeal spine; dorsal margin of petiole discontinuous; anterior and ventral surfaces of node transversely striate; longitudinal, regular to irregular striae on node dorsum and lateral surfaces, striae more straight on dorsum and sinusoid on lateral surface, interspaces distinguishable; subpostpetiolar process striate; profemur posterior surface mostly smooth; striae on protibiae extensor surface weakly marked; striation on tergum of first gastral segment

restricted to base; branched setae of two types: 1) 2–3 short, thin and equal-sized branches diverging from the main axis; 2) thick setae flattened in its final half, with several branches.

**Description.** WORKER (n=8) (Fig. 44A–C): HL (0.80–0.90); HW (0.79–0.88); ML (0.52–0.55); SL (0.57–0.64); MOD (0.22–0.26); PNW (0.54–0.63); WL (1.08–1.20); PSL (0.16–0.19); PL (0.52–0.58); PW (0.24–0.28); PPL (0.30–0.34); PPW (0.33–0.38); GL (0.96–1.14); TL (4.21–4.53); CI (93.18–98.75); SI (65.90–78.04); OI (25.58–32.91). Small-sized. Shiny integument. Brownish body, lighter appendices; petiole, postpetiole and gaster darker. Mostly thin setae, unbranched or branched, midsized to short, erect to decumbent; branched setae of two types: 1) 2–3 short, thin and equal-sized branches diverging from the main axis (Fig. 80E); 2) thick setae flattened in its final half, with several branches, mainly in the postpetiole and gaster (Fig. 80J).



**FIGURE 44.** Holotype worker of *Hylomyrma lopesi* (MZSP67354). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 7–9 regular to irregular, longitudinal and thick striae converging to a point on the anterior margin, interspaces smooth or thinner striae between thicker striae. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere as long as previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye reniform, midsized, larger diameter with 12 ommatidia. Regular, longitudinal striae on head dorsum, diverging towards posterior margin, interspaces between striae filled with thinner regular to irregular striae. Head lateral and laterodorsal regions with same striation of head dorsum, striae converging to eye margin; striation

connecting the region posterior to frontal carina with eye margin, striae irregular, not uniform in thickness; gena striate, 4 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 45.** Paratype queen of *Hylomyrma lopesi* (MZSP67386). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Mesosoma covered with regular and longitudinal striae, thicker than head striation, interspaces distinguishable; striae transverse on pronotum anterior region (DV) and longitudinal in other regions (DV); lateral of pronotum, mesepisternum and propodeum with longitudinal striae directed to propodeal spine. Promesonotal junction and metanotal groove indistinct. Transverse carina inconspicuous (DV). Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth longer and acute than shorter and blunt ventral tooth; dorsal tooth length similar to propodeal spine length. Propodeal spine short, straight (LV), divergent (DV), sculptured on base. Transverse striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur mostly smooth. Protibia extensor surface entirely striate, striae weakly marked.

Dorsal margin of petiole discontinuous. Node with anterior and ventral surfaces striate transversely, striae regular to irregular, interspaces distinguishable; longitudinal, regular to irregular striae on dorsal and lateral surfaces,

straight on dorsum, sinusoid on lateral. Postpetiole and subpostpetiolar process with regular, longitudinal striae; subpostpetiolar process prominent, convex.

First gastral segment striation longitudinal and thinner than postpetiole striae; striae length on tergum shorter than  $\frac{1}{3}$  of postpetiole length; sternite striation weakly marked, covering the laterobasal region.

QUEEN (n=3) (Fig. 45A–C): HL (0.85–0.88); HW (0.82–0.84); ML (0.52–0.55); SL (0.54–0.57); MOD (0.26–0.28); PNW (0.64–0.68); WL (1.22–1.26); PSL (0.20–0.22); PL (0.58–0.64); PW (0.26–0.28); PPL (0.35–0.36); PPW (0.37–0.39); GL (1.12–1.20); TL (4.71–4.80); CI (94.32–96.47); SI (64.28–69.47); OI (31.70–33.73). Mid-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 14 ommatidia. Longitudinal and regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal and regular striae on anepisternum and katepisternum, interspaces distinguishable. Axilla with the same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Scutellum with the same sculpture of scutum. Transverse striae on propodeum (DV). Lateral surface of mesosoma with longitudinal and regular striae directed to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The epithet *lopesi* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -i to the last name of a male person. This species is named in honor of Dr. Benedito Cortês Lopes, M.A. Ulysséa's first 'ant' professor, for his many years of work on ants, as a Zoology and Entomology professor, and as a scientific supervisor at the Universidade Federal de Santa Catarina.

**Comments.** This species is similar to *H. balzani*, *H. reitteri*, and *H. margaridae*. *Hylomyrma lopesi* can be misidentified as *H. reitteri* because of the sculpture on the mesosomal dorsum, and the shape of the dorsal margin of petiole. However, *H. lopesi* differs from *H. reitteri* (characteristic in parentheses) in the smaller body size (vs. larger), the thick striae on the mesosomal dorsum (vs. thin striae), the transverse striae on the ventral surface of petiole (vs. smooth surface), the laterals of the mesosoma covered mainly with regular and thick striae that are directed to the propodeal spine (vs. irregular and thin striae directed to the propodeal dorsum), and the striate subpostpetiolar process (vs. smooth). Both species occur broadly in Brazil, co-occurring in Botucatu (SP), Niquelândia (GO), and São José de Buerarema (BA). The distribution of *H. reitteri* is more circumscribed to eastern portions of Brazil from southern and southeast regions (Fig. 85), whereas *H. lopesi* is distributed mainly in the center of Brazil from northern (state of Pará) to southern (state of São Paulo) regions (Fig. 89).

Specimens of *H. lopesi* have been identified as *H. balzani*, due to the similarity of the sculpture and shape of petiole, and based on the sculpture of gena. But both species can be easily distinguished by the rugose striae on the mesosoma of *H. balzani* and the regular striae on the mesosoma of *H. lopesi*. The distribution of these species cover a broad area in Brazil, both co-occurring in Botucatu (SP) and Milagres (BA). *Hylomyrma lopesi* is distributed mainly in the center of Brazil from northern (state of Pará) to southern (state of São Paulo) regions (Fig. 89), whereas *H. balzani* is more restricted to the eastern portions of Brazil from northeast to southern regions (Fig. 84).

*Hylomyrma lopesi* and *H. margaridae* have similar shape and sculpture of mesosoma. Nevertheless, *H. lopesi* has reniform eye (vs. oval eye of *H. margaridae*), the striae on the head dorsum with smooth crests (vs. with punctuated crests), and the discontinuous dorsal margin of petiole (vs. continuous). The two species are allopatric (Fig. 89); *H. lopesi* occurs in Brazil, and *H. margaridae* in Guyana and French Guiana.

There is considerable variation among *Hylomyrma lopesi* specimens. The striae on the petiolar node dorsum in specimens from several localities in Brazil (BA, GO, MA, MT, SP, and TO) are not exclusively longitudinal, but can also be transverse. Also, in specimens from Bahia, the striae on the laterals of the mesosoma are not entirely directed to the propodeal spine. In these specimens part of the striae on the laterals of the mesosoma are directed to propodeal dorsum. Besides, the 14 intercaste specimens present a larger phenotypic plasticity, sharing morphological traits with worker and winged queens. The modifications observed in these specimens are: a) the central ocellus and the strongly convex mesosoma [(n=1), HL 0.85; HW 0.80; ML 0.52; PNW 0.60; WL 1.125; GL 0.87]; b) the central ocellus, the strongly convex mesosoma, and the presence of pre-transcutal suture [(n=5), HL (0.82–0.95); HW (0.82–0.92); ML (0.52); PNW (0.55–0.65); WL (1.15–1.30); GL (0.95–1.15)]; c) the central ocellus, the presence of promesonotal suture, the strongly convex mesosoma, the presence of pre-transcutal suture [(n=1), HL 0.85; HW 0.82; ML 0.55; PNW 0.60; WL 1.15; GL 1]; d) the three ocelli, the strongly convex mesosoma, the promesonotal junction discernible by a depression, and the presence of pre-transcutal suture [(n=3), HL (0.87–0.92); HW (0.85–0.87); ML (0.55–0.57); PNW (0.60–0.65); WL (1.22); GL (0.85)]; e) the three ocelli, the strongly convex

mesosoma, the distinguishable promesonotal junction and metanotal groove by a depression, and the presence of pre-transcutal suture [(n=2), HL (0.90–0.92); HW (0.90); ML (0.55–0.57); PNW (0.65–0.67); WL (1.22–1.25); GL (1.07–1.10)]; f) the three ocelli, the enlarged mesosoma, the presence of promesonotal and pre-transcutal sutures, and the metanotal groove discernible by a depression [(n=1), HL 0.90; HW 0.87; ML 0.55; PNW 0.57; WL 1.17; GL 1]; and g) the three ocelli, the enlarged mesosoma, the presence of promesonotal and transcutal sutures, and the metanotal groove discernible by a depression [(n=1), HL 0.87; HW 0.87; ML 0.55; PNW 0.62; WL 1.17; GL 1].

**Distribution.** This species is widely distributed in Brazil, occurring in north, central-west, northeast, and south-east regions (Fig. 89).

**Natural history.** This species occurs in the “Cerrado” (Brazilian savanna), “Caatinga” (Brazilian dry forest), and Atlantic and Amazon forests in Brazil. It is mostly collected in leaf-litter samples with Winkler extractors, which suggests that it nests in the leaf-litter, fallen logs, rotten wood, or inside natural cavities of the superficial soil layers. Specimens collected with pitfall traps and with honey or sardine baits are rare. Except for the presence of intercastes, and possibly ergatoids (a few intercastes have more queen-like traits), there is no further information available regarding the biology of *H. lopesi*.

**Additional material examined** (177 workers, 5 queens, 17 intercastes): **BRAZIL: AC[Acre]:** Rio Branco-Res. Catuaba, 10°04'S, 67°37'W, Dez.2001–Dez.2005, Oliveira M.A. (2W) [CEPLAC]; **BA[Bahia]:** Milagres, Caatinga Arbórea, área 1, S12°54.542', W39°51.279', 13.vii.2010, Ulysséa, M.A., Medina, A.M. e Campos, E.M. leg., serapilheira, Winkler, W4 (1W) [MZSP]; same except 10.i.2011, W110 (1W) [MZSP]; W113 (1W covered with gold) [MZSP]; 23.x.2010, W58 (1W) [MZSP]; área 2, S12°54.294', W39°52.083', Ulysséa, M.A., Medina, A.M. e Campos, E.M. leg., 13.vii.2010, W22 (2W) [MZSP]; Gongogi, 17 a 18.iv.1997, 14°16'27"S, 39°29'03"W, Santos, J.R.M. dos (3W 1Q) [CEPLAC]; Jussari, 15°08'26"S, 39°31'29"W, 26.v.1999, col. J.C.S. Carmo & J.R.M. Santos, 128 (5W) [CEPLAC]; A. de Olivença, mata-w, 23.iii.1998, 14.58.85S, 39.01.48W, Santos, J.R.M. dos, 637 (1Q 2W) [CEPLAC]; Maraú, 14°12'65"S, 39°03'48"W, 23.x.1998, J.C.S. Carmo & J.R.M. Santos, 637 (3W) [CEPLAC]; Una, colônia, 12.vi.1997, 15°15'42"S, 39°09'12"W, Santos, J.R.M. dos, 637 (2W) [CEPLAC]; same except A45, 24.viii.1998, 151104S, 0390056W, Santos, J.R.M. dos, 637 (3W, one covered with gold) [CEPLAC]; Res. Biológica, 13.ii.1997, col. Jardim, J., #5079 (4W) [CEPLAC]; Arataca, 23.xi.1999, 151590S, 0391601W, Santos, J.R.M., A48, 637 (3W) [CEPLAC]; Monte Pascoal, 16°52'03"S, 39°55'03"W, 18.vii.1997, Santos, J.R.M. (3W) [CEPLAC]; Ramal de Barreiras, 25.x.1999, 15°35'54"S, 39°09'38"W, Santos, J.R.M. dos 637 (2W) [CEPLAC]; Itajuipe, 18.vi.1997, 14.42.12S, 039.29.53W, Santos, J.R.M. dos, 637 (3W) [CEPLAC]; Camanan, 27.viii.1999, 15.36.04S, 039.31.16W, Santos, J.R.M. dos, (3W) [CEPLAC]; Ibicaraí, Km41, 21.xi.1998, 145375S, 0392901W, Santos, J.R.M. dos, 637 (1Q 2W) [CEPLAC]; Itabuna, Ferradas, A27, 21.ix.2000, 144933S, 392416W, Santos, J.R.M. dos, 637 (2W) [CEPLAC]; Ilhéus, Pimenteira, Mata, W-A17, 06.x.1997, 14327S, 392539W, Santos, J.R.M. dos, Carmo, J.C.S. do, 637 (2W) [CEPLAC]; Madisa, A54, 04.x.1999, 152323S, 0391151W, Santos, J.R.M. dos, 637 (1W) [CEPLAC]; Unacau, A43, 11.ii.2000, 150521S, 09°1742W, Santos, J.R.M. dos, 321 (2W) [CEPLAC]; [São José de] Buerarema, A39, mata, 28.x.2002, J.R.M. dos Santos (3W) [CEPLAC]; **CE[Ceará]:** Ubajara, Dist. Jaburuna, ±840m, 03°52'S, 40°57'W, vii.2004, Y. Quinet, W74 (2W) [MZSP]; same except W6 (1W) [MZSP]; W76 (1W) [MZSP]; W33 (1W) [MZSP]; W56 (5W) [MZSP]; W39 (1I) [MZSP]; Crateús, São Luis, 05°08'S, 40°51'W, 20-30.iv.2003, Y. Quinet, Mata seca, Pitfall traps (1W) [MZSP]; same except RPPN Serra das Almas, 5°08'S, 40°55'O, Winkler, Carrasco Preservado, 05.vi.2011, F.A. Nunes col., CRP.05/VII/2011, LUK.06 MF.62 (1I) [MZSP]; CRP, WK.10 MF.62 (3W) (MZSP67438) [MZSP]; CRP, WK.06 MF.62 (2W) [MZSP]; CRD.03/VI/2011, PFS.13 MF.62 (1W) [MZSP]; SP.28 IV-PF (1W) [MZSP]; SP.28/III (3W) [MZSP]; MSD, PFS.19 MF.62 (2W) [MZSP]; Pitfall, Carrasco, ± 700m, 27.iv.2003, Y. Quinet col., SP.28/III (1I) [MZSP]; Mata Seca Preservada, 15.iv.2012, F.A. Nunes col., MSP, WK.01 MF.62 (1I) (MZSP67442) [MZSP]; 16.iv.2012, MSP, WK.17 MF.62 (1I) [MZSP]; Mata Seca Degradada, 15.iv.2012, F.A. Nunes col., MSD, WK.16 MF.62 (1I) [MZSP]; WK.13 MF.62 (1I) [MZSP]; **DF[Distrito Federal]:** Brasília, Reserva Ecolo. IBGE, Projeto fogo, Cerrado sensu stricto, Parcada controle, pt.:132, 08.ii.2008, J. Maravalhas col. (1W) [MZSP]; E. Ecol. Águas Emendadas, 25.v.1992, A. Reis col., isca - mel, noite - solo, 30 (1W) [MZSP]; same except isca - mel, dia - solo, 111 (1W) [MZSP]; isca - sardinha, dia - solo, 85 (1W) [MZSP]; Tabatinga, F.Z. Cooperbrás, Pitfall, 2003-2004, Schmidt F.G.V. (5W) [CEPLAC]; same data (1I) (MZSP67441) [MZSP]; **GO[Goiás]:** Campo Limpo, Faz. Conceição, 16°19'51"S, 49°09'49.2"W, 20-24.i.2005, Silva R.R. col., Winkler 2 (1W) [MZSP]; Niquelândia, 18-30.v.1996, 14°17'05"S, 48°55'01"W, Silvestre, Silva & Brandão col., Winkler, R. do Peixe (1W) [MZSP]; same except Riacho Pindaíba (1W) [MZSP]; **MA[Maranhão]:** Estreito, Fazenda Itaueiras, 06°31'54.4"S, 47°22'16"W, 07-13.i.2005, Silva R.R. & Silvestre R. cols., Winkler 29 (1W) [MZSP];

João Lisboa, 05°19'46.3"S, 47°19'13.0"W, 13-22.ii.2006, Silva R.R. & Feitosa R.M. cols., Winkler 18 (2W) [MZSP]; same data (2W) [UTEP]; same except Winkler 10 (1Q) [MZSP]; 01-09.vi.2005, Silva R.R. & Feitosa R.M. cols., Winkler 28 (1W) [MZSP]; Açaílândia, Horto Faz. Pompéia, 04°52'30"S, 47°17'40"W, 12-22.ii.2006, Silva R.R. & Feitosa R.M. cols., Winkler (1W) [MZSP]; same except 13-22.ii.2006, Winkler 08 (3W) [CEPLAC]; Winkler 10 (1W) [MZSP]; Winkler, Res[íduo] (3W) [UFSC]; São Francisco do Brejão, 05°17'19"S, 47°15'01.7"W, 07-13.i.2005, Silva R.R. & Silvestre R. cols., Winkler 22 (1W) [MZSP]; **MG[Minas Gerais]**: Matias Cardoso, ii.2012, Pitfall, CJ2ITPS1-1032, Coletor L.F. Silva (1W) [UFMG]; Parque Estadual Lagoa do Cajueiro, Estágio Intermediário, CJ1ITW4, 16.ii.2012, 14°55'16.32"S, 43°55'10.12"O, L.F. Silva col. (1W) (MZHY61) [MZSP]; same except CJ2ITW2, 20.ii.2012, 14°56'9.01"S, 43°55'27.51"O, L.F. Silva col. (1W) (MZHY62) [MZSP]; Pitfall JITPS2-2526, Coletor L.F. Silva (1I) (MZSP67440) [MZSP]; Pandeiros, Efeito antropização no cerrado, APA REVISE, elev. 511m, 15°29'58.15"S, 44°45'39.94"O, 07.i.2016, Santiago et al., área 3, pitfall epigéico, Ponto 2, Repetição C, Q2 (1I) [DZUP]; same except Ponto 3, Repetição B, Quadrante 2 (1I) [DZUP]; Uberlândia, Reserva do Panga, 19°10'20.5"S, 48°23'46.5"W, 24.i.2012, T. Frizzo, J. Maravalhas & H. Vasconcelos col., T 36 15 S; **MT[Mato Grosso]**: Cotriguaçu, Faz. São Nicolau—ONF Brasil, 09°48'S, 58°16'W, col. manual, x.2011, Vicente, R.E. (1W) [MZSP]; **PA[Pará]**: Paragominas, 2°59'S, 47°21'W, i-vii.2011, baited pitfall, B324, T1, P125, R. Solar col., UFV LABECOL n°000144 (1W) [MZSP]; Primavera, Projeto BIOMAS, área D, 00°55'26"S, 47°06'27"W, 25.v.2013, Fernandes F. col., winkler D07 (1W) [MPEG]; **PB[Paraíba]**: Rio Tinto, APA Rio Mamanguape, 07.vi.2014, Ramos E.F. et al. col., 06°46'20.15"S, 34°55'12.90"W (1I) (MZSP67439) [MZSP]; **SP[São Paulo]**: Agudos, C. Gilbert, iii.1960, 3525 (1I) [MZSP]; Mirassol, Faz. Campo, Reserva Lukezi, 15.x.1971, J.L.M. Diniz, #366, 11028 (2W) [MZSP]; same except grota, 10.i.1983, J.L.M. Diniz, 2068 (1W) [DZUP]; Botucatu, 18-02-1988, Forti L.C. & Rinaldi I.M.P. col., Armadilha de solo, #12 (1W) [MZSP]; same except 18-01-1988, #28 (1W) [MZSP]; 13-07-1987, #54 (1W) [MZSP]; 09-11-1987, #15 (1W) [MZSP]; Cerrado, 17.ii.1987, L.C. Forti col., Armadilha de solo, #05 (1W) [MZSP]; Luiz Antônio, Reserva Jataí, 02/97, Silvestre R. col. (1W) [MZSP]; same except 05/97, Winkler, Cerrado (2W) [MZSP]; Reserva Ecológica Jataí, 23-25.v.1997, Cerrado, R. Silvestre & R.R. Silva col., isca sardinha I, dia solo A49 (1W) [MZSP]; same except Winkler, Cerrado (1W) [MZSP]; **TO[Tocantins]**: Palmeiras do Tocantins, 06°40'12.1"S, 47°31'48.6"W, 14-19.i.2005, Silva R.R. & Silvestre R. cols., Winkler 29 (1W) [MZSP]; same except Winkler 45 (1W) [MZSP]; Recursolândia, Mata Ciliar Rio Mateiros, 08°45'28.6"S, 47°02'20.7"W, 09-12.v.05, Silva R.R. & Dietz B.H. cols., Winkler 15 (1W) [MZSP]; Goiatins, 07°56'28.9"S, 47°09'31.3"W, 03-08.v.05, Silva R.R. & Dietz B.H., Winkler 6 (1W) [MZSP]; same except Winkler 2 (2W) [MZSP]; Mata Ciliar do Ribeirão Grande, 07°69'57"S, 47°22'42"W, 28.iv-03.v.05, Silva R.R. & Dietz B.H., Winkler 11 (3W) [MZSP]; same except Winkler 8 (2W) [UTLP]; Campos Lindo, 08°06'12.8"S, 46°50'44.9"W, 03-08.v.05, Mata Ciliar, Silva R.R. & Dietz B.H., Isca solo 38 (1W) [MZSP]; same except Winkler 18 (1W) [MZSP]; Winkler 16 (2W) [MZSP]; Palmeirante, 07°52'25.3"S, 47°57'07.4"W, 10-15.xii.2001, Albuquerque & Silva cols., Mata Ciliar/Cerradão, Transecto I, Winkler 14 (1W) [MZSP]; same except Winkler 09 (1W) [MZSP]; Winkler 04 (2W) [JTLC]; Winkler 05 (1W) [MZSP]; Isca solo 04 (1W) [MZSP]; Isca solo 34 (1W) [MZSP]; Porto Nacional, Fazenda Alto Paraíso, 05-06.x.2001, 10°43'32"S, 48°28'05"W, Albuquerque & Silva cols., Cerradão, Transecto I, Winkler 07 (6W) [MZSP]; same except Winkler 09 (1W 1I) [MZSP]; Aguiarnópolis, 06°36'49.4"S, 47°28'53.2"W, 01-09.vi.2005, Silva R.R. & Feitosa R.M. cols., Winkler 3 (1W 1Q) [MZSP]; same except Winkler 12 (1W) [MZSP]; Winkler 4 (1W) [MZSP]; Winkler 9 (2W) [MZSP]; 13-22.ii.2006, #16 (1W) [MZSP]; 1-17.i.2005, Silva R.R. & Silvestre R. cols., Winkler 9 (1W) [MZSP]; Winkler 10 (2W) [MZSP]; Winkler 5 (1W) [MZSP]; Winkler 8 (2W) [MZSP]; 14-19.i.2005, Silva R.R. & Silvestre R. cols. (1W) [MZSP]; Babaçulândia, 07°05'16.3"S, 47°49'43.1"W, 10-15.xii.2001, Albuquerque & Silva cols., Mata Ciliar/Cerradão, Transecto I, Winkler 06 (1W 1I) [MZSP]; same except Winkler 18 (1W) [UFGD]; Winkler 05 (1W) [MZSP]; Winkler 20 (1W) [MZSP]; Winkler 09 (3W) [MZSP]; Winkler 11 (1W 1I) [MZSP]; Winkler 07 (2W) [MZSP].

### *Hylomyrma macielae* Ulysséa new species

Figures 46, 47, 86 (map)

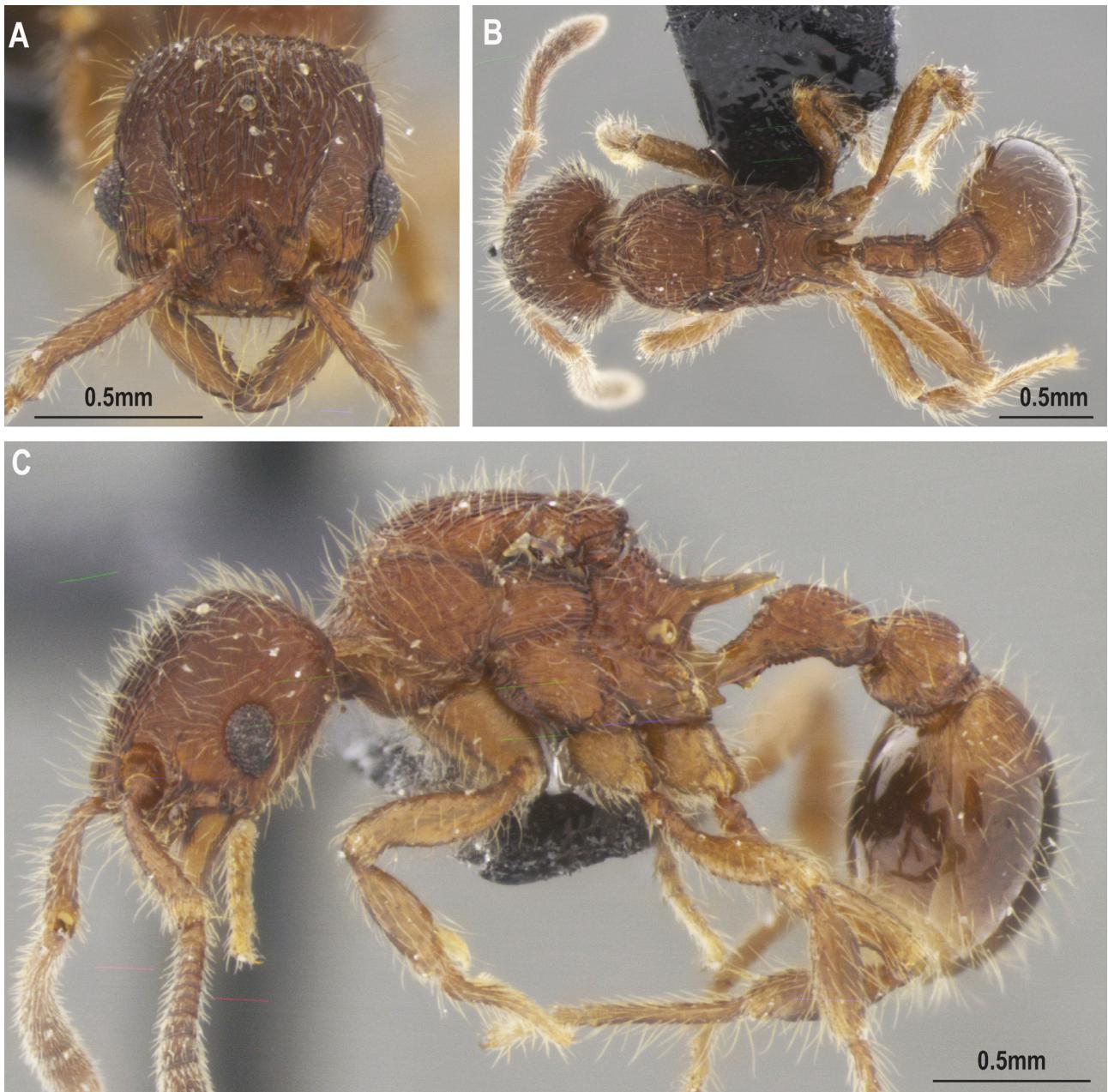
Holotype: COLOMBIA: Nariño: Orito, Territorio Kofan, 00°30'N, 77°13'W, 1000m, 25.ix.1998, E.L. González leg., winkler 3 (1W) [IHVL]. Paratypes: same data as holotype (1Q covered with gold) [IHVL]; same except winkler 6 (1W) (MZHY208) [MZSP]; 1430m, 23.ix.1998, winkler 1 (1Q) (MZSP67387) [MZSP]. ECUADOR: Pastaza: 22km SW Puyo, 15 July 1976, B-362, S. & J. Peck (1W) (MCZENT00525515) [CASC]; same data (1W) (MCZENT00525513) [DZUP];

(1W) (MCZENT00525509) [IHVL]; (1W) (MCZENT00524684 MZSP67390) [MZSP]; (7W 1Q) (MCZENT00524682, MCZENT00524683, MCZENT00525508, MCZENT00525511, MCZENT00525512, MCZENT00525514, MCZENT00525516, MCZENT00525507) [MCZC]; (1W) (MCZENT00525510) [USNM].

**Diagnosis.** Head dorsum with regular and longitudinal striae, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent, interspaces indistinguishable; mesosoma covered with irregular striae of variable thickness, assuming multiple directions, interspaces indistinguishable; metanotal groove discernible by a slight depression (LV) and altered sculpture (DV); propodeal spine long; dorsal margin of petiole discontinuous, dorsum with the same striation of mesosoma lateral; subtriangular projection on mesoventral surface of petiole; subpostpetiolar process weak, convex; profemur and protibia mostly smooth, few irregular to regular striae on basal and apical regions; short striae on tergum of first gastral segment, shorter than postpetiole length.



**FIGURE 46.** Holotype worker of *Hylomyrma macielae* (COLOMBIA: Nariño: Orito, Territorio Kofan, 00°30'N, 77°13'W, 1000m, 25.ix.1998, E.L. González leg., winker 3 [IHVL]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 47.** Paratype queen of *Hylomyrma macielae* (MZSP67387). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Description.** WORKER (n=3) (Fig. 46A–C): HL (0.88–0.91); HW (0.82–0.84); ML (0.54–0.56); SL (0.58–0.60); MOD (0.18–0.22); PNW (0.58–0.60); WL (1.10–1.14); PSL (0.28–0.34); PL (0.52–0.54); PW (0.20–0.23); PPL (0.32); PPW (0.31–0.32); GL (0.88–1); TL (4.28–4.42); CI (90.11–95.45); SI (70.73–73.17); OI (21.95–26.83). Small-sized. Subopaque integument, except for the shiny gaster. Brown body, lighter appendices. Many thin and unbranched setae, long to midsized, suberect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with regular and longitudinal striae, interspaces indistinguishable. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye oval, small-sized, larger diameter with 10 ommatidia. Head dorsum, lateral and laterodorsal regions with longitudinal, regular to irregular striae, mesial striation in part directed to posterior margin and in part anteriorly divergent and posteriorly convergent, interspaces indistinguishable. Head lateral and laterodorsal striae converging to eye margin; gena striate, irregular and semicircular striae circumscribe the torulus,

approaching eye margin, being 5–7 thicker striae, interspaces indistinguishable. Interspaces between striae on head ventral surface indistinguishable.

Mesosoma covered with irregular striae of variable thickness, interspaces indistinguishable; striation assumes multiple directions, transverse on pronotum anterior region, longitudinal on pronotum posterior region and mesonotum, semicircular on metanotal groove and propodeum dorsum. Promesonotal junction indistinct. Metanotal groove discernible by a slight depression (LV) and altered sculpture (DV). Transverse carina inconspicuous. Dorsal margin of mesosoma slightly discontinuous, convex. Propodeal lobe bidentate, acute dorsal tooth longer than blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; regular and transverse striae on C2 and C3. Profemur and protibia mostly smooth, few irregular to regular striae on basal and apical regions, transversely on profemur posterior surface, longitudinally on protibia extensor surface.

Dorsal margin of petiole discontinuous; ventral surface smooth. Convex node; regular and transverse striae on ventral surface, interspaces indistinguishable; irregular and transverse striae of variable thickness on other surfaces, interspaces indistinguishable; striae on anterior surface and on anterior region of dorsal surface continuing on lateral surface; semicircular-sinusoid striae on middle and posterior region of dorsal surface. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex, striation weakly marked.

First gastral segment striation similar to postpetiole striae; short striae on tergum, shorter than postpetiole length; sternite smooth.

QUEEN (n=3) (Fig. 47A–C): HL (0.90–0.95); HW (0.88–0.92); ML (0.58–0.62); SL (0.62–0.70); MOD (0.26–0.28); PNW (0.68–0.76); WL (1.32–1.42); PSL (0.34–0.38); PL (0.54–0.64); PW (0.25–0.28); PPL (0.34–0.40); PPW (0.38–0.40); GL (1.10–1.26); TL (4.78–5.29); CI (94.44–96.84); SI (71.59–76.09); OI (29.54–30.59). Medium to large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 13 ommatidia. Longitudinal striae on scutum, irregular to vermicular anteriorly, regular to irregular posteriorly, striae going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal, regular to irregular striae on anepisternum and katepisternum, interspaces indistinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral of mesosoma with irregular to vermicular striae directed partly to propodeal dorsum and partly to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The epithet *macielae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -ae to the middle name of a female person. The specific epithet is named after Miraildes Maciel Mota, a black Brazilian woman and footballer, popularly known as “*Formiga*” (= ant in Portuguese). *Formiga* holds many international records; she is the only player present in all female football editions in the Olympic Games (the first edition happened in 1996), and has participated in seven different FIFA Women’s World Cup.

**Comments.** This species is similar to *H. blandiens*, *H. dentiloba*, and *H. jeronimae*, sharing the adjacent striation on the mesosoma, but can be distinguished from these three species in the long propodeal spine (vs. short). Also, *H. macielae* can be distinguished from *H. blandiens* (characteristic in parentheses) in the striae on the mesosomal dorsum that assumes multiple directions (vs. longitudinal); from *H. dentiloba* in the oval eye (vs. drop-shaped), and the convex dorsal margin of mesonotum (vs. straight); and from *H. jeronimae* in the oval eye (vs. reniform), and the discontinuous dorsal margin of petiole (vs. continuous). *Hylomyrma jeronimae* and *H. dentiloba* are restricted to Central America (Figs. 84, 86), co-occurring in Panamá, whereas *H. blandiens* has a broad distribution in north-western South America, from Bolivia to French Guiana (Fig. 84), overlapping in part with the area of distribution of *H. macielae* (south Colombia and the center-north of Ecuador) (Fig. 86).

**Distribution.** This species occurs in Northern Andes, from northern Peru to southern Venezuela (Fig. 86).

**Natural history.** This species was collected at elevations between 96 and 1430 m (Letícia and Territorio Kofán, both in Colombia) with Winkler extractors or Berlese-Tüllgren funnels, which suggests that nests are located in leaf-litter, fallen logs, rotten wood, or inside natural cavities of the superficial soil layers.

**Additional material examined** (10 workers): **COLOMBIA: Amaz.[Amazonas]:** 7km NW Letícia, 20–25 Feb 1972, #230, forest litter, berlesate (6W, one covered with gold) (MZSP67388, MZSP67389) [MZSP]; same data (2W) [MCZC]. **ECUADOR: Pastaza:** 25km N of Puyo, 1000m, 13.vii.1976, B361, S. & J. Peck (1W) [MCZC]; **Pichincha:** Tinalandia, 16km SE of S. Domingo de los Colorados, 4.vi.1976, S. & J. Peck (1W) [MCZC].

## *Hylomyrma margaridae* Ulysséa new species

Figures 48, 49, 89 (map)

Holotype: GUYANA: Upper Takutu-Upper Essequibo: Acarai Mts., nr. New Romeo Camp, 1038m, 58°57.876'W, 1°20.066'N, 14.x.2006, T.R. Schultz, J. Sosa-Calvo, C.J. Marshall, R. Williams, 1° forest, leaf litter, Winkler sample, JSC061014-LS04 (1W) (USNM00688842) [USNM]. Paratypes: same data as holotype (1W) (USNM00688836 MZHY195) [MZSP]; (2W 1Q, one worker covered with gold) (USNM00688820, USNM00688844, USNM00688842) [USNM]; same except 1050m, 58°57.876'W, 1°20.048'N, JSC061014-LS03 (1W) (USNM00688740) [MCZC]. FRENCH GUIANA: [Cayenne: Saint-Élie], Nouragues Station, FT2-Transition For., 4°09'N, 52°68'O, ix.2009, Sarah Groc & al, #5635, FT2 Tr5 W29 (1Q) (MZSP67391) [MZSP]; [Saint-Laurent-du-Maroni: Maripasoula], Mitaraka Mts, Plateau, 2.233158N -54.44381W, 27.ii.2015, J. Orivel & F. Petitclerc cols., winkler 48h, C-P7-3, MI15-0079-15 (1W) (MZSP67392) [MZSP].

**Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin, interspaces between striae smooth, striae crest punctuated; mesosoma covered with regular, longitudinal, parallel and thick striae; longitudinal striae on lateral of pronotum, mesepisternum and propodeum directed to propodeal spine; dorsal margin of petiole continuous, strongly convex; spiniform projection on mesoventral surface of petiole; node rounded with transverse striae anteriorly and longitudinal striae posteriorly on dorsum; subpostpetiolar process smooth, prominent, subtriangular; profemur posterior surface and protibia extensor surface mostly smooth, with few striae on basal and apical regions; striation on tergum of first gastral segment restricted to base.

**Description.** WORKER (n=3) (Fig. 48A–C): HL (0.85–0.88); HW (0.79–0.82); ML (0.53–0.55); SL (0.58–0.59); MOD (0.20–0.21); PNW (0.58); WL (1.12–1.18); PSL (0.14–0.16); PL (0.53–0.57); PW (0.21–0.22); PPL (0.32–0.34); PPW (0.29–0.30); GL (0.86–0.98); TL (4.21–4.50); CI (92.94–94.25); SI (71.95–73.41); OI (25.31–25.61). Small-sized. Shiny integument. Brownish body, darker gaster, yellowish appendices. Few thin and unbranched setae, long to midsized, suberect to subdecumbent.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–9 striae, regular to irregular, longitudinal, converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 1 stria subdivided towards the posterior margin. Short scape, not reaching head posterior margin; apical antennomere of similar size or slightly shorter than previous 3 antennomeres together. Frontal carina straight. Eye drop-shaped, small-sized, larger diameter with 9 ommatidia. Regular and longitudinal striae on head dorsum, divergent towards posterior margin, interspaces smooth, striae with punctuated crests. Head laterodorsal sculpture converges to mandible insertion region; head lateral sculpture converges to eye margin; gena striate, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with regular and longitudinal striae, thicker than head striation, transverse on pronotum anterior region (DV), longitudinal in the other regions (DV); longitudinal striae on lateral of pronotum, mesepisternum and propodeum directed to propodeal spine. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth longer and with rounded tip; ventral tooth shorter and blunt; dorsal tooth length similar to propodeal spine length. Propodeal spine short, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur and protibia mostly smooth, few striae on basal and apical regions.

Dorsal margin of petiole continuous, strongly convex; smooth spiniform projection on mesoventral surface; ventral surface smooth; first third of dorsal surface and parts of lateral surface smooth, other regions mostly striate, transverse and longitudinal striae. Longitudinal striae on postpetiole; subpostpetiolar process well-developed, subtriangular, smooth.

Tergum first gastral segment striation similar to that of postpetiole; striae short, restricted to base, length shorter than  $\frac{1}{4}$  of postpetiole length; sternum smooth.

QUEEN (n=2) (Fig. 49A–C): HL (0.82–0.90); HW (0.80–0.86); ML (0.52–0.58); SL (0.54–0.60); MOD (0.24–0.26); PNW (0.65–0.70); WL (1.20–1.36); PSL (0.20–0.22); PL (0.58–0.63); PW (0.24–0.26); PPL (0.36–0.38); PPW (0.33–0.34); GL (1.04–1.16); TL (4.52–5.01); CI (95.55–97.56); SI (67.50–69.76); OI (30–30.23). Small to midsized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 12 ommatidia. Anepisternum, katepisternum, axilla and scutellum with the same sculpture

of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral of mesosoma with longitudinal and regular striae directed to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The epithet *margaridae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. This species is named in honor of Margarida Maria Alves (1933–1983), a Brazilian trade unionist and precursor in defending the rights of rural workers in Paraíba, northeast region of Brazil—“*Da luta eu não fujo. É melhor morrer na luta do que morrer de fome*”. Margarida was murdered for her activism on the 12 of August. Since the year 2000, thousands of women from all of the regions of the country gather every two years in a march for the equal rights for rural women that bears her name—“*Marcha das Margaridas*”.

**Comments.** This species can be misidentified mainly as *H. peetersi* and *H. villemantae*. The three species are allopatric; *H. villemantae* occurs in one locality in northeastern Brazil (BA) (Fig. 86), *H. margaridae* occurs in Guyana and French Guiana (Fig. 89), and *H. peetersi* in areas near the Guyana - Venezuela border (Fig. 89).



**FIGURE 48.** Holotype worker of *Hylomyrma margaridae* (USNMENT00688842). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 49.** Paratype queen of *Hylomyrma margaridae* (USNM 00688833). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

*Hylomyrma margaridae* can be distinguished from *H. peetersi* (characteristic in parentheses) in the striae on the laterals of mesosoma that are directed transversely towards the propodeal spine (vs. directed to the propodeal dorsum), the mesoventral surface of petiole armed with a conspicuous spine (vs. a subtriangular projection), the petiolar dorsum covered with both transverse and longitudinal striae (vs. entirely covered with transverse striae), and the prominent subpostpetiolar process (vs. weak). *Hylomyrma margaridae* can be distinguished from *H. villemantae* in the striae on the head dorsum with punctuated crests (vs. with smooth crests), the mesosoma longitudinally striate (vs. with few elliptical and concentric striae), the shorter propodeal spine (vs. longer), the armed mesoventral surface of petiole (vs. unarmed), and the smooth dorsum of postpetiole and gaster (vs. striate).

*Hylomyrma margaridae* and *H. lopesi* have similar shape and sculpture of the mesosoma. Nevertheless, *H. margaridae* has a reniform eye (vs. oval eye of *H. lopesi*), the striae on the head dorsum with punctuated crests (vs. with smooth crests), and the continuous dorsal margin of petiole (vs. discontinuous). The two species are allopatric (Fig. 89); *H. margaridae* occurs in Guyana and French Guiana, and *H. lopesi* in Brazil.

Regarding morphological variation, the queen collected in French Guiana has the petiolar node covered with concentric striae that circumscribe its anterodorsal, lateral and posterior regions.

**Distribution.** This species is known from the southern part of the Upper Takutu-Upper Essequibo region in Guyana, and from the Réserve Naturelle Nationale des Nouragues, in the central region of French Guiana (Fig. 89).

**Natural history.** This species has been recorded with winkle extractors in forested areas at high elevations ranging from 1038 to 1050 m in Guyana and at lower elevations in French Guiana (Nouragues Station is located at about 124 m and Mitaraka Mountain at 554 m).

### ***Hylomyrma mariae* Ulysséa new species**

Figures 50, 88 (map)

Holotype: COLOMBIA: [Magdalena]: Cincinnati, Feby 1924, W.M. Mann (1W) [USNM]. Paratypes: same data as holotype (3W) [CASC, DZUP, IHVL]; (2W, one covered with gold) (MZSP67393, MZHY205) [MZSP]; (4W) [USNM]; San Pedro de La Sierra—Pico Yerbabuena, C. Kugler col., 2200m, berlesate rot. wood & humus, 18.feb.77, vial 13 (1W) [MCZC]; same except 1730m, berlesate humus & lf. Litter, 18.feb.77 (1Q) [MCZC].

**Diagnosis.** Irregular and longitudinal striae on head dorsum diverge towards posterior margin; rugose striae on mesosoma and petiole; promesonotal junction and metanotal groove distinguishable by a slight depression (LV) and altered sculpture (DV); dorsal margin of petiole discontinuous; subtriangular projection on mesoventral surface of petiole; node ventral surface striate transversely; profemur posterior surface entirely striate; striae transverse and well-marked; protibia extensor surface entirely striate, striae weakly marked; long striae on first gastral tergite.

**Description.** WORKER (n=6) (Fig. 50A–C): HL (0.99–1.04); HW (0.92–0.96); ML (0.60–0.65); SL (0.65–0.68); MOD (0.20–0.22); PNW (0.64–0.68); WL (1.26–1.32); PSL (0.32–0.37); PL (0.62–0.64); PW (0.25–0.27); PPL (0.30–0.32); PPW (0.34–0.36); GL (1.04–1.30); TL (4.85–5.23); CI (91.34–94.11); SI (69.47–70.83); OI (20.83–23.91). Midsized. Shiny integument. Light brown body, darker gaster, yellowish leg. Thin and unbranched setae, long to midsized, suberect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus slightly convex medially, with a pair of medium teeth laterally; median area of clypeus with 8–10 irregular and longitudinal striae converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 2–3 striae. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, small-sized, larger diameter with 10 ommatidia. Irregular and longitudinal striae on head dorsum, divergent towards posterior margin, interspaces between thicker striae filled with thinner striae. Head lateral and laterodorsal regions with irregular striae converging to eye margin; rugose striae on anterior part of laterodorsal region; gena striate, 3–4 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with rugose striae of uniform thickness, mostly transverse on pronotum anterior region (DV), longitudinal in other regions (DV), interspaces between rugose striae smooth. Promesonotal junction and metanotal groove distinguishable by a slight depression (LV) and altered sculpture (DV). Transverse carina inconspicuous. Dorsal margin of mesosoma slightly discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and sharper than shorter and blunt ventral tooth; dorsal tooth length around  $\frac{1}{2}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur ventral surface smooth, transverse striae well-marked on posterior surface; apical region of anterior and dorsal surfaces with irregular striae. Protibia extensor surface entirely striate.

Dorsal margin of petiole discontinuous. Subtriangular projection on mesoventral surface of petiole. Convex node; transverse striae on ventral and anterior surfaces weakly marked; rugose striae on lateral and dorsal surfaces. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex.

First gastral segment striation similar to postpetiole striae; longitudinal striae on tergum slightly longer than postpetiole length; sternite entirely striate on basal region.

QUEEN (n=1): HL 1.06; HW 1.01; ML 0.66; SL 0.70; MOD 0.24; PNW 0.80; WL 1.50; PSL 0.42; PL 0.70; PW 0.30; PPL 0.36; PPW 0.42; GL 1.26; TL 5.54; CI 95.28; SI 69.30; OI 23.76. Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 13 ommatidia. Longitudinal and irregular striae on scutum going from an anterior central point towards transcutal suture. Longitudinal and regular to irregular striae on anepisternum and katepisternum. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse and regular striae on propodeum (DV). Lateral of mesosoma with irregular to vermicular striae directed partly to propodeal dorsum and partly to propodeal spine. Wings unknown.

MALE Unknown.



**FIGURE 50.** Holotype worker of *Hylomyrma mariae* (COLOMBIA: Cincinnati, Feby 1924, W.M. Mann [USNM]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

**Etymology.** The epithet *mariae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. The specific epithet is named after Maria do Espírito Santo da Silva (1956–2011), a Brazilian conservationist and environmentalist who campaigned against logging in the Amazon rainforest. Maria and her husband, José Cláudio Ribeiro da Silva (1957–2011), extracted sustainable rainforest products, such as oils and nuts. Both were murdered for their activism in name of the Brazilian Amazon conservation.

**Comments.** *Hylomyrma mariae* is similar to *H. adelae* and *H. dandarae*. *Hylomyrma mariae* differs from *H. adelae* (characteristics in parentheses) in the irregular divergent-longitudinal striae on the head dorsum (vs. rugose striae), the distinct metanotal groove (vs. indistinct), the longer propodeal spine (vs. shorter), the profemur posterior surface with striae weakly marked (vs. well-marked), and the dorsum of petiole with rugose striae (vs. irregular and transverse striae). The two species are allopatric; *Hylomyrma mariae* occurs in northern Colombia (Fig. 88), and *H. adelae* in Bolivia (Fig. 83). *Hylomyrma mariae* differs from *H. dandarae* in the drop-shaped eye (vs. oval), the shorter petiolar node (vs. longer), and the long striae on tergum of the first gastral segment that extends up to its first third (vs. short striae). The two species occur in Colombia (Figs. 83, 88).

**Distribution.** *Hylomyrma mariae* is known from northern Colombia (Fig. 88).

**Natural history.** This species is only known from its type locality, and inhabits areas at elevations between 1340 and 2200 m. Most specimens were collected from rotten wood, humus, and leaf-litter submitted to Berlese-Tüllgren funnels.

**Additional material examined** (19 workers): **COLOMBIA:** [Magdalena]: Cincinnati [pueblo, 11°09'N 74°08'W], Feby 1924, W.M. Mann (3W, two without head, one without postpetiole and gaster) [USNM]; Cuchilla S.[San] Lorenzo, vic. El Campano, 1340m, rainf., C. Kugler & W.L. Brown cols. (15W) [MCZC]; El Campano, 1740m, 16.june.1976, Brown & Kugler cols., berlesate (1W) [MCZC].

### *Hylomyrma marielleae* Ulysséa new species

Figures 51, 52, 80C, 85 (map)

Holotype: BRAZIL: PA[Pará]: Primavera, PBA-Projeto Primavera, 1°02'48"S, 47°9'25"W, 16–26.xi.2013, M. Souza col., Área/Winkler A/01 (1W) [MZSP67394] [MZSP]. Paratypes: AC[Acre]: Mâncio Lima, P.N. da Serra do Divisor, 245m, 7°26'58.81"S, 73°39'37.83"W, 15–18.xi.2016, R.M. Feitosa, T.S. Silva & A.C. Ferreira cols. (1W) [DZUP]; TO[Tocantins]: Araguacema, Senhor do Bonfim, 08°40'20"S, 49°25'53"W, 16–30.xi.2005, Semidecidua, Silva R.R. & Feitosa R.M., Winkler (1Q) [MZSP67395] [MZSP]; same except Winkler 7 (1W) [MZSP67396] [MZSP]; Winkler 6 (1W) [MZSP67397] [MZSP]; Babaçulândia, 07°02'19"S, 47°52'03.4"W, 01–09.vi.2005, Silva R.R. & Feitosa R.M., Winkler 13 (1W) [MZSP67398] [MZSP]; same except Winkler 16 (1W covered with gold) [MZSP67399] [MZSP]; Winkler 12 (1Q) [MZSP67400] [MZSP]; Winkler 4 (1W) [USNM]; RO[Rondônia]: Porto Velho, Área Abunã, A9P4, 09°38'03.3"S, 65°26'23.9"W, 17–27.vii.2013, Mazão G.R. & Probst R.S. cols. (2W) [DZUP]; same except Área Mutum, M7P2, 09°35'41.6"S, 65°03'54.2"W, 03.iii.2015, Winkler 1 (1W) [MZHY106] [MZSP]; MT[Mato Grosso]: Diamantino, Faz. Junqueira Vilela, 11km NE casa, 17–18.july.1973, W.L. Brown col. (1W) [MCZC].

**Diagnosis.** Regular and longitudinal striae on head dorsum, parallel towards posterior margin; long scape; vermicular striae on mesosoma; dorsal margin of petiole discontinuous; ventral surface entirely striate; transverse striae; postpetiole covered with thick, regular and longitudinal striae, slightly anastomosed; subpostpetiolar process sculptured on laterobasal region, midbasal region smooth; long striae on tergum of first gastral segment; body with many thick and unbranched setae.

**Description.** WORKER (n=6) (Fig. 51A–C): HL (0.90–0.96); HW (0.80–0.88); ML (0.60–0.64); SL (0.75–0.86); MOD (0.24–0.27); PNW (0.60–0.65); WL (1.20–1.30); PSL (0.31–0.34); PL (0.52–0.54); PW (0.20–0.22); PPL (0.30–0.32); PPW (0.29–0.32); GL (1.06–1.20); TL (4.58–4.93); CI (88.89–92.63); SI (88.37–100); OI (27.90–30.68). Small to midsized. Shiny integument. Bicolored body, brownish, lighter head and gaster, yellowish appendices. Many thick and unbranched setae (Fig. 80C), long to midsized, erect to decumbent.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–10 striae, regular and longitudinal, converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 1 sagittal stria. Long scape, surpassing head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 11 ommatidia. Regular and longitudinal striae on head dorsum, parallel towards posterior margin, interspaces between thicker striae filled with thinner striae; anastomosed striae on posterior region. Sculpture on head lateral and laterodorsal regions converge to eye margin; longitudinal striae predominate on laterodorsal region; anastomosed striae predominate on lateral and lateroventral regions; gena striate, 6–9 regular and semicircular striae circumscribe the torulus, almost reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with vermicular striae of uniform thickness, interspaces smooth. Promesonotal junction distinguishable by a slight depression (LV); metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and sharper than the shorter and blunt ventral tooth; dorsal tooth shorter than  $\frac{1}{3}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur with transverse to inclined striae weakly marked. Protibia smooth.

Dorsal margin of petiole discontinuous; transverse striae on its entire ventral surface. Node with regular and transverse striae on anterior surface, striation on anterior surface continuing transversely on lateral surface to ventral surface, striae weakly marked; vermicular striae on dorsal surface. Postpetiole covered with thicker, regular and longitudinal striae, slightly anastomosed; subpostpetiolar process weak, straight, with the same sculpture of laterobasal region of postpetiole, sculpture weakly marked, midbasal region smooth.

First gastral segment striation similar to postpetiole striae; longitudinal striae on tergum  $\frac{1}{3}$  longer than postpetiole length; sternite striation weakly marked, restricted to laterobasal region.



**FIGURE 51.** Holotype worker of *Hylomyrma marielleae* (MZSP67394). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 52.** Paratype queen of *Hylomyrma marielleae* (MZSP67400). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

QUEEN (n=3) (Fig. 52A–C): HL (0.94–1); HW (0.85–0.88); ML (0.62–0.64); SL (0.78–0.84); MOD (0.30); PNW (0.72–0.74); WL (1.42–1.48); PSL (0.34–0.36); PL (0.62–0.64); PW (0.23–0.24); PPL (0.37–0.38); PPW (0.33–0.35); GL (1.30–1.44); TL (5.29–5.52); CI (88–91.66); SI (88.63–95.45); OI (34.09–35.29). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 15–16 ommatidia. Striae on scutum anastomosed anteriorly and irregular posteriorly, going from an anterior central point towards transcutal suture. Longitudinal and regular striae on anepisternum, longitudinal and irregular to vermicular striae on katepisternum, interspaces distinguishable in both. Axilla and scutellum with the same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral of mesosoma with irregular to vermicular striae directed in part to propodeal dorsum and in part to propodeal spine. Wings unknown.

MALE Unknown.

**Etymology.** The epithet *marielleae* is a Latin noun in the genitive case created by adding the singular Latin

genitive case suffix -ae to the first name of a female person. This species is named in honor of Marielle Franco (1979–2018), born Marielle Francisco da Silva, a black Brazilian woman, politician, feminist, and human rights activist, whose assassination, motivated by her positions and actions against all forms of discrimination, happened during her mandate as a representative in Rio de Janeiro local Assembly.

**Comments.** *Hylomyrma marielleae* is similar to *H. longiscapa* regarding the body size and the sculpture pattern. However, *H. marielleae* can be easily distinguished from *H. longiscapa* (characteristic in parentheses) in the thick and dark setae (vs. thin and light), and the transverse striae on the ventral surface of petiole weakly marked (vs. well-marked). Both species have broad distribution in the center-north of South America, however *H. longiscapa* occurs in many localities in eastern portions of Brazil (from northeast to southeast regions) (Fig. 83) where *H. marielleae* does not occur (Fig. 85). One queen collected in French Guiana [USNMENT00536047] has lighter setae when compared to the other specimens evaluated here.

**Distribution.** *Hylomyrma marielleae* is known from Brazil, Bolivia, Ecuador, French Guiana, and Peru (Fig. 85).

**Natural history.** This species inhabits sites at elevations between 120 and 590 m in tropical rainforest, semi-deciduous forest, bamboo forests, crops, and pastures. There is no further information available regarding the *H. marielleae* biology, besides nesting in the leaf-litter or inside natural cavities of the superficial soil layers, given that specimens were collected with winkler extractors.

**Additional material examined** (31 workers, 3 queens): **BOLIVIA: Cochabamba:** Villa Tunari, 67.5k E Valle Sajta, 6.ii.99, R. Anderson, #18525, 17°06'19"S, 64°46'57"W, Lowland rain forest, litter, #18525 (3W) [UTEP, CASC, MZSP]. **ECUADOR: [Sucumbíos]:** Cuyabeno, 12/10-05/11/94, J.P. Caldwell, #10349 (1W) [CEPLAC]; **Napo:** Limoncocha, 250m, 18.vi.1976, B-348, S. & J. Peck (6W 1Q) [MCZC]; same except 25.vi.1976, B-355 (2W) [MCZC]. **FRENCH GUIANA: [Cayenne]:** Nouragues Field Station, H Trail, 153m, 52°40.834'W, 4°5.196'N, 1.viii.2005, T.R. Schultz, J.S. LaPolla, D. Price, 1° forest, litter sample, Winkler sample, TRS050801-03-LS07 (1W) [USNMENT00536053] [USNM]; same data (2Q) [USNMENT00536047, USNMENT00536048] [USNM]; Nouragues, Fourmis de litière, 4°04'58"N, 52°40'28"O, 120-160m, 29.iii.2006, Jérôme Orivel (+ autres), FL-WTr25 (1W) [MZSP]. **PERU: Cusco:** Estación Biológica Villa Carmen, 590m, -12.902437° -71.407672° ±300m, bamboo forest, 2° vegetation, 5-15.viii.2013, Ant Course cols. (2W) [DZUP]; same except w03 (3W) (MZHY68, MZHY103) [MZSP]; successional vegetation, crops and pasture (2W) [DZUP]; 525m, -12.888005° -71.401526° ±300m, riparian successional vegetation, 8.viii.2013, Lattke 3385 (6W) [MZSP]; **Madre de Dios:** Los Amigos Field Station, Trail 3, Huangana, 277m, 70°6'3.1W, 12°34'8.4S, 9.x.2004, T.R. Schultz, C. Marshall, J. Sosa-Calvo, 1° forest, litter sample, =JSC041009-02, TRS041009-01-LS02 (1W) [USNM]; same except Trail 6, =JSC041006-12, TRS041006-01-LS12 (1W) [USNM]; 180m, Sachavacayoc Center, 34.39k SW Puerto Maldonado, 21.vii.2012, W. & E. Mackay, #24994, 12°51'10.9"S, 69°22'2.5"W, litter extraction, Tropical rain forest, seasonally flooded reddishbrn clay (2W) [MZSP, IHVL]; same except AW10S (1W) [UNMSM]; Pasco: nr. Pozuzo, steep 1° for. above farms, 1000m, 4-6.vi.81, berl. lf. lit., C. Kugler & R.R. Lambert cols. (1W) [MCZC].

### *Hylomyrma mitiae* Ulysséa new species

Figures 53, 54, 80D, 81H, 87 (map)

Holotype: GUYANE FRANÇAISE: [Saint-Laurent-du-Maroni: Maripasoula], Mitaraka Mts, Pente, 2.238226N -54.45203, 04.iii.2015, J. Orivel & F. Petitclerc cols., winkle 48h, A-P2-8, MI15-0380-25 (1W) (MZSP67401) [MZSP]. Paratypes: same data as holotype (3W) [CASC, DZUP, IHVL]; (7W) (MZHY223) [MZSP]; same except Plateau, 2.243615N -54.45882, 03.iii.2015, J. Orivel & F. Petitclerc cols., winkle 48h, A-P1-12, MI15-0344-62 (1W 2Q, one worker and one queen covered with gold) (MZSP67403, MZSP67402, MZSP67404) [MZSP]; (2W) [MCZC, USNM]; Maripasoula, vii.1999, S. Durou (1W) [CEPLAC]; [Cayenne]: Nouragues Natural Reserve Station, 102km SW of Cayenne, lat 4.08799, lon -52.67978, 145m, 21.viii-1.ix.2018, Rainforest, Ant Course 2018 (2W) (MZHY224) [MZSP].

**Diagnosis.** Vermicular to vermiculated-areolated striae on head dorsum and mesosoma; dorsal margin of petiole continuous, ventral surface smooth; longitudinal and anastomosed striae on postpetiole and tergum of first gastral segment; subpostpetiolar process prominent, subtriangular; profemur posterior surface and protibia extensor surface entirely striate; striae on tergum of first gastral segment shorter than postpetiole length; 2 short branches of equal size diverging from the main axis.

**Description.** WORKER (n=3) (Fig. 53A–C): HL (0.95–1.06); HW (0.98–1.01); ML (0.67–0.75); SL (0.75–0.83); MOD (0.27–0.29); PNW (0.73–0.76); WL (1.41–1.52); PSL (0.32–0.356); PL (0.69–0.72); PW (0.27–0.30); PPL (0.30–0.32); PPW (0.33–0.36); GL (1.13–1.21); TL (5.27–5.52); CI (94.11–106.45); SI (74.24–81.81); OI (27.27–28.78). Large-sized. Shiny integument. Dark brown body, lighter appendices. Thin and branched setae, long to midsized, erect to subdecumbent; 2 short branches of equal size diverging from the main axis (Fig. 80D).



**FIGURE 53.** Holotype worker of *Hylomyrma mitiae* (MZSP67401). A) frontal view; B) dorsal view; C) lateral view. Photos by Gabriel Biffi.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus concave medially, with a pair of medium teeth laterally; median area of clypeus with irregular and longitudinal striae converging to a point on the anterior margin, interspaces indistinguishable. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 12 ommatidia. Head dorsum with vermicular to vermiculated-areolated striae, divergent towards posterior margin, interspaces smooth. Striae on head lateral and laterodorsal regions converge to eye margin;

very thin striae (microsculpture) between vermicular to vermiculated-areolated striae (macrosculpture), interspaces between microesculpture indistinguishable; gena striate, with the same striation of head lateral, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 54.** Paratype queen of *Hylomyrma mitiae* (MZSP67402). A) frontal view; B) dorsal view; C) lateral view. Photos by Gabriel Biffi.

Thick, vermicular to vermiculated-areolated striae on mesosoma, interspaces between thick striae on mesosoma dorsum smooth, but filled with thinner striae on mesosoma lateral. Promesonotal junction indistinct. Metanotal groove discernible by a slight depression. Transverse carina well-marked. Dorsal margin of mesosoma discontinuous, slightly convex. Propodeal lobe bidentate, dorsal tooth slightly longer and more acute than the shorter and blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Thin and transverse striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Irregular to regular transverse striae on profemur dorsal and posterior surfaces; anterior and ventral surfaces smooth. Protibia extensor surface entirely striate.

Dorsal margin of petiole continuous, convex; ventral surface smooth; first third of dorsal surface smooth; ir-

regular and transverse striae on second third of dorsal surface (aligned to petiolar spiracle) continuing on lateral surface; vermiculated-areolated striae on lateral and last third of dorsal surface. Longitudinal, regular to irregular striae on postpetiole, few anastomosed; subpostpetiolar process striae restricted to lateral region; subpostpetiolar process prominent, subtriangular.

First gastral segment striation similar to postpetiole striae; short striae on tergum, shorter than postpetiole length; sternite striation weakly marked, covering the laterobasal region.

QUEEN (n=2) (Fig. 54A–C): HL (1.04); HW (1.06); ML (0.75–0.76); SL (0.81–0.86); MOD (0.30); PNW (0.89–0.90); WL (1.67–1.69); PSL (0.36); PL (0.73–0.76); PW (0.30–0.32); PPL (0.33–0.36); PPW (0.36–0.40); GL (1.40–1.43); TL (5.96–6.06); CI (95.74–100.97); SI (101.47); OI (28.98). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 16–17 ommatidia. Longitudinal, irregular to vermicular striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal and irregular striae on anepisternum and katepisternum, interspaces distinguishable. Axilla and scutellum with the same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse and regular striae on propodeum (DV). Thick striae (macrosculpture) on mesosoma lateral, irregular to vermiculated-areolated, directed to propodeal spine, interspaces between thicker striae filled with thinner striae (microsculpture). Wings as in Fig. 81H.

MALE Unknown.

**Etymology.** The epithet *mitiae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. This species is named in honor of M.A. Ulysséa's beloved friend Mítia Heusi Silveira (1984–2010), who had her life interrupted by femicide. As an undergraduate student, she developed projects with Fungi and Coleoptera. After university, she worked at FUNAI, a Brazilian governmental agency for the protection of indigenous interests and culture.

**Comments.** *Hylomyrma mitiae* is similar to *H. virginiae* and *H. sagax*. All three are allopatric, but nevertheless occur in northwestern South America. *Hylomyrma mitiae* has been recorded only in French Guiana (Fig. 87), *H. sagax* is restricted to southeast Colombia (Fig. 83), whereas *H. virginiae* has been recorded in Ecuador (both sides of The Andes) and in western Colombia (Fig. 89). *Hylomyrma mitiae* can be distinguished from *H. virginiae* (characteristic in parentheses) by the comparatively larger body, TL 5.27–5.52 mm, WL 1.41–1.52 mm (vs. smaller, TL 4.94–5.20 mm, WL 1.24–1.40 mm), the gena and laterodorsal region of head are covered with very thin striae between the vermicular to vermiculated-areolated striae (vs. very thin striae superimposed on vermicular to vermiculated-areolated striae), the metanotal groove distinguished by a slight depression (vs. indistinct), the continuous dorsal margin of petiole (vs. discontinuous), and the very prominent and subtriangular subpostpetiolar process (vs. weak and slightly convex). *Hylomyrma mitiae* is distinguished from *H. sagax* by the pair of medium sized teeth laterally at the clypeus anterior margin (vs. large teeth), the presence of smooth interspaces between the vermicular striae only on the mesosomal dorsum (vs. on the entire mesosoma), and the subtriangular subpostpetiolar process (vs. convex).

**Distribution.** This species is only known from French Guiana (Fig. 87).

**Natural history.** Most specimens were found in leaf-litter samples, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

### *Hylomyrma montana* Pierce, Branstetter & Longino, 2017

Figures 55, 56, 83 (map)

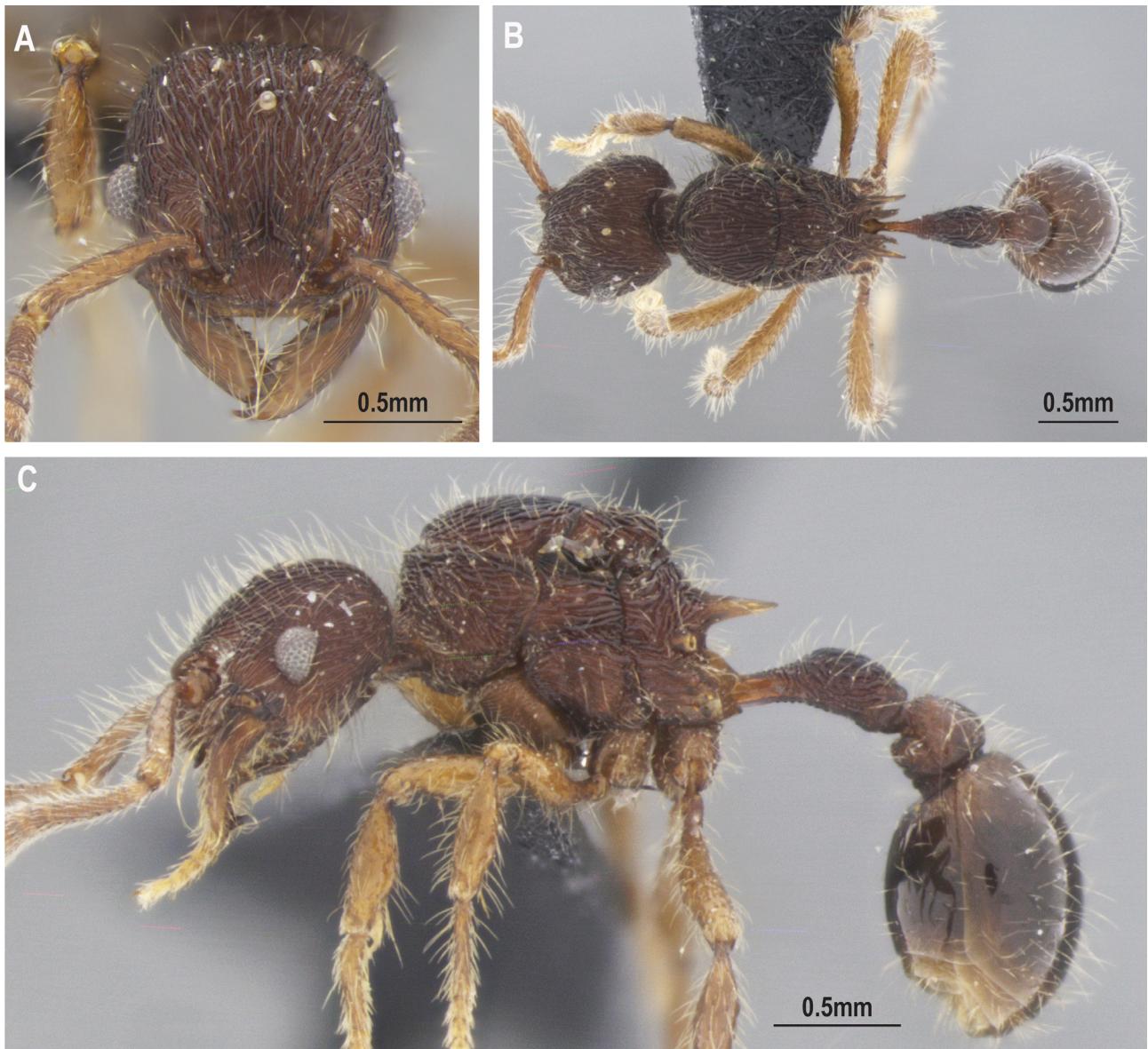
*Hylomyrma montana* Pierce, Branstetter & Longino, 2017: 138 (W). Holotype: COSTA RICA: Limón: Cerro Platano, 9.86732–83.24131 ± 20 m, 1130 m [a.s.l.], 18 June 2015, [Project] ADMAC [collection code] #Wm-E-03-1-01, cloud forest, ex sifted leaf litter (1W) (CASENT0637306) [CASCI] [examined by image]. Paratypes: same data as holotype (1W) (CASENT0638686) [MCZC] [not examined]; (1W) (CASENT0638689) [UCD] [not examined]; (1W) (CASENT0638690) [UCR] [not examined]; (1W) (CASENT0638691) [USNM] [not examined]; (7W) (CASENT0638721, CASENT0638702, CASENT0638694, CASENT0638692, CASENT0638699, CASENT0638696, CASENT0638695) [JTLC] [not examined]; (1W) (CASENT0638719 MZSP67405) [MZSP] [examined].

Worker (Fig. 55A–C) **Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin, interspaces between thicker striae filled with thinner striae; regular and irregular striae on mesosoma assuming multiple directions, interspaces smooth; dorsal tooth of propodeal lobe acute, ventral tooth blunt; dorsal margin of

mesosoma slightly discontinuous, somewhat straight (mesosoma slightly flattened dorsally), promesonotal junction and metanotal groove discernible by a slight depression (LV) and altered sculpture (DV); propodeal spine long; dorsal margin of petiole continuous, convex; ventral surface with transverse striae from petiole spiracle to posterior end of petiole; irregular, longitudinal and anastomosed striae node dorsum; postpetiole smooth; subpostpetiolar process predominantly smooth, weak, convex; profemur posterior surface and protibia extensor surface smooth; striation on tergum of first gastral segment restricted to base, very short striae.



**FIGURE 55.** Holotype worker of *Hylomyrma montana* (CASENT0637306). A) frontal view; B) dorsal view; C) lateral view. Photos by Michele Esposito, available from [www.antweb.org](http://www.antweb.org).



**FIGURE 56.** Queen of *Hylomyrma montana* (MZSP67406). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

QUEEN (first description) (n=3) (Fig. 56A–C): HL (1–1.02); HW (0.96–0.97); ML (0.64–0.68); SL (0.72–0.74); MOD (0.24–0.26); PNW (0.78–0.80); WL (1.48–1.51); PSL (0.31–0.34); PL (0.71–0.74); PW (0.28–0.30); PPL (0.36–0.38); PPW (0.42); GL (1.30–1.36); TL (5.49–5.62); CI (95.10–97); SI (74.22–77.08); OI (24.74–26.80). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 12–13 ommatidia. Longitudinal, regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal and mostly irregular striae on anepisternum and katepisternum, interspaces distinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Irregular striae on mesosoma lateral directed in part to propodeal dorsum and in part to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The specific epithet is in reference to the montane distribution of this species.

**Comments.** This species is easily distinguished from almost all of its congeners, but it is very similar to *H. lispactorae* regarding the shape of mesosoma, and the sculpture and shape of the procoxa, petiole, postpetiole, and gaster. The two species are sympatric, co-occurring in two Ecuadorian localities: Centro Científico Río Palenque,

and 4 km E of Santo Domingo de los Colorados (Figs. 83, 84). *Hylomyrma montana* can be distinguished from *H. lispectorae* (characteristic in parentheses) by the dorsum of head and mesosoma with irregular striae of uniform thickness with interspaces distinguishable (vs. vermicular striae of variable thickness with interspaces indistinguishable), and the somewhat straight dorsal margin of mesosoma (vs. notably convex).

The morphological variation displayed by *H. montana* is associated with the presence of intercastes. Three specimens have an inconspicuous central ocellus, and a more pronounced depression on the metanotal groove. Two specimens (#17842, #17840) from Chiriquí-Bocas del Toro, Panama, have more queen-like traits, as larger bodies [HL (1); HW (0.94–0.98); ML (0.58–0.62); SL (0.68–0.70); MOD (0.22–0.23); PNW (0.25–0.26); WL (1.32–1.34); PSL (0.30–0.31); PL (0.64–0.65); PW (0.25–0.26); PPL (0.36); PPW (0.35–0.38); GL (1.18–1.30); TL (5.09–5.26)], the presence of three ocelli, the well-marked promesonotal suture, the differentiated mesonotum (scutum, transcutal suture, prescutellum, and scutellum) and metanotum.

**Distribution.** Costa Rica, Ecuador, and Panama (Fig. 83).

**Natural history.** This species inhabits wet forest sites at elevations between 29 and 1800 m. Specimens are frequently found in leaf-litter samples, which suggests that nests are located in leaf-litter, fallen logs, rotten wood, or inside natural cavities of the superficial soil layers. Except for the presence of intercastes, there is no further information available regarding the biology of *H. montana*.

**Additional material examined** (40 workers, 15 queens, 5 intercastes): **COSTA RICA: Heredia:** 16km SSE La Virgem, 10.26877 -84.08531 ± 200m, 1110m, 1.iv.2001, ALAS #11/WF/01/all montane wet forest, ex sifted leaf litter (2I) [MZSP]. **ECUADOR: Cotopaxi:** Otonga, 00°25'S, 79°00'W, 2AUG1977, L. Tapia & P. Ponce, ex monte, B5, QCAZ I 26128 (1Q) [UTLP]; same except MN008I, LL4-P2WI (1Q) [UTLP]; **[Los Ríos]:** Rio Palenque, Univ. Miami Res. Sta., 29July.1978, G.J. Umphrey (1W) (MCZENT00525538) [MCZC]; Agosto/Septiembre, 1977, 55235, Bosque primario, cuad.cerr, QCAZ I 114015 (1Q) [UTLP]; **Pichincha:** Centr. Cient. R. Palenque, 4.i.1981, Sonia Sandoval col., Bosque primario cerrado, 196 (1Q) [IHVL]; same except 28.ii.1981, 279 (1Q) [IHVL]; 4km E Santo Domingo de los Colorados, 8.vii.1976, S. & J. Peck (2Q) (MCZENT00524645, MCZENT00524644) [MCZC]; 4km E Santo Domingo de los Colorados, 520m, 22 June 1975, rainfor, B-304, S. & J. Peck (2W) (MCZENT00524657, MCZENT00524665) [MCZC]; same data (1W) (MCZENT00524664) [MZSP]; 20-30km ENE Allurquin on Chiriboga Rd., 1400-1800m, moss for., B301, 1975, S. & J. Peck (1W 1Q) (MCZENT00524672, MCZENT00524671) [MCZC]; Otongachi, 850m, 0°18'49"S, 78°57'15"W, 04SEP2009, G. Ramón, KT-601, LL8W14 (2W) [UTLP]; same except KT-1668, LL8W7 (2W) [UTLP]; KT-691, LL8W1 (1W) (MZHY213) [MZSP]; KT-691, LL8W1 (1W) [IHVL]; 04-AUG-2008, D. Donoso, KT-1270, LL6-W2 (2W 1Q) [MZSP]; 03AUG2011, G. Ramón, VD-604, LL12-PF18 (1Q) [MZSP]; 06AUG2009, G. Ramón, KT-1055, GR-018 (1Q) [UTLP]; Tinalandia, 16km SE S. Domingo de los Colorados, 5.vi.1976, S. & J. Peck (5W) (MCZENT00524687, MZCENT00525525, MZCENT00524685, MZCENT00525526, MZCENT00524686) [MCZC]; same data (1W) (MZCENT00525527) [MZSP]; same except 4.vi.1976 (1W) (MCZENT00525483) [MCZC]; 680m, B-300, (1W 1Q) (MIZA0021697, MIZA0021698) [MIZA]; 680m (1Q) (MIZA0021700) [MIZA]; Río Toachi, 900m, 0.3304033°S, 78.9413833W, 05.Sep.2003, D. Donoso, KT-786, N.O W LL-1, 19/26 (2W, one covered with gold) (MZSP67433) [MZSP]; same except LL1P11W48h, xc275, QCAZ I 59348 (1W 1Q) [MZSP]. **PANAMA: Chiriquí-Bocas del Toro:** Cont. Div., 9.vi.95, R. Anderson, #17845 (2W) MZSP; same data (1W) [UTEP]; (2W) [DZUP]; same except #17842 (8W 1I) [MZSP]; #17840 (2I) [MZSP]; La Fortuna area, 9.v.95, R. Anderson, #17846 (1W 1Q) (MZSP67406) [MZSP]; **Veraguas:** 6.1k N Santa Fe, Cerro Tute, 1220m, 13.vi.1996, litter extr., wet cloud for., R. Anderson, #17893 (1W) [MZSP]; same except #17891 (1W) [UTEP].

### *Hylomyrma peetersi* Ulysséa new species

Figures 57, 80D, 89 (map)

Holotype: GUYANA: [Cuyuni-Mazaruni]: Mt. Ayanganna Falls Camp, 1134m, 59°57.563'W, 5°22.332'N, 11.x.2002, T.R. Schultz, J. LaPolla, C.J. Marshall, R. Williams, 1° forest, litter sample, JSL021011-01-LS06 (1W) (USNMENT00413223) [USNM]. Paratypes: same data as holotype except JSL021011-01-LS13 (1W) (USNMENT00413369) [USNM]; JSL021011-01-LS09 (1W) (USNMENT00413299) [MZCZ]; JSL021011-01-LS07 (1W) (USNMENT00413243) [DZUP]; JSL021011-01-LS18 (1W) (USNMENT 00413433) [MZSP 67407]; JSL021011-01-LS14 (1W) (USNMENT00413373 MZHY194) [MZSP]; Mt. Ayanganna Base Camp, 732m, 59°55.486'W, 5°20.063'N, 9.x.2002, J.S. LaPolla, forest, litter sample, JSL021009-03-LS07 (1W) (USNMENT00441070) [USNM]; Mt. Ayanganna Cloud Forest, 1300m, 59°57.969'W, 5°22.483'N, 13.x.2002, T.R. Schultz, J. LaPolla, C.J. Marshall, R. Williams, litter sample, JSL021013-01-LS10 (1W) (US-

NMENT00413807) [USNM]; JSL021013-01-LS18 (1W covered with gold, without postpetiole and gaster) (USNMENT 00413896) [USNM].

**Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin, interspaces between striae smooth, striae crest punctuated; mesosoma covered with regular, longitudinal, parallel and thick striae; longitudinal striae on lateral of pronotum and mesepisternum continuing transversely on propodeum; dorsal margin of petiole continuous, strongly convex; subtriangular projection on mesoventral surface of petiole; node rounded with transverse striae on dorsum; subpostpetiolar process smooth, weak, convex; profemur posterior surface and protibia extensor surface mostly smooth, few striae on basal and apical regions; striation on tergum of first gastral segment restricted to base.

**Description.** WORKER (n=4) (Fig. 57A–C): HL (0.88–0.94); HW (0.84–0.90); ML (0.57–0.60); SL (0.62–0.66); MOD (0.20–0.24); PNW (0.56–0.64); WL (1.14–1.24); PSL (0.16–0.19); PL (0.52–0.59); PW (0.20–0.22); PPL (0.32–0.34); PPW (0.30–0.31); GL (0.98–1.02); TL (4.41–4.71); CI (94.44–96.62); SI (73.33–76.47); OI (23.81–26.66). Small-sized. Shiny integument. Brownish body, darker gaster, lighter appendices. Thin and branched setae (Fig. 80D), long to midsized, suberect to subdecumbent; 2 short branches of unequal size from the main axis.



**FIGURE 57.** Holotype worker of *Hylomyrma peetersi* (USNMENT00413223). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Head subquadrate; posterior margin straight. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–9 striae, longitudinal, regular to irregular, converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 3 striae. Short scape, not reaching head posterior margin; apical antennomere of similar size or slightly shorter than previous 3 antennomeres together. Frontal carina straight. Eye drop-shaped, small-sized, larger diameter with 10 ommatidia. Regular and longitudinal striae on head dorsum, divergent towards posterior margin, striae with punctuated crests, interspaces smooth. Head laterodorsal sculpture converges to mandible insertion region; head lateral sculpture converges to eye margin; gena striate, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with regular and longitudinal striae, thicker than head striation, transverse on pronotum anterior region (DV), longitudinal in other regions (DV); longitudinal striae on lateral of pronotum and mesepisternum continuing transversely on propodeum. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth longer and rounded tip; ventral tooth shorter and blunt; dorsal tooth length similar to propodeal spine length. Propodeal spine short, straight (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur and protibia mostly smooth, few striae on basal and apical regions.

Dorsal margin of petiole continuous, strongly convex; subtriangular projection on mesoventral surface of petiole; ventral surface smooth; first third of dorsal surface smooth, transverse striae on posterodorsal surface continuing on lateral surface forming arches. Longitudinal striae on postpetiole; subpostpetiolar process smooth, weak, convex.

Tergum first gastral segment striation similar to postpetiole striae, short, restricted to base, striae length equivalent to  $\frac{1}{2}$  of postpetiole length; sternum smooth.

QUEEN Unknown.

MALE Unknown.

**Etymology.** The epithet *peetersi* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -i to the last name of a male person. This species is named in honor of our friend and colleague Dr. Christian Paul Peeters (1956–2020), a Belgian born researcher that worked at the Université Pierre et Marie Curie in Paris, and who contributed enormously to Myrmecology in general and, specifically to the present work, in understanding the *Hylomyrma* intercastes. Peeters generously received the first author in his lab for some very profitable months in 2015.

**Comments.** The diagnostic characters of this species are sufficient to distinguish it from most of its congeners. *Hylomyrma peetersi* is, however, more similar to *H. margaridae* and *H. villemantae*. All three species display a strongly convex petiole, with indistinguishable petiolar peduncle and node, and the body mainly covered with regular and longitudinal striae. *Hylomyrma peetersi* and *H. margaridae* can be easily distinguished from *H. villemantae* (characteristic in parenthesis) by the striae on the head dorsum with punctuated crests (vs. with smooth crests), the mesosoma longitudinally striate (vs. with few elliptic and concentric striae), the shorter propodeal spine (vs. longer), the armed mesoventral surface of petiole (vs. unarmed), and the longitudinal striae on the dorsum of postpetiole and gaster (vs. smooth). *Hylomyrma peetersi* can be distinguished from *H. margaridae* in the striae on the laterals of mesosoma that are directed transversely to the propodeal dorsum (vs. directed to the propodeal spine), the mesoventral surface of petiole armed with a subtriangular projection (vs. a conspicuous spine), the petiolar dorsum entirely covered with transverse striae (vs. with both transverse and longitudinal striae), and the weak subpostpetiolar process (vs. prominent). All three species are allopatric; *H. villemantae* is recorded in Brazil (BA) (Fig. 86), whereas *H. peetersi* and *H. margaridae* occur in relatively close areas in northern South America (French Guiana, Guyana, and Venezuela) (Fig. 89).

**Distribution.** The specimens were collected in areas near the Guyana - Venezuela border (Fig. 89).

**Natural history.** This species inhabits the leaf-litter of forested areas at elevations between 732 and 1200 m.

**Additional material examined** (2 workers): **VZLA[VENEZUELA]: Bolívar:** km114 El Dorado to Santa Elena, 12.viii.1986, 1000m, 6°01'N, 61°24'W, P.S. Ward [leg.], #8548-16, sifted litter (leaf mold, rotten wood), rainforest (1W) [MIZA]; same except 1200m (1W) [MIZA].

***Hylomyrma plumosa* Pierce, Branstetter & Longino, 2017**

Figures 58, 80F, 80K, 85 (map)

*Hylomyrma plumosa* Pierce, Branstetter & Longino, 2017: 138 (W). Holotype: COSTA RICA: Limón: Res. Biol. Hitoy-Cerere, 9.66480 -83.02346 ± 10 m, 250 m [a.s.l.], 10 June 2015, [Project] ADMAC [collection code] #Wa-E-02-2-38, tropical rainforest, ex sifted leaf litter (1W) (CASENT0638700) [CASC] [examined by image]. Paratypes: same data as holotype (1W) (CASENT0638687) [MCZC] [not examined]; (1W) (CASENT0638688) [UCD] [not examined]; (1W) (CASENT0638693) [UCR] [not examined]; (1W) (CASENT0638697) [USNM] [not examined]; (1W) (CASENT0638703 MZSP67408) [MZSP] [examined]; (8W) (CASENT0638720, CASENT0638701, CASENT0638725, CASENT0638698, CASENT0638700, CASENT0638722, CASENT0638724, CASENT0638735) [JLTC] [not examined].



**FIGURE 58.** Holotype worker of *Hylomyrma plumosa* (CASENT0638700). A) frontal view; B) dorsal view; C) lateral view. Photos by Michele Esposito, available from [www.antweb.org](http://www.antweb.org).

Worker (Fig. 58A–C) **Diagnosis.** Mesosoma and petiole covered with thin striae (microsculpture) superimposed on irregular and thick striae (macrosculpture), interspaces between thinner striae indistinguishable; conspicuous and trifid setae.

QUEEN Unknown.

MALE Unknown.

**Etymology.** The specific epithet is a reference to the distinctive branched setae of this species.

**Comments.** *Hylomyrma plumosa* is identified based on the conspicuous and trifid setae (Fig. 80K). This species resembles *H. versuta*, described by Kempf (1973) as “long hairs, pointed at tip, gently curved on petiole and postpetiole”. However, the types of *H. versuta* and additional examined material comprise specimens with unbranched and branched setae. The branched setae of *H. versuta*, mostly present on the petiole, postpetiole, and gaster, are composed of a variable number of short branches with similar size (Fig. 80F). These branched setae are not conspicuous as in *H. longiscapa*, *H. plumosa*, and *H. transversa*, being better observed in SEM images.

*Hylomyrma plumosa* and *H. versuta* are locally sympatric (Figs. 85, 88), having been collected in the same sample (ALAS #03/WF/02) near La Virgen (300 m), and in different samples (*H. plumosa* #AMI-1-W-006-01, and *H. versuta* #AMI-1-W-006-05) from the La Selva Biological Station (50 m); both locations in Heredia Province, Costa Rica. The two species have very similar body sculpture. The difference between them is very subtle: the propodeum is laterally covered by thin striae (microsculpture) with indistinguishable interspaces superimposed on irregular and thick striae (macrosculpture) in *Hylomyrma plumosa*, whereas *H. versuta* presents thin striae (microsculpture) with indistinguishable interspaces between irregular and thick striae (macrosculpture). Initially, we understood that *H. plumosa* and *H. versuta* belonged to a continuum of variation due to their body sculpture similarity, variable setae, and co-occurrence. But molecular data show *H. plumosa* as sister to the *H. cf. dentiloba* sp.2 (the true *H. dentiloba*)–*H. versuta* clade (Pierce *et al.* 2017). In this scenario, we have decided to maintain all three species as valid until additional evidence is gathered. Further investigative approaches using UCEs should include representatives of all the variation found in these taxa (or nominal species).

**Distribution.** *Hylomyrma plumosa* occurs in Costa Rica (Fig. 85).

**Natural history.** This species occurs in wet forests at elevations between 50 and 300 m. Seventeen specimens were collected in the leaf-litter, which suggests that this species nests in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (4 workers): **COSTA RICA: Heredia:** 11km ESE La Virgem, 10.35, -84.05 + 2km, 300m, 10.iv.2004, ALAS #03/WF/02/all montane wet forest, ex sifted leaf litter (1W) [MZSP]; La Selva, E.O Wilson col., 19.iii.85 (1W) [MCZC]; La Selva Biological Station, 10.41639, -84.02 ± 500m, 50m, 16.iii.2004, TEAM #AMI-1-W-006-01, mature wet forest, ex sifted leaf litter (2W) (MZSP67470, MZHY84) [MZSP].

### *Hylomyrma praepotens* Kempf, 1973

Figures 59, 60, 61, 90 (map)

*Hylomyrma praepotens* Kempf, 1973: 245 (W). Holotype: COLOMBIA: Amaz.[Amazonas]: 7km NW Letícia, 20-25 Feb 1972, #230, forest litter, berlesate, S. & J. Peck [leg.] (1W) (MCZ35421) [MCZC] [examined]. Paratypes: same data as holotype (5W) (MCZ35421) [MCZC] [examined]; (2W 1I) (MZSP67410) [MZSP] [examined]; Meta: Villavicencio, 1-4 Mar 1972, S. & J. Peck, 233, forest litter, berlesate (2I, one covered with gold) (MZSP67411) [MZSP] [examined]; same data (1I) (ANTWEB-1008992 MZSP67409) [MZSP] [examined].

**Diagnosis.** Large-sized; regular to irregular, longitudinal and thick striae on head dorsum diverge towards posterior margin, interspaces between striae smooth; propodeal spine long; a pair of large and blunt teeth laterally on anterior margin of clypeus; dorsal margin of petiole continuous, convex; subpostpetiolar process weak, convex; profemur mostly covered with irregular to regular transverse striae; protibia entirely covered with regular striae; very long striae on tergum of first gastral segment; semicircular striae on sternite of first gastral segment covering the mid-basal and lateral regions.

**Redescription.** WORKER (n=4) (Fig. 59A–C): HL 1.22 (1.20–1.24); HW 1.20 (1.18–1.22); ML 0.82 (0.82); SL 0.90 (0.90–0.94); MOD 0.32 (0.30–0.34); PNW 0.82 (0.82–0.84); WL 1.54 (1.54–1.58); PSL 0.42 (0.36–0.43); PL 0.75 (0.75–0.77); PW 0.28 (0.26–0.28); PPL 0.42 (0.40–0.42); PPW 0.42 (0.40–0.42); GL 1.58 (1.36–1.59); TL 6.33 (6.10–6.40); CI 98.36 (96.72–100); SI 75 (75–78.81); OI 26.66 (25.42–27.87). Large-sized. Shiny integument.

Brownish body, lighter petiole, postpetiole and leg. Thin and unbranched setae, long to midsized, erect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus slightly concave medially, with a pair of large and blunt teeth laterally; median area of clypeus centrally striate, with 10 regular and longitudinal striae converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, large-sized, larger diameter with 16 ommatidia. Head dorsum with regular to irregular, longitudinal and thick striae, divergent towards posterior margin, interspaces smooth. Longitudinal striae on head lateral and laterodorsal regions converge to mandible insertion; gena striate, around 5–7 regular and semi-circular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 59.** Paratype worker of *Hylomyrma praepotens* (MZSP67409). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Mesosoma sculpture similar to head dorsum, striae of uniform thickness assuming multiple directions; transverse striae on pronotum anterior region (DV) continuing on lateral surface, longitudinal striae on other regions of pronotum and metanotal groove region (anteriorly to transverse carina); irregular striae on mesonotum assuming more than one direction. Promesonotal junction and metanotal groove indistinct. Transverse carina inconspicuous.

Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and acute than the shorter and blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured. Thin striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur mostly covered with irregular to regular transverse striae. Protibia entirely covered with regular striae.

Dorsal margin of petiole continuous, convex; sculpture similar to mesosoma; mostly covered with transverse striae; ventral surface smooth. Regular and longitudinal striae on postpetiole; subpostpetiolar process striae restricted to lateral region, midbasal region smooth; subpostpetiolar process weak, convex.

First gastral segment striation similar to postpetiole striae; length of long striae on tergum similar to postpetiole length; semicircular striae on sternite covering the midbasal and lateral regions.



**FIGURE 60.** Queen of *Hylomyrma praepotens* (MCZENT00524675). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

QUEEN (first description) (n=1) (Fig. 60A–C): HL 1.20; HW 1.24; ML 0.84; SL 0.90; MOD 0.34; PNW 1; WL 1.78; PSL 0.38; PL 0.83; PW 0.32; PPL 0.44; PPW 0.47; GL 1.66; TL 6.75; CI 103.33; SI 72.58; OI 27.41. Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger di-

diameter of eye with 18 ommatidia. Longitudinal, regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal and mostly regular striae on anepisternum and katepisternum, interspaces distinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral of mesosoma with mostly irregular striae directed to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The specific epithet *praepotens* (Latin, *prae* = pre-, before, very and *potens* = powerful) is possibly a reference to the head sculpture or to the long clypeal teeth of this species.

**Comments.** *Hylomyrma praepotens*, the largest species of the genus, is similar to *H. immanis*, both have a long propodeal spine, and an elongated and continuous dorsal margin of petiole, but *H. praepotens* is easily distinguished by the shiny integument (subopaque in *H. immanis*), and the body covered by thick striae with distinguishable interspaces (thin striae with indistinguishable interspaces in *H. immanis*). *Hylomyrma immanis* is more easily sampled than *H. praepotens*, the former has a broad distribution in the center-north of South America (Fig. 88), whereas the latter is only known from two localities in Colombia, two in Ecuador, and one in Brazil (Fig. 90). Both species co-occur in a locality 7 km NW of Letícia, Amazonas, Colombia.

Four type specimens, identified as workers by Kempf (1973), have an inconspicuous central ocellus, and a darker area on the head dorsum coincident with the ocelli location in winged queens (Fig. 61). They also have the mesosoma larger and more convex than in workers. Due to these characters, we recognized these specimens as intercastes.



**FIGURE 61.** Paratype intercaste of *Hylomyrma praepotens* (MZSP67410) in frontal view. Photo by Guilherme Ide.

**Distribution.** The few known specimens were collected in Brazil, Colombia, and Ecuador (Fig. 90).

**Natural history.** The type specimens were collected with Berlese-Tüllgren funnels in Colombia, and the unique specimen from Brazil was collected with winkler extractors, suggesting that colonies are located in leaf-litter or in

superficial soil layers. Except for the presence of intercastes (4 paratypes), there is no further information available regarding *H. praeponens* biology.

**Additional material examined** (12 workers, 1 queen): **BRAZIL: MA[Maranhão]:** São Francisco do Brejão, 05°17'19"S, 47°15'01.7"W, 01-09.vi.2005, Silva R.R. & Feitosa R.M. cols., Winkler 10 (1W) (MZHY202) [MZSP]. **ECUADOR: Napo:** Limoncocha, 250m, 25.vi.1976, B-355, S. & J. Peck (11W) [MCZC]; same except 18.vi.1976, B-348 (1Q) (MCZENT00524675) [MCZC].

### *Hylomyrma primavesi* Ulysséa new species

Figures 62, 80J, 88 (map)

Holotype: BRAZIL: MG[Minas Gerais]: Santana do Riacho, Serra do Cipó, APA[Environmental Protection Area] Morro da Pedreira, 19°17'50.11"S, 43°35'39.69"W, 1300m, 16.i.2012, campo rupestre, pitfall-solo, T.C. Lana col., Q16-X-V-4[Area code - Xeric environment - Transect number - Point number] (1W) (MZSP67412) [MZSP]. Paratypes: same data as holotype except abril/2011, Q16-X-VI-2 (1W) (MZSP67413) [MZSP]; Q16-X-VI-4 (1I) (MZSP67414) [MZSP]; abril/2013, Q16-X-V-4 (1I) (MZSP67415) [MZSP]; 19°13'48.89"S, 43°34'35.19"W, 1100m, x.2011, C11-X-I-2 (1I) (MZSP67416) [MZSP]; C11-X-I-4 (1I) (MZSP) [MZSP 67417]; PARN[A] National Park Serra do Cipó, 19°15'49.92"S, 43°32'04.35"W, 1400m, 25-30.iv.2011, AP-X-III-1, pitfall-solo (1W covered with gold) (MZSP67418) [MZSP]; same except AP-X-III-2 (1I) (MZSP67419) [MZSP]; AP-X-III-3 (1I) (MZSP67420) [MZSP]; jul/2011, AP-X-III-2 (1I) (MZSP67421) [MZSP]; AP-X-II-3 (1I) (MZSP67422) [MZSP]; x.2011, AP-X-III-4 (2I) (MZSP67423, MZHY60) [MZSP]; i.2012, AP-X-III-1 (1I) (MZSP67424) [MZSP]; AP-X-III-3 (1I) (MZSP67425) [MZSP]; AP-X-III-4 (1I) (MZSP67426) [MZSP]; iv.2012, AP-X-III-1 (1W) [DZUP]; AP-X-III-2 (1W) [USNM]; AP-X-III-3 (1I) (MZSP67427) [MZSP]; julho/2012, AP-X-III-2 (1W) [MCZC]; AP-X-III-4 (1I) (MZSP67428) [MZSP]; x.2012, AP-X-III-2 (1I) [MCZC]; janeiro/2013, AP-X-III-1 (1I) [CASC]; AP-X-III-2 (2I) [DZUP]; AP-X-III-3 (2I) [IHVL, JTCL]; abril/2013, AP-X-III-3 (1I) [USNM]; julho/2013, AP-X-III-4 (1I) [CASC].

**Diagnosis.** Body black; regular striae on head dorsum diverge towards posterior margin; rugose striae on mesosoma and petiole; promesonotal junction and metanotal groove discernible by a slight depression (LV) and altered sculpture (VD); propodeal spine length similar to dorsal tooth of propodeal lobe; dorsal margin of petiole discontinuous; transverse striae on node ventral surface; profemur posterior surface smooth; striae on protibia extensor surface weakly marked; striation on tergum of first gastral segment restricted to base; thick branched setae flattened in its final half, with several branches.

**Description.** WORKER (n=3) (Fig. 62A–C): HL (1.16–1.24); HW (1.06–1.18); ML (0.64–0.72); SL (0.80–0.86); MOD (0.28–0.31); PNW (0.72–0.82); WL (1.34–1.48); PSL (0.18–0.20); PL (0.62–0.68); PW (0.28–0.34); PPL (0.34–0.40); PPW (0.36–0.44); GL (1.22–1.42); TL (5.32–5.78); CI (91.38–97.45); SI (71.30–75.47); OI (26.08–26.41). Large-sized. Shiny integument. Black body, brownish mandibles, trochanter and tarsus. Mostly thin and unbranched setae, midsized to short, suberect to subdecumbent; thick branched setae flattened in its final half, with several branches, mainly in the postpetiole and gaster (Fig. 80J).

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 7–8 regular, longitudinal and thick striae converging to a point on the anterior margin, interspaces between striae smooth or thinner striae between thicker striae. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere length  $\frac{1}{4}$  shorter than previous 3 antennomeres together. Frontal carina straight. Eye drop-shaped, midsized, larger diameter with 13 ommatidia. Regular, longitudinal striae on head dorsum, divergent towards posterior margin, interspaces smooth. Thin, regular to irregular striae on head lateral and laterodorsal region near eye, interspaces indistinguishable; striae on laterodorsal region near eye converging to mandible insertion region; striae on lateral region converging to eye margin; laterodorsal region near frontal carina rugose; gena striae, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma mostly covered with rugose striae of uniform thickness; interval between striae smooth; transverse striae on propodeum dorsum and on slope surface. Promesonotal junction and metanotal groove discernible by a slight depression (LV) and altered sculpture (DV). Transverse carina indistinct to inconspicuous. Dorsal margin of mesosoma slightly discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and acute than shorter and blunt ventral tooth; dorsal tooth length similar to propodeal spine length. Propodeal spine short, straight (LV), divergent (DV), sculptured. Transverse striae of uniform thickness on procoxa; irregular and transverse striae

on C2 and C3. Transverse striae on profemur anterior, dorsal and posterior surfaces; ventral surface smooth. Protibia extensor surface entirely striate.

Dorsal margin of petiole discontinuous. Subtriangular projection on petiole mesoventral surface. Node with transverse striae on ventral and anterior surfaces, with interspaces distinguishable; rugose striae on dorsal and latero-dorsal surfaces, interspaces sculptured; irregular and longitudinal striae on latero-ventral surface. Postpetiole and subpostpetiolar process with regular and longitudinal striae; subpostpetiolar process weak, convex.

First gastral segment striation similar to postpetiole striae; striae on tergum as long as postpetiole length; sternite striation restricted to laterobasal region.

QUEEN Unknown.

MALE Unknown.



**FIGURE 62.** Holotype worker of *Hylomyrma primavesi* (MZSP67412). A) frontal view; B) dorsal view; C) lateral view. Photos by Gabriel Biffi.

**Etymology.** The epithet *primavesi* is a non-Latin proper noun used in apposition. This species is named in honor of Ana Maria Primavesi (1920–2020), an agronomist, pioneer in soil sciences and especially in the ecological management of tropical soils in Brazil. She provided the scientific basis for the development of tropical organic agriculture.

**Comments.** *Hylomyrma primavesi* is unique among its congeners in its blackish body. Nonetheless, its body sculpture resembles that of *H. balzani*. *Hylomyrma primavesi* can be distinguished from *H. balzani* (characteristic in parentheses) by the larger body, TL 5.32–5.78 mm, WL 1.34–1.48 mm (vs. smaller, TL 4.27–5.23 mm, WL 1.10–1.39 mm), the distinct promesonotal junction and metanotal groove (vs. both indistinct). Both species occur in Brazil, whereas *H. primavesi* is known only from higher elevations in Serra do Cipó, MG (Fig. 88), *H. balzani* has a broad distribution, occurring mainly in eastern portions of Brazil from north to south (Fig. 84).

Half of all specimens examined have a central ocellus (n=6) or a more or less pronounced depression on the region where winged queens present the central ocellus (n=11). Moreover, most of the specimens have the promesonotal junction and metanotal groove distinguishable by a slight depression or altered sculpture. This morphological variation is associated with intercastes at least in other *Hylomyrma* species with intercastes. Winged queens are not known in this species, thus these intercastes may perform reproduction. Specimens identified as workers do not present ocelli or ocellar depression, nor the conspicuous promesonotal junction and metanotal groove. One of the workers studied presents the laterals of the mesosoma flattened. This was interpreted as a deformity.

**Distribution.** This species is only known from Santana do Riacho (Serra do Cipó National Park and APA Morro da Pedreira), Minas Gerais, Brazil (Fig. 88).

**Natural history.** All specimens were collected with winkler extractors and pitfall traps at elevations between 1100 and 1400 m in areas of “Campos rupestres”. Those relatively high-elevation areas are characterized by savannas and grasslands, with plants and outcrops. Except for the presence of worker-like intercastes, there is no further information available regarding the biology of *H. primavesi*. The winged queen of this species is unknown, then perhaps the specimens determined here as intercastes are responsible for reproduction.

**Additional material examined** (2 workers, 4 intercastes, 2 indeterminates): **BRAZIL: MG|Minas Gerais:** Santana do Riacho, Serra do Cipó, APA Morro da Pedreira, 19°17'50.11"S, 43°35'39.69"W, 1300m, 16.i.2012, campo rupestre, pitfall-solo, T.C. Lana col., Q16-X-III-2 (1W, bad mesosoma formation; 1 indet., without head) [MZSP]; same except jul/2011, Q16-X-VI-4 (1W, without postpetiole and gaster) [MZSP]; out/2011, Q16-X-III-4 (1 indet.) [MZSP], Q16-X-VI-2 (1I) [MZSP]; PARNA Serra do Cipó, 19°15'49.92"S, 43°32'04.35"W, 1400m, abril/2013, AP-X-III-3, pitfall-solo (1I) [MZSP]; same except janeiro/2013, AP-X-III-3 (1I) [JTLC]; julho/2012, AP-X-III-1 (1I) [MZSP].

### *Hylomyrma reginae* Kutter, 1977

Figures 63, 64, 86 (map)

*Hylomyrma reginae* Kutter, 1977: 85 (W). Holotype: GUYANA: Morabukea, vi.1964, R.M. Watson, RM1964-125, PF4,3 (1W) (CASENT0900392 BMNH(E)1013786) [BMNH] [examined by image]. Paratypes: same data as holotype (1W) [BMNH] [examined]; (2W) [NHMB] [examined].

**Diagnosis.** Regular to slightly irregular and longitudinal striae on head dorsum diverge towards posterior margin, interspaces between striae smooth; striae crest punctuated; striae on mesosoma assuming multiple directions, interspaces indistinguishable; pronotum posterior region, mesonotum, and metanotal groove region with semi-elliptical to V-shaped striae; dorsal margin of petiole continuous, convex; subtriangular projection on mesoventral surface of petiole; subpostpetiolar process well-developed, subtriangular; profemur and protibia entirely covered with striation; striation on tergum of first gastral segment restricted to base; sternite striation of first gastral segment covering the laterobasal region.

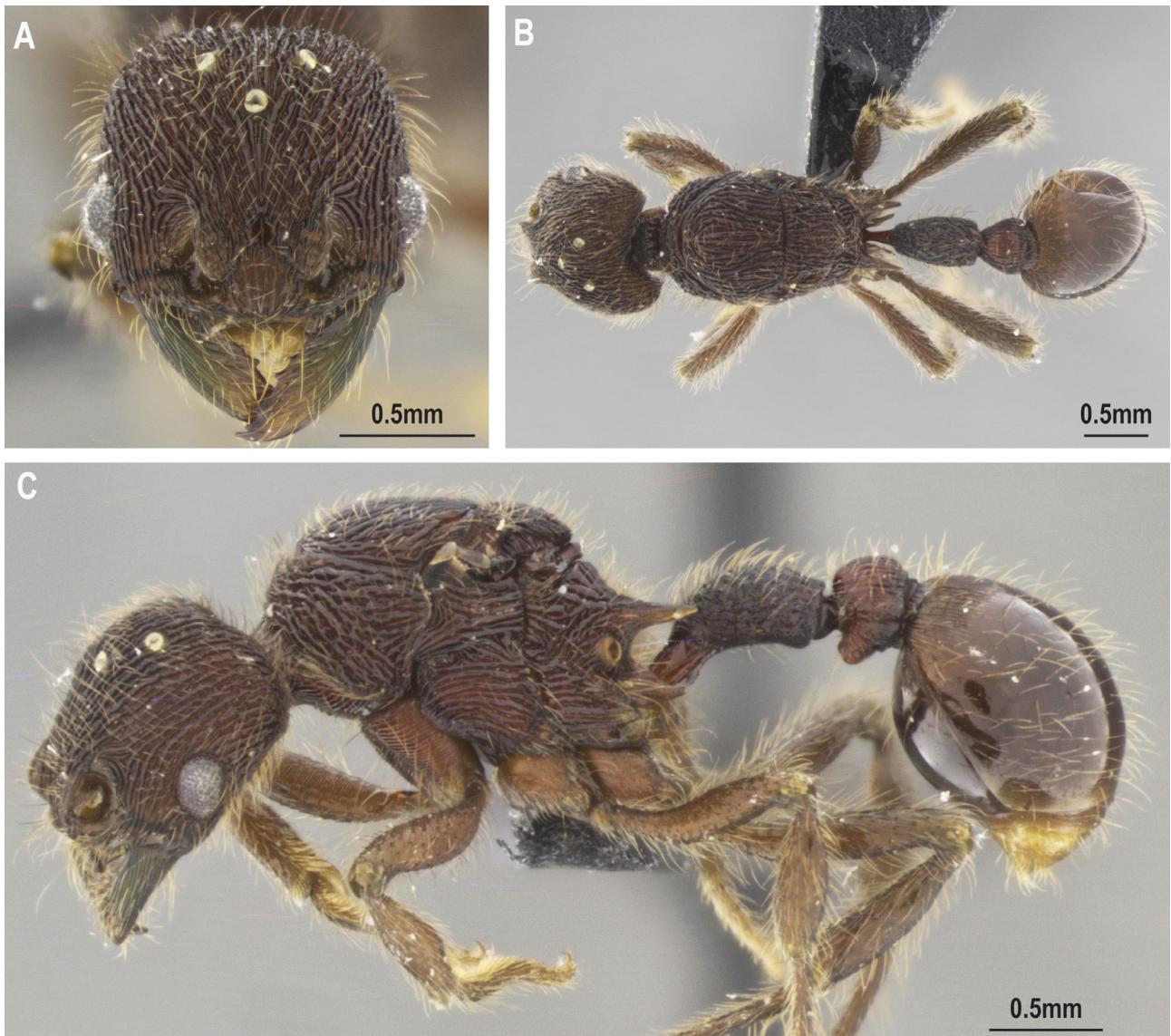
**Redescription.** WORKER (n=5, exceptionally, for this species, the measures presented outside the parentheses refer to the paratype examined [NHMB]) (Fig. 63A–C): HL 0.94 (0.94–1.09); HW 0.87 (0.87–1.04); ML 0.60 (0.60–0.70); SL 0.67 (0.67–0.76); MOD 0.17 (0.17–0.26); PNW (0.64–0.72); WL 1.30 (1.30–1.52); PSL 0.25 (0.25–0.32); PL 0.62 (0.62–0.75); PW 0.29 (0.29–0.32); PPL 0.27 (0.27–0.34); PPW 0.30 (0.30–0.38); GL 0.97 (0.97–1.20); TL 4.71 (4.71–5.60); CI 93.33 (93.33–101.96); SI 77.14 (73.07–76.09); OI 20 (20–25). Medium to large-sized. Shiny

integument. Brownish body, darker gaster, lighter appendices. Thin and unbranched setae, long to short, suberect to subdecumbent.

Head subquadrate; posterior margin straight to slightly concave at middle. Mandible masticatory margin with 5 teeth. Labial palp 3-articulated; maxillary palp 4-articulated. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 10–12 regular to irregular and longitudinal striae. Fontal triangle with 2 striae. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 11 ommatidia. Longitudinal, regular to slightly irregular striae on head dorsum diverge towards posterior margin, striae with punctuated crests, interspaces smooth, striae. Striation on head lateral and laterodorsal regions converge to mandible insertion; gena striate, 3–4 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 63.** Worker of *Hylomyrma reginae* (BRAZIL: AM: Terra Firme [INPA]). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.



**FIGURE 64.** Queen of *Hylomyrma reginae* (USNMENT00688795). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Irregular to regular striae on mesosoma dorsum assuming multiple directions, interspaces indistinguishable; transverse striae on pronotum anterior region (DV) continuing on lateral surface; pronotum posterior region, mesonotum, and metanotal groove region (immediate anterior to transverse carina) with semi-elliptical to V-shaped striae; striae on lateral of pronotum continuing sinuously on mesepisternum and propodeum lateral, and transversely on propodeum. Promesonotal junction and metanotal groove indistinct. Transverse carina inconspicuous. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth longer and more acute than the shorter and blunt ventral tooth; dorsal tooth slightly shorter than propodeal spine. Propodeal spine midsized, straight (LV), divergent (DV), sculptured on base. Thin striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur covered with regular and transverse striae. Protibia extensor surface entirely covered with regular and longitudinal striae.

Dorsal margin of petiole continuous, convex; subtriangular projection on mesoventral surface; dorsal and lateral surfaces covered with vermicular striae of variable thickness, interspaces indistinguishable; ventral surface smooth. Regular and longitudinal striae on postpetiole and subpostpetiolar process, interspaces indistinguishable; subpostpetiolar process well-developed, subtriangular.

First gastral segment striation similar to postpetiole striae; short striae on tergum, shorter than postpetiole length; sternite striation covering the laterobasal region.

QUEEN (first description) (n=3) (Fig. 64A–C): HL (1.02–1.20); HW (0.98–1.22); ML (0.68–0.80); SL (0.72–0.88); MOD (0.26–0.32); PNW (0.84–0.98); WL (1.56–1.88); PSL (0.30–0.36); PL (0.75–0.90); PW (0.34–0.40); PPL (0.39–0.40); PPW (0.40–0.46); GL (1.20–1.46); TL (5.63–6.64); CI (94.23–101.66); SI (72.13–74); OI (26–26.53). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 15 ommatidia. Longitudinal, regular to irregular striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal and mostly regular striae with mostly uniform thickness on anepisternum and katepisternum, interspaces distinguishable. Axilla and scutellum with same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV). Lateral of mesosoma with irregular striae of variable thickness directed to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The specific epithet was named after Regina Pestalozzi, Kutter's daughter.

**Comments.** *Hylomyrma reginae* is unlikely to be confused with any other congener because of its very prominent and subtriangular subpostpetiolar process.

Two specimens collected in Upper Takutu-Upper Essequibo, Guyana (USNMENT00688778, USNMENT00689009) were designated as intercaste because of the larger body measures [HL (1.16); HW (1.16–1.17); ML (0.76–0.78); SL (0.82–0.84); MOD (0.27–0.28); PNW (0.83–0.84); WL (1.64); PSL (0.34–0.35); PL (0.82–0.85); PW (0.36–0.38); PPL (0.36); PPW (0.40); GL (1.30); TL (6.04–6.09)], and for having one central and inconspicuous ocellus.

**Distribution.** All known specimens were collected in northern South America (Brazil, French Guiana, Guyana, and Suriname) (Fig. 86).

**Natural history.** This species is recorded from tropical rainforests (in the Amazon and in Inselberg forests; primary and secondary forests) at elevations between 60 and 1051 m. Specimens are frequently found in leaf-litter samples, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers. Except for the presence of intercastes, there is no further information available regarding the biology of *H. reginae*.

**Additional material examined** (23 workers, 3 queens, 2 intercastes): **BRAZIL: AM[Amazonas]:** Manaus, Dimona Station, INPA, 100ha Plot, 130m, 60.09414°W, 2.34121°S, 16.i.2009, J. Sosa-Calvo, rainforest, leaf litter, Winkler sample, JSC090116-LS05 (1W) (USNMENT00447161) [USNM]; same except JSC090116-LS06 (1W) (USNMENT00754291) [USNM]; Pres[idente] Figueiredo, Terra-firme, Ig. Poraque, 1°54'57"S, 59°26'94"W, 23/04/94, Mata primária, Arm. De solo, Queiroz col. (1W) [MPEG]; Terra Firme, ZF-02, km10, capoeira, 02°34'S, 60°06'W, M.O. de A. Ribeiro coll., 01.viii.1990, capoeira, ZF-2/solo, Extração Kempson, Camada 1, Reg 18, Prof 0-3.5cm (1W) [INPA]; **MA[Maranhão]:** São Francisco do Brejão, 05°17'19"S, 47°15'01.7"W, 01-09.vi.2005, Silva R.R. & Feitosa R.M. cols., Winkler 1 (2W) (MZHY200) [MZSP]; **PA[Pará]:** Marituba, Mata-Winkler, 1°22'S, 48°20'W, 22.x.2004, Santos J.R.M., 17 (1W) [CEPLAC]; Utinga, tract. nr. Belém, BF-19, Aug. 14.1962, P.F. Darlington (1W) [MZSP]; same data (1W) [MCZC]; **RO[Rondônia]:** Porto Velho, Área Caiçara, C3P3, 09°26'46.8"S, 64°49'31.1"W, 04-18.ix.2012, Vicente, R.E. & Oliveira, J. cols. (2W) [DZUP]. **FRENCH GUIANA: [Cayenne]:** Kaw. Mt., Amazon Nature Lodge, 950', 52°12.349'W, 4°33.426'N, T. Schultz, U. Mueller, J. LaPolla, 2° forest, leaf litter, Winkler sample, TRS050719-01-LS04 (2W) (USNMENT00537919, USNMENT00537922) [USNM]; Nouragues Station, IN2-Inselberg For., 04°05'N, 52°40'W, ix.2009, winker, Sarah Groc & al, #5630, IN2 Tr2 W10 (1W) [MZSP]. **GUYANA: [Cuyuni-Mazaruni]:** Calm Water Creek, along Essequibo River nr. Bartica, 58°37.16'W, 6°28.06'N, 24.ix.2002, J.S. LaPolla, 1° forest, litter sample, =020923-8, JSL020923-01-LS04 (2W) (USNMENT00442164, USNMENT00442165) [USNM]; same except =020923-9, JSL020923-01-LS05 (1W) [USNM USNMENT00442185]; **[Potaro-Siparuni]:** Iwokrama For. Res., Whitewater Camp, 60m, 58°50.992'W, 4°43.89'N, 5.xi.2002, J.S. LaPolla et al., 1° forest, litter sample, =021105-1-LS20, JSL021105-01-LS20 (1W 1Q) (USNMENT00413113, USNMENT00413112) [MZSP]; same except =021105-1-LS11, JSL021105-01-LS11 (1Q) (USNMENT00412448) [USNM]; **Upper Takutu-Upper Essequibo:** Acarai Mts., nr. New Romeo Camp, 1050m, 58°57.867'W, 1°20.048'N, 14.x.2006, T.R. Schultz, J. Sosa-Calvo, C.J. Marshall, R. Williams, 1° forest, leaf litter, Winkler sample, JSC061014-LS03 (1Q 1I, intercaste covered with gold) (USNMENT00688795, USNMENT00688778) [USNM]; same except 1051m, 58°57.885'W, 1°20.095'N, JSC061014-LS05 (1I) (USNMENT00689009) [USNM]. **SURINAME: Sipaliwini:** Lely Mts., 560m, 55°13'48.65W, 4°27'2.45N, 29.x.2005, J. Sosa-Calvo & R. Badal, 1° forest, litter sample, nr. creek, JSC051029-01-LS09 (1W) (USNMENT00446454)

[USNM]; same except JSC051029-01-LS08 (1W) (USNMENT00446434) [IHVL]; JSC051029-01-LS05 (1W) (USNMENT00446224) [USNM]; same data (1W) (USNMENT00446225) [MCZC]; 619m, 54°45'21.96W, 4°15'10.62N, 26.x.2005, J. Sosa-Calvo & R. Badal, 1° forest, litter sample, tall forest, rocky soil, JSC051026-01-LS04 (1W) (USNMENT00447161) [USNM].

### *Hylomyrma reitteri* (Mayr, 1887)

Figures 2A, 65, 66, 67, 68, 80E, 80J, 81B, 82B, 85 (map)

*Tetramorium reitteri* Mayr, 1887: 621 (W). Lectotype (here designated): BRAS[BRAZIL]: São Paulo: E. Reitter leg., in *Meteopias aglenus* (Pselaphinae) nest], Collect. G. Mayr (1W) (CASENT0919630) [NHMW] [examined]. Paralectotype: same data as lectotype (1W) [NHMW] [examined]. Combination in *Lundella* by Emery, 1915: 191; in *Hylomyrma* by Brown, 1953: 3.

*Pogonomyrmex (Hylomyrma) goeldii* Forel, 1912: 17 (Q). Holotype: [BRAZIL]: Rio [de Janeiro: Corcovado], dec.89, Goeldi col., [Coll. Forel] (1Q) (CASENT0907677) [MHNG] [examined]. Synonym by Kempf, 1960: 430.

**Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin; mesosoma with longitudinal, regular to irregular striae of uniform thickness slightly divergent, interspaces between striae smooth; lateral of pronotum and mesepisternum with longitudinal striae which in part continuing transversely on propodeum dorsum, and in part continuing on propodeal spine; ventral surface of node smooth; regular to irregular striae on node dorsum; subpostpetiolar process smooth; profemur mostly smooth; protibia extensor surface entirely striate, striae weakly marked; striation on tergum of first gastral segment restricted to base; branched setae of two types: 1) 2–3 thin, short and equal-sized branches diverging from the main axis; 2) thick setae flattened in its final half, with several branches.

**Redescription.** WORKER (n=7) (Fig. 65A–C): HL 1 (0.86–1.10); HW 0.95 (0.81–1.04); ML 0.62 (0.52–0.70); SL 0.70 (0.58–0.70); MOD 0.22 (0.20–0.24); PNW 0.70 (0.58–0.72); WL 1.32 (1.08–1.34); PSL 0.22 (0.16–0.28); PL 0.57 (0.50–0.60); PW 0.22 (0.20–0.26); PPL 0.30 (0.28–0.36); PPW 0.32 (0.28–0.35); GL 1.10 (0.96–1.26); TL 4.92 (4.26–5.28); CI 95 (93.20–96.19); SI 73.68 (66.34–72.91); OI 23.68 (23.07–27.50). Small to midsized. Shiny integument. Brownish body, yellowish appendices. Mostly thin setae, unbranched or branched, midsized to short, suberect to subdecumbent; branched setae of two types: 1) 2–3 thin, short and equal-sized branches diverging from the main axis (Fig. 80E); 2) thick setae flattened in its final half, with several branches, mainly in the gaster (Fig. 80J).

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–9 regular to irregular, longitudinal, thick striae converging to a point on the anterior margin, interspaces smooth or thinner striae between thicker striae. Frontal triangle with 1–2 striae. Short scape, not reaching head posterior margin; apical antennomere as long as previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye reniform, small-sized, larger diameter with 10 ommatidia. Regular and longitudinal striae on head dorsum, divergent towards posterior margin, interspaces between thicker striae filled with thinner and regular to irregular striae. Head lateral and laterodorsal regions with the same striation of head dorsum, striae converging to eye margin; anterior laterodorsal region rugose; striae connecting the region posterior to frontal carina with eye margin; gena striate, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma striation similar to head dorsum; longitudinal, regular to irregular striae of uniform thickness slightly divergent, interspaces smooth; transverse striae on pronotum anterior region (DV) directed to lateral of pronotum, longitudinal in other regions (DV); lateral of pronotum and mesepisternum with longitudinal striae in part continuing transversely on propodeum dorsum and in part continuing on propodeal spine. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and acute than shorter and blunt ventral tooth; dorsal tooth length slightly shorter than  $\frac{1}{3}$  of propodeal spine length. Propodeal spine short, straight (LV), divergent (DV), sculptured on base. Transverse striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Profemur mostly smooth. Protibia extensor surface entirely striate, striae weakly marked.

Dorsal margin of petiole discontinuous. Node with transverse striae on anterior surface continuing on lateral

surface, interspaces distinguishable; regular to irregular striae on lateral and dorsal surfaces, interspaces smooth; ventral surface smooth. Postpetiole with regular, longitudinal striae; subpostpetiolar process smooth, weak, convex.

First gastral segment striation similar to postpetiole striae; striae length on tergum similar to  $\frac{1}{3}$  of postpetiole length; sternite smooth.



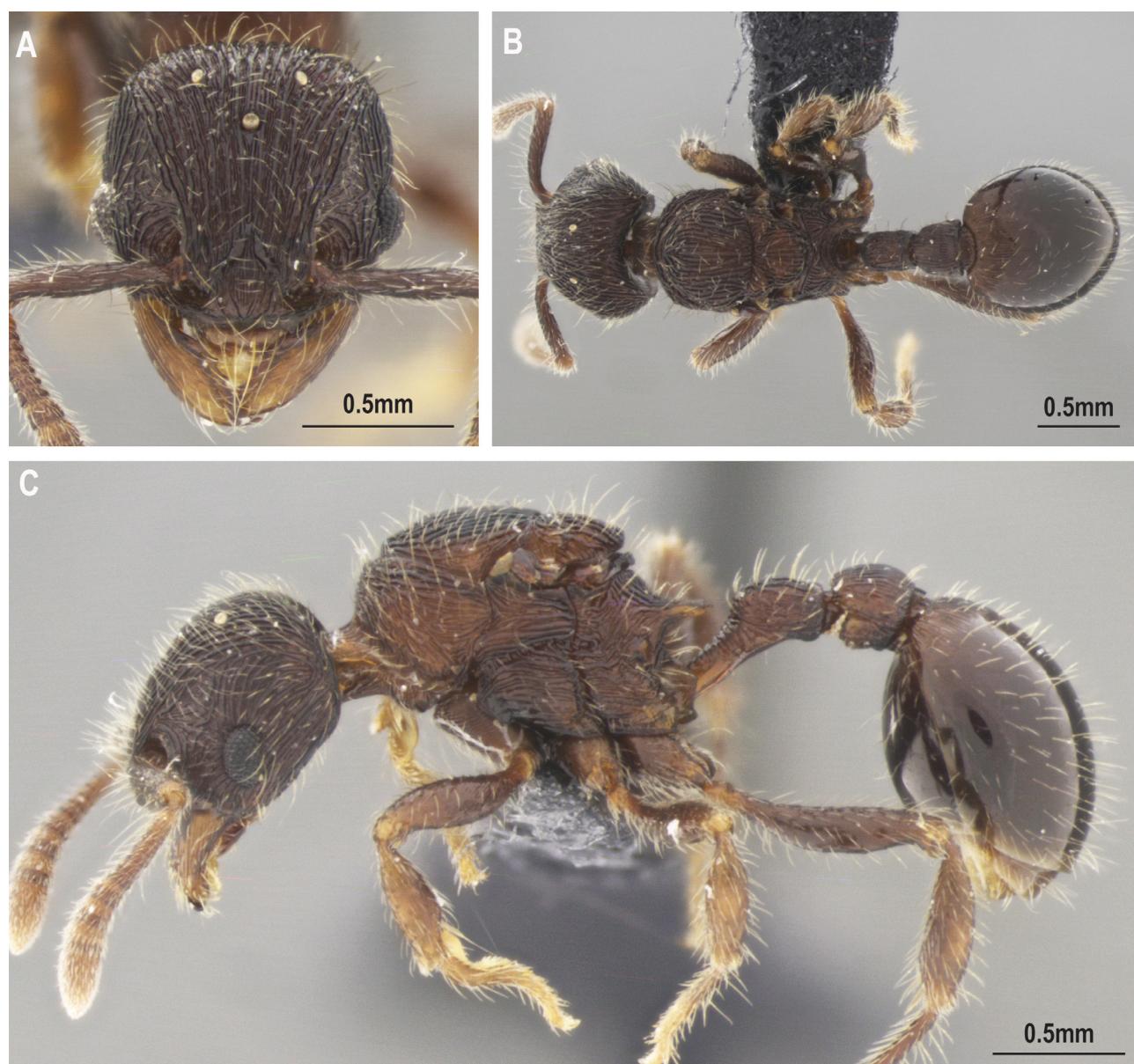
**FIGURE 65.** Worker of *Hylomyrma reitteri* (MZSP67429). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

QUEEN (n=6, 2 syntypes) (Fig. 66A–C): HL 1.05–1.08 (0.94–1.12); HW 1–1.05 (0.88–1.06); ML 0.62–0.67 (0.60–0.74); SL 0.67–0.72 (0.63–0.74); MOD 0.27–0.28 (0.24–0.28); PNW 0.75–0.83 (0.75–0.90); WL 1.45–1.50 (1.30–1.52); PSL 0.25–0.32 (0.22–0.32); PL 0.62–0.65 (0.58–0.65); PW 0.25–0.28 (0.25–0.28); PPL 0.32–0.37 (0.32–0.40); PPW 0.35–0.39 (0.35–0.39); GL 1.26–1.37 (1.24–1.38); TL 5.5 (5.01–5.74); CI 95.24–97 (93.61–98.11); SI 63.91–72.50 (63.91–72.50); OI 26.80–27.50 (25–27.27). Midsized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 12–13 ommatidia. Longitudinal and mostly regular striae on scutum going from an anterior central point towards transcutal suture,

interspaces distinguishable. Longitudinal and regular striae on anepisternum, katepisternum, axilla, and scutellum. Scutoscutellar sulcus inconspicuous. Transverse striae on propodeum (DV), interspaces between thicker striae filled with thinner striae. Lateral of mesosoma with longitudinal and mostly irregular striae directed to propodeal spine, interspaces distinguishable. Wings as in Fig. 81B.

MALE (first description) (n=3) (Fig. 67A–C): HL (0.80–0.84); HW (0.76–0.78); ML (0.44–0.48); SL (0.22–0.24); MOD (0.36–0.38); PNW (0.78–0.90); WL (1.36–1.50); PL (0.61–0.72); PW (0.22–0.26); PPL (0.34–0.36); PPW (0.31–0.34); GL (1.20–1.40); TL (4.85–5.12); CI (92.85–95.12); SI (28.20–30.77); OI (46.15–48.71). Brownish body, lighter appendices. Mandible with 4 teeth. Scutum mostly smooth and with few regular to irregular and thinner striae. Anepisternum and katepisternum mostly smooth. Scutellum with regular to irregular striae, thicker than scutum striae, interspaces distinguishable. Propodeum with irregular striae assuming multiple directions, interspaces distinguishable. Dorsal region of propodeal lobe forming an acute angle (= small tooth) and ventral region rounded. Petiole dorsum partly smooth and partly covered with irregular striae assuming multiple directions, interspaces distinguishable. Postpetiole mostly smooth. Gaster smooth. Wings as in Fig. 82B.

**Etymology.** This species was named in honor of Edmund Reitter (1845–1920), an Austrian Entomologist specialist in Coleoptera who collected this species's type specimens.



**FIGURE 66.** Queen of *Hylomyrma reitteri* (MZSP67430). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.



**FIGURE 67.** Male of *Hylomyrma reitteri* (MZSP67431). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

**Comments.** Kempf (1960) described the queen of *H. reitteri* and labelled it as a paratype. However, this queen is not part of the type specimens. The first queen description was made by Forel (1912) in the original description of *Pogonomyrmex goeldi*. Also, Kempf (1960) indicated that five *H. reitteri* syntypes from “an unknown locality in São Paulo State” were housed at Naturhistorisches Museum Wien, Austria. While visiting this collection at the museum, we recognized two workers and one queen with the label data described by Mayr (1887), and later labelled as lectotypes (workers) and paratype (queen) by Kempf. At the same museum there is also one worker labelled “Brazil” and “lectotype”, and two workers from Santa Catarina, Brazil, labelled “paratypes” by Kempf. Nevertheless, as Mayr (1887) described only the worker, providing a range of body measures and stated that the type locality was São Paulo, Brazil, we understand that only the two workers with the label data similar to what was described by Mayr are part of this type series. Possibly the other three “syntype” workers seen by Kempf have been misplaced. Kempf did not publish the later type designations he had apparently intended, thus we are designating the lectotype and consequently the paralectotype. Therefore, any other specimen with a type label should not be considered as such.

*Hylomyrma reitteri* is similar to *H. balzani*, *H. lopesi*, *H. transversa*, and *H. wachiperi*. The first four species show broad distributions (Figs. 84, 85, 89), while *H. wachiperi* is known only in one locality in Peru (Fig. 86). *Hylomyrma reitteri*, *H. transversa*, and *H. wachiperi* are allopatric, but present the discontinuous dorsal margin of petiole, and a similar pattern of sculpturation on head. However, *H. reitteri* can be easily distinguished from *H. transversa* (characteristic in parentheses) in the reniform eye (vs. drop-shaped), the longitudinal striae on the mesonotal dorsum (vs. transverse striae), and the smooth ventral surface of petiole (vs. striate). *Hylomyrma reitteri* differs from *H. wachiperi* in the reniform eye (vs. oval), the smooth ventral surface of petiole (vs. striate), and the tergum of the first gastral segment with short striae (vs. long striae).

*Hylomyrma balzani* and *H. reitteri* occur in sympatry in Paraguay (Alto Paraná department) and in 19 localities at Brazil (Santa Teresa, ES; Lavras, and Viçosa, MG; Estrada Velha Guaricana, Irati, Laranjeiras, Morretes, Rondon, and Tuneiras do Oeste, PR; Rio de Janeiro, and Teresópolis, RJ; Frederico Westphalen, Nova Petrópolis, and 5km N of Progresso, RS; Chapecó, Nova Teutônia, and Seara, SC; Botucatu, and Jundiaí, SP). *Hylomyrma reitteri* can be distinguished from *H. balzani* by the regular to irregular striae on the mesosoma (vs. rugose striae), the irregular striae on the petiole (vs. rugose striae), and the smooth ventral surface of petiole (vs. striate surface). The winged queens of both species are very similar, differing only in the laterodorsal sculpture of the propodeum. In *Hylomyrma balzani* this region presents rugose striae, whereas *H. reitteri* has regular to irregular striae in this region.

*Hylomyrma reitteri* differs from *H. lopesi* in the smaller body size (vs. larger), the thick striae on the mesosomal dorsum (vs. thin striae), the transverse striae on the ventral surface of petiole (vs. smooth surface), the laterals of the mesosoma covered mainly with regular and thick striae that are directed to the propodeal spine (vs. irregular and thin striae directed to the propodeal dorsum), and the striate subpostpetiolar process (vs. smooth). Both species occur broadly in Brazil, the distribution of *H. reitteri* is more restricted to eastern portions of Brazil from southern and southeast regions, whereas *H. lopesi* is distributed mainly in the center of Brazil from northern (state of Pará) to southern (state of São Paulo) regions. *Hylomyrma reitteri* and *H. lopesi* co-occur in Botucatu (SP), Niquelândia (GO), and São José de Buerarema (BA), Brazil.

The most striking intraspecific morphological variation found in *H. reitteri* concerns the pilosity and the sculpture of the petiolar dorsum. The striae on the petiolar dorsum, usually longitudinal, can be transverse (Brigadeiro, MG, and Teresópolis, RJ, Brazil) or can be in part longitudinal and in part transverse (Niquelândia, GO; Brigadeiro, MG; Santa Teresa, ES; and Morretes, PR, Brazil). *Hylomyrma reitteri* setae are mostly branched, with branches of unequal length. The exception to this setae pattern is observed in some specimens from Florianópolis, SC and Viçosa, MG, Brazil, which present mostly unbranched setae, and the few branched setae have branches of equal size (found in the propodeum, petiole, postpetiole and/or gaster).

It is impressive that out of the 1,037 *H. reitteri* female specimens analysed, 730 are intercastes. As in *H. balzani* and *H. lopesi*, *H. reitteri* presents considerable morphological variation among intercastes. We recognized eight morphotypes that essentially have larger body sizes, and mostly are worker-like, just two are queen-like (Fig. 2A).

**Distribution.** This species is widely distributed in eastern Brazil, from southern Bahia to Rio Grande do Sul. It also occurs in Paraguay (Salto Tembey and Ciudad del Este) (Fig. 85).

**Natural history.** *Hylomyrma reitteri* inhabits mainly areas in the Atlantic forest, but there are also records in the “Cerrado” (Brazilian savanna) in Goiás, and in coffee plantations (Minas Gerais), both in Brazil. Specimens are frequently found in leaf-litter samples (Fig. 68), which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers. Most of the intercastes are worker-like and just few have more queen-like traits, those may in the future be understood as ergatoids. One winged queen and one queen-like intercaste were collected together in two different winkler samples (winkler 49 from São Bonifácio, SC, and winkler 31 from Santa Teresa, ES, Brazil).



**FIGURE 68.** Worker of *Hylomyrma reitteri* collected in a leaf litter sample from an area of arboreal ‘restinga’ (MZSP67432). Photos by Fabiano F. Albertoni.

**Additional material examined** (209 workers, 98 queens, 107 males, 730 intercastes, 6 indeterminates): **BRAZIL: BA[Bahia]**: São José de Buerarema, 14.09.00, 15°03'06"S, 39°18'48"W, Santos J.R.M. dos, 637 (2W) [CEPLAC]; **ES[Espírito Santo]**: Santa Teresa, Estação Biológica Santa Lucia, 19°58'09"S, 40°32'15"W, 20-24.i.2002, Schoereder J.H. & Ribas C.R. cols., Winkler 2 (2I) [MZSP]; same except Winkler 4 (1I 1M) [MZSP]; Winkler 9 (1W) [MZSP]; Winkler 12 (1I) [MZSP]; Winkler 19 (1I) [MZSP]; Winkler 21 (1I) [MZSP]; Winkler 23 (2I) [MZSP]; Winkler 24 (1W) [MZSP]; Winkler 27 (1W) [MZSP]; Winkler 31 (1I 1Q) [MZSP]; Winkler 44 (1W) [MZSP]; Winkler 45 (1W) [MZSP]; Winkler 47 (1I 1M) [MZSP]; Winkler 14 (1I) [MZSP]; Winkler 36 (1I covered with gold) [MZSP]; Winkler 46 (1I) [MZSP]; Winkler 48 (1I) [MZSP]; **GO[Goiás]**: Niquelândia, 18-30.v.1996, 14°17'05"S, 48°55'01"W, Silvestre, Silva & Brandão col., peneira (1I) [MZSP]; Campinaçu, Serra da Mesa, 13°52'S, 48°23'W, 18.ii-2.iii.1996, Silvestre, Brandão & Yamamoto col., Cerrado (1I covered with gold) (MZSP67443) [MZSP]; **MG[Minas Gerais]**: Lavras, 6.xii.1978, W.D. Fronk col., berlese funnel (2W 1Q) [MCZC]; same locality Fragmento, 06-12.2002, Santos M.S. & Dias N.S. (3I) [CEPLAC]; Viçosa, Cafezal, 7.viii.1987, M.V.B. Queiroz col., A<sub>1</sub> 3 (1Q) [MZSP]; same locality Floresta secundária, ii.1994, Sperber, Louzada & Lopes, UFV LABECOL n°000143 (1I) [MZSP]; Parque Estadual da Serra do Brigadeiro, 1500m, winker sample, Jan.2007, R. Solar. col. (5I 1W 1Q) [MZSP]; **[PR/Paraná]**: Rondon, vii.1952, 24°38'B, 54°07'L, 500m, Fritz Plaumann (1I) [MZSP]; Rio Azul, 1000m, x.1959, F. Plaumann, 3173 (2W) [MZSP]; Bocaiuva, v.1963, F. Plaumann, 4002 (1Q 1W 3I) [MZSP]; Guaragi, 25°16', 54°14', v.1964, F. Plaumann, 4583 (2Q 1W) [MZSP]; Laranjeiras, iv.1965, F. Plaumann, 4550 (2Q 1I) [MZSP]; Antonina, Reserva Natural Rio Cachoeira, 25°18'21.85"S, 48°40'26.58"W, 02-05.iii.2014, R. Feitosa, J. Calixto, W. Franco & A. Oliveira cols., P1DQ4 DIA1 (1I) [DZUP]; same except P1EQ4 DIA1 (1I) [DZUP]; P16EQ1 DIA2 (2I) [DZUP]; P5EQ2 NOITE1 (4W 1I) [DZUP]; P14EQ1 DIA2 (1W) [DZUP]; P12DQ2 DIA2 (1W) [DZUP]; P15EQ2 DIA2 (1W) [DZUP]; P3EQ4 NOITE1 (2W) [DZUP]; P14DQ1 DIA2 (2W 1I) [DZUP]; P15EQ2 DIA2 (1W 1I) [DZUP]; P19EQ4 NOITE2 (1I) [DZUP]; P8DQ1 NOITE2 (1I) [DZUP]; P14DQ4 NOITE2 (2I) [DZUP]; P3EQ4 NOITE1 (2I) [DZUP]; P1D5Q2 DIA2 (2I) [DZUP]; P10DQ4 NOITE2 (2I) [DZUP]; São José dos Pinhas, pitfall, 972m, 25°33'28.89"S, 48°59'38.28"W, 15-22.x.2011, J.S. Vieira e Klemann-Júnior col. (2W 1I) [DZUP]; Piraquara, Parque Estadual Pico do Marumbi, 25°29'32.59"S, 48°59'33.59"W, 15-19.xii.2014, R. Feitosa et al. cols., Floresta Ombrófila Densa, Winkler, P10EQ3 NOITE2 (1I) [DZUP]; same except P8EQ2 NOITE2 (7W 1Q 1I) [DZUP]; P19DQ4 DIA2 (2W 3I) [DZUP]; Ponta Grossa, 24-28.xi.2014, Feitosa et al. cols, winker, arenitos 4 (1W) [DZUP]; same except arenitos 1 (1I) [DZUP]; arenitos 7 (1Q 1I) [DZUP]; 24-29.xi.2014, Feitosa et al. cols., winker, furnas 1 (2W) [DZUP]; furnas 12 (1W) [DZUP]; furnas 4 (1Q) [DZUP]; furnas 9 (1I) [DZUP]; Morretes, Parque Estadual do pau-Ôco, 25°34'33.5"S, 48°53'19.5"W, 6-11.v.2002, Silva R.R. & Dietz B.H. cols., Winkler 3 (1I) [MZSP]; same except Winkler 8 (1I) [MZSP]; Winkler 9 (1W 2I) [MZSP]; Winkler 18 (1W) [MZSP]; Winkler 11 (2W) [MZSP]; Winkler 44 (1W 1I) [MZSP]; Winkler 49 (1W 2I) [MZSP]; Tunas, Parque das Lauráceas, 21-29.ii.2001, 24°51'16"S, 48°43'00.4"W, Silva & Eberhardt cols., Transecto I, Winkler 01 (1W 1I) [MZSP]; same data (1W) (MZSP67444) [MZSP]; same except Winkler 02 (1Q) [MZSP]; Winkler 03 (1W 1I) [MZSP]; Winkler 05 (1W 1I) [MZSP]; Winkler 06 (1I) [MZSP]; Winkler 07 (1I) [MZSP]; Winkler 08 (1W 1I) [MZSP]; Winkler 09 (1W) [MZSP]; Winkler 10 (1I) [MZSP]; Winkler 11 (1I) [MZSP]; Winkler 12 (1Q 2W) [MZSP]; Winkler 13 (1I) [MZSP]; Winkler 14 (1I) [MZSP]; Winkler 15 (1I) [MZSP]; Winkler 16 (1I) [MZSP]; Winkler 17 (1I) [MZSP]; Winkler 18 (1I) (MZSP67448) [MZSP]; Winkler 19 (1I) [MZSP]; Winkler 22 (1I) [MZSP]; Winkler 23 (1W) [MZSP]; Winkler 26 (1W 1I) [MZSP]; Winkler 28 (1W) [MZSP]; Winkler 29 (1I) [MZSP]; Winkler 31 (1I) [MZSP]; Winkler 32 (1 indet.) [MZSP]; Winkler 34 (1W) (MZSP67429) [MZSP]; Winkler 36 (1W) [MZSP]; Winkler 37 (2W) [MZSP]; Winkler 38 (1W 1I) [MZSP]; Winkler 39 (1I) [MZSP]; Winkler 40 (1I) [MZSP]; Winkler 41 (1W) [MZSP]; Winkler 42 (1W 2Q 1I) [MZSP]; Winkler 45 (1W) [MZSP]; Winkler 46 (1I) [MZSP]; Winkler 47 (1I) [MZSP]; Winkler 48 (1W 1Q) [MZSP]; Winkler 49 (1I) [MZSP]; Winkler 50 (1W) [MZSP]; Estrada Velha Guaricana, ca Cachoeira das Mulas, -25.3423° 48.9226°, 13.iv.2017, R. López, J. Lattke, 3856 (1I) [MZSP]; same except -25.7303° 49.0911°, 10.iv.2017, R. López, J. Lattke, 3814 (1W) [DZUP]; 3827 (1W) [DZUP]; 3823 (2W) [DZUP]; 3828 (1W) [DZUP]; 3831 (1W) [DZUP]; 3826 (1I) [DZUP]; Irati, Guamirim, Fz. Arroio Grande, 09.x.2014, 25°35'36.11"S, 50°49'12.06"W, Serapilheira, Funil de Berlese, Marques, C.G.P., Falbot, L. col., Talhão 16-AII (2W 1Q) [DZUP]; Talhão 15-AIII (1W) [DZUP]; Talhão 11-AII (1W) [DZUP]; Talhão 19-AII (1W) [DZUP]; Tuneiras do Oeste, Reserva Biológica de Perobas, 23°50'5.64"S, 52°45'37.52"W, 18.ix.2015, Busanello, D. & Caron, E. cols. (11W) [DZUP]; Reserva Biológica das Perobas, 23°50'39"S, 52°44'43.26"W (2W) [DZUP]; **[RJ, Rio de Janeiro]**: Santa Maria] Madalena, [P.E. do Desengano, 21°58'41"S, 41°57'00"W, 30.xi.2002, Mayhé A. & Veiga-Ferreira S. cols.], 30 (1I) [MZSP]; same except 38 (1I) (MZSP67446) [MZSP]; 36 (1W) [MZSP]; 50 (1I) (MZSP67445) [MZSP]; 48

(1I) [MZSP]; 47 (1I 1Q) (MZSP67449) [MZSP]; Rio de Janeiro, Floresta da Tijuca, D. Federal, ii.1960, C.A.C Seabra (1W) [MZSP]; Teresópolis, P.N. Serra dos órgãos, 23-28.xi.1999, Dietz, Silva & Rocha cols., Winkler 10 (2I) [MZSP]; Winkler 18 (1W) [MZSP]; **RS[Rio Grande do Sul]:** N.[Nova] Petropolis, Lat 29°20', Lo. 51°12', xi.1959, F. Plaumann, 3223 (1Q 2W) [MZSP]; Frederico Westphalen, UF Santa Maria, 04.xi.2008, Granzotto F., #5546 (2W 1I) [CEPLAC]; 5km north of Progresso, Linha Araçá, near Rio Fão, 52°20'W, 29°10'S, 300-400m, Secondary Forest, soil sifting, Winkler 1 qm, 23.iv.1999, Leg. J. Bihm (2I) [MZSP]; same except 17.iii.1999 (1W 1I) [MZSP]; Tainhas, iv.1959, F. Plaumann, 3077 (2I) [MZSP]; B[arão de] Cotejipe, vii.1960, F. Plaumann, 3771 (2Q 2I) [MZSP]; **SC[Santa Catarina]:** Abelardo Luz, 26°33'53"S, 52°19'42"W, 20.ix.1999, Silva R.R. col., Transecto I, Winkler (2I) [MZSP]; Blumenau, P.E. Nascentes, 27°06'15"S, 49°09'14"W, 20-27.x.2000, Silva R.R. & Eberhardt F. cols., Transecto I, Winkler 01 (1I) [MZSP]; same except Winkler 03 (2I) [UTEP]; Winkler 04 (1I) [MZSP]; Winkler 05 (1W 1I) [MZSP]; Winkler 07 (3I) [MZSP]; Winkler 08 (1Q) [MZSP]; Winkler 10 (1I) [MZSP]; Winkler 12 (2I) [MZSP]; Winkler 13 (1I) [MZSP]; Winkler 17 (1I) [MZSP]; Winkler 20 (1I) [MZSP]; Winkler 21 (1W 1I) [MZSP]; Winkler 24 (1Q) [MZSP]; Winkler 26 (1I) [MZSP]; Winkler 29 (1I) [MZSP]; Winkler 30 (1W) [MZSP]; Winkler 31 (1W) [MZSP]; Winkler 32 (1I) [MZSP]; Winkler 34 (1I) [MZSP]; Winkler 35 (1I) [MZSP]; Winkler 36 (1I) [MZSP]; Winkler 37 (1I) [MZSP]; Winkler 38 (1I) [MZSP]; Winkler 39 (1I) [MZSP]; Winkler 40 (1I) [MZSP]; Winkler 41 (1W) [MZSP]; Winkler 42 (1I) [MZSP]; Winkler 44 (1I) [MZSP]; Winkler 45 (1I) [MZSP]; Winkler 46 (1W) [MZSP]; Winkler 47 (1I) [MZSP]; Winkler 48 (1I) [MZSP]; Winkler 49 (1I) [MZSP]; Winkler 50 (1I) [MZSP]; Chapecó, v.1957, Plaumann col., Col. Kempf n°2655 (5I 1Q) [MZSP]; same locality xii.1957, F. Plaumann col., Coll. Borgm. Nr. 6501 (5I 1Q) [MZSP]; Concórdia, ix.1959, F. Plaumann, 8294 (1W) [MZSP]; Florianópolis, Morro da Lagoa, 19.vi.1993, R.R. da Silva & B.C. Lopes, funil-56 (1I) [MZSP]; same locality, Canto da Lagoa, -27.533657, -48.458410, 15.ii.2016, JCwinkler#003, J. Chaul col. (1Q) [MZSP]; UCAD, 18.iii.2005, H. Mozerle (1W) [UFSC]; Praia dos Naufragados, 27°49'58.2"S, 48°33'37.8"W, Jan.2013, sifted litter, J. Chaul, UFV LABE-COL n°000141 (1I) [MZSP]; same except início da descida da trilha para a praia, -27.823412, -48.561569, 19.ii.2016, JCwinkler#008, J.Chaul col. (1W 5I) [MZSP]; Nova Teutonia, 27°11'B, 52°23'L, Fritz Plaumann, 300-500m, viii.1952 (5I 1Q) [USNM]; same except x.1953 (1W 1Q) [MCZC]; x.1954 (2W) [MZSP]; i.1957 (1I) [MZSP]; v.1957 (1W) [MZSP]; vi.1957 (1W) [MZSP]; vii.1957 (1W 4I 3Q) [MZSP]; viii.1957 (1W 2I 1Q) [MZSP]; (1Q) [MCZC]; vi.1959 (2I) [IFML]; ix.1959, 3490 (1W 6I 2Q) [MZSP]; vi.1960 (1Q) [MZSP]; 1961, leg. F. Plaumann (1Q) [MHNG]; iv.1976, 13628 (4I 1Q) [MZSP]; N. Teutônia, vi.1960, 8172 (1W 3I 2Q) [MZSP]; vi.1961, 6869 (2I 3Q) [MZSP]; viii.1961, 7003 (5I 1Q) [MZSP]; xii.1970, 8135 (1M) [MZSP]; iii.1971, F. Plaumann, 7099 (1I) [MZSP]; Palhoça, P.E. Serra do Tabuleiro, 27°44'28"S, 48°41'50"W, 02-10.vi.2003, Silva R.R., Dietz B.H. & Tavares A. cols., Winkler 2 (2I) [MZSP]; same except Winkler 3 (2I) [MZSP]; Winkler 4 (1I) [MZSP]; Winkler 6 (1I 1Q) [MZSP]; Winkler 6 (1I 1Q) [MCZC]; Winkler 7 (2I) [MZSP]; Winkler 8 (2I) [MZSP]; Winkler 9 (2I) [MZSP]; Winkler 10 (2I) [MZSP]; Winkler 13 (1I) [MZSP]; Winkler 14 (2I) [MZSP]; Winkler 20 (1Q) [CASC]; Winkler 29 (2I) [MZSP]; Winkler 31 (2I) [UTLP]; Winkler 33 (2I) [MZSP]; Winkler 35 (2I) [MZSP]; Winkler 37 (2I) [USNM]; Winkler 38 (1W 1I) [MZSP]; Winkler 39 (1I) [MZSP]; Winkler 41 (1I) [MZSP]; Winkler 44 (2I) [MZSP]; Winkler 45 (1W) [MZSP]; Winkler 47 (1I) [MZSP]; Winkler 49 (1I) [MZSP]; P.[Passos] Bormann, xii.1957, Plaumann (1W) [MZSP]; Sto.[Santo] Amaro, 17.xi.2009, PEST, F.O.D., Romualdo Begnini, NP1 (1W 1I) [UFSC]; São Bento do Sul, APA Rio Vermelho, 26°21'51"S, 49°16'16"W, 30.iii-04.iv.2001, Silva R.R. & Eberhardt F. cols., Transecto II, Winkler 26 (1I) [MZSP]; same except Winkler 27 (1I) [MZSP]; Winkler 28 (1I) [MZSP]; Winkler 29 (1I) [MZSP]; Winkler 30 (1I) [MZSP]; Winkler 31 (1I) [MZSP]; Winkler 35 (1I) [MZSP]; Winkler 38 (1I) [MZSP]; Winkler 40 (1I) [MZSP]; Winkler 41 (1Q) [MZSP]; Winkler 42 (1I) [MZSP]; Winkler 44 (1I) [MZSP]; Winkler 45 (1I) [MZSP]; Winkler 46 (1I) [MZSP]; Winkler 47 (1I) [MZSP]; Winkler 50 (1I) [MZSP]; Transecto I, Winkler 01 (1I) [MZSP]; Winkler 03 (1I) [MZSP]; Winkler 04 (1I) [MZSP]; Winkler 05 (1I) [MZSP]; Winkler 06 (1I) [MZSP]; Winkler 08 (1I) [MZSP]; Winkler 09 (2I) [IHVL]; Winkler 10 (1I) [MZSP]; Winkler 11 (1I) [MZSP]; Winkler 12 (1I) [MZSP]; Winkler 13 (1I) [MZSP]; Winkler 14 (1I) [MZSP]; Winkler 15 (1I) [MZSP]; Winkler 17 (1I) [MZSP]; Winkler 18 (1I) [MZSP]; Winkler 19 (1I) [MZSP]; Winkler 21 (1I) [MZSP]; Winkler 22 (1I) [MZSP]; Winkler 23 (1I) [MZSP]; Winkler 24 (1I) [MZSP]; Winkler 29 (1I) [MZSP]; São Bonifácio, 27.8183S, 48.9114W, 850m, 2-10.vii.2011, Winkler, F.A. Esteves & B.L. Fisher cols. (4W 1I) [MZSP]; same locality, -27.8183 -48.9114, 850m, winkler, 02-10.vii.2011, F.A. Esteves & B.L. Fisher cols. (3I 3W) [MZSP]; same except BLF 27476 (1I) [MZSP]; P.E. Serra do Tabuleiro, 27°49'06"S, 48°54'41"W, 08-13.iii.2004, Silva R.R., Dietz B.H. & Albuquerque N. (5I 1Q) [MZSP]; same except Winkler 1 (1I) [MZSP]; Winkler 2 (1I) [MZSP]; Winkler 4 (2I) [MZSP]; Winkler 5 (1I) [MZSP]; Winkler 6 (1Q) [MZSP]; Winkler 8 (1I) [MZSP]; Winkler 10 (2I) [MZSP]; Winkler 12 (2I) [MZSP]; Winkler 13 (1I)

[MZSP]; Winkler 14 (1I) [MZSP]; Winkler 15 (3I) [MZSP]; Winkler 16 (1I) [MZSP]; Winkler 18 (1W 1Q) [MZSP]; Winkler 19 (1I) [MZSP]; Winkler 21 (2I) [MZSP]; Winkler 22 (3I) [MZSP]; Winkler 23 (2I) [MZSP]; Winkler 24 (1Q) [MZSP]; Winkler 27 (2I 1Q) [MZSP]; Winkler 28 (2I) [MZSP]; Winkler 31 (2I) [MZSP]; Winkler 33 (2I) [MZSP]; Winkler 34 (2I) [MZSP]; Winkler 35 (1I) [MZSP]; Winkler 37 (1I 1Q) [MZSP]; Winkler 38 (1Q) [MZSP]; Winkler 39 (2I) [MZSP]; Winkler 40 (1I) [MZSP]; Winkler 41 (1Q) [MZSP]; Winkler 42 (2I) [MZSP]; Winkler 43 (2I 1Q) [MZSP]; Winkler 45 (3I) [MZSP]; Winkler 46 (1I) [MZSP]; Winkler 47 (3I) (MZSP67447) [MZSP]; Winkler 48 (1I) [MZSP]; Winkler 49 (2I 2Q) [MZSP]; Winkler 50 (1I) [MZSP]; Seara, xii.1958, Plaumann, 2709 (1I) [MZSP]; same except vii.1958, Plaumann, 2721 (2I) [MZSP]; 24°07'S, 52°18'W, v-xii.1998, Rogério R. Silva col., Transecto I, Winkler (2I) [MZSP]; Xanxeré, xii.1957, F. Plaumann (1I) [MZSP]; **SP[São Paulo]**: Bertioga, RPPN SESC Bertioga, 23°49'18.9"S, 46°07'23.7"W, Restinga [arbórea], Winkler, 18-20.x.2014, M.A. Ulysséa & L.P. Prado cols., PT2 (1W) (MZSP67432) [MZSP]; Botucatu, 9-11-1987, Forti L.C. & Rinaldi I.M.P. col., Forti #14 (1I) [MZSP]; same except 07-07-1987, Forti #34 (1I) [MZSP]; 15-19-1987, Forti #38 (3I) [MZSP]; 18-02-1988, Forti #10 (1I) [MZSP]; 07-10-1986, Forti L.C. col. (1I) [MZSP]; 14-04-1987, Forti L.C. col., Forti #51 (1I) [MZSP]; 03-09-1986, Forti #42 (1Q 1I) [MZSP]; Forti #41 (2Q 1I) [MZSP]; Mata Ciliar, Botignoli, 9.viii.1988, L.C. Forti col., Armadilha de solo, Forti #04 (1W) [MZSP]; Cananéia, P.E. Ilha do Cardoso, 25°05'48.7"S, 47°55'47.3"W, 24-28.xi.2002, Silva R.R., Brandão C.R.F., Scott C. cols., Winkler 1 (2I) [MZSP]; same except Winkler 2 (1I) [MZSP]; Winkler 9 (1I) [MZSP]; Winkler 11 (2I) [MZSP]; Winkler 12 (1I) [MZSP]; Winkler 13 (2I) [MZSP]; Winkler 15 (2I) [MZSP]; Winkler 32 (1I) [MZSP]; Winkler 35 (1I) [MZSP]; Winkler 39 (2W 1I) [IHVL]; Winkler 42 (1I) [MZSP]; Winkler 47 (1I) [MZSP]; Winkler 48 (1W) [MZSP]; Winkler 49 (1I) [MZSP]; Cunha, P.E. Serra do Mar, Núcleo Cunha-Indaiá, 23°15'03"S, 45°00'26"W, 21-22.iv.2001, A.A. Tavares, R.R. Silva, cols., Winkler 5 (1W) [MZSP]; same except Winkler 10 (1I) [MZSP]; Winkler 11 (1W 1Q 1I) [MZSP]; Winkler 13 (1W) [MZSP]; Winkler 14 (1Q) [MZSP]; Winkler 15 (1Q) [MZSP]; Winkler 17 (3I) [MZSP]; Winkler 18 (1W) [MZSP]; Winkler 19 (1Q 3I) [MZSP]; Winkler 20 (2I 1 indet.) [MZSP]; Winkler 22 (1W 1I) [MZSP]; Winkler 23 (3W 2I) [MZSP]; Winkler 24 (1W 1I) [MZSP]; Winkler 26 (1W 1I 1M) [MZSP]; Winkler 27 (3W 1I 1Q) [MZSP]; Winkler 28 (1I) [MZSP]; Winkler 29 (1W 1Q 1I) [MZSP]; Winkler 31 (1W) [MZSP]; Winkler 32 (1Q 1I) [MZSP]; Winkler 33 (1I) [MZSP]; Winkler 37 (1W 1I) [MZSP]; Winkler 39 (2I) [MZSP]; Winkler 42 (3W 1I) [MZSP]; Winkler 43 (1I) [MZSP]; Winkler 45 (1Q 1I) [MZSP]; Winkler 46 (1W 2I) [MZSP]; Winkler 47 (1W 1Q) [MZSP]; Winkler 50 (3I) [MZSP]; Igaratá, Cachoeira Pedra Bonita, 23°12'28"S 46°10'39"W, 14.iv.2015, T. Fernandes col., nidificando em galho na serapilheira, galho compartilhado com *Brachymyrmex admotus*, *B. heeri*, *Pheidole sigillata* e duas espécies de *Solenopsis*, P6G-1098, CPB3-1499 (1Q) [MZSP]; same except CPB3-1500 (1Q) [MZSP]; Iguape, E.E. Juréia-Itatins, Núcleo Rio Verde, 24°32'39"S, 47°14'08"W, 5-14.iii.2001, A.A. Tavares col., Winkler 1 (1I) [MZSP]; same except Winkler 10 (1W) [MZSP]; Winkler 11 (1I) [MZSP]; Winkler 22 (1I) [MZSP]; Winkler 34 (1I) [MZSP]; Winkler 50 (1I) [MZSP]; Itatinga, Mata, litter, 19.x.1991, B.H. Dietz col., Forti #06 (1I) [MZSP]; Jundiaí, Serra do Japi, 23°13'S, 46°58'W, pitfall, iii.2011, T. Postali col., #1644 (1I) [MZSP]; Nazaré Pta.[Paulista], tronco podre, 25.i.1992, B.H. Dietz col. (3Q) [MZSP]; Picinguaba, P.E. Serra do Mar, 23°20'10"S, 44°50'15.3"W, 30.iii-04.iv.2001, Brandão C.R.F. & Eq. cols, Winkler 2 (1I) [MZSP]; same except Winkler 3 (1I) [MZSP]; Winkler 4 (1I) [MZSP]; Winkler 6 (1W) [MZSP]; Winkler 7 (1I) [MZSP]; Winkler 15 (1W 1I) [MZSP]; Winkler 16 (1W 2I) [MZSP]; Winkler 17 (2I) [MZSP]; Winkler 18 (1I) [MZSP]; Winkler 19 (1I) [MZSP]; Winkler 22 (2I) [MZSP]; Winkler 26 (1W 2I) [MZSP]; Winkler 28 (1I) [MZSP]; Winkler 35 (2I) [MZSP]; Winkler 41 (1W 2I) [USNM]; Winkler 43 (1 indet.) [MZSP]; Winkler 45 (1W 2I) [MZSP]; Winkler 47 (2I) [MZSP]; Winkler 49 (2I) [MZSP]; Praia Grande, P.E. Serra do Mar, Núcleo Pilões-Cubatão, 23°58'31"S, 46°32'24"W, 26-27.v.2001, A.A. Tavares, R.R. Silva, cols., Winkler 1 (1I) [MZSP]; same except Winkler 12 (2I) [MZSP]; Winkler 37 (1I) [MZSP]; Ribeirão Grande, P.E. Intervales, Base Barra Grande, 02.ii.1999, A.A. Tavares, Transecto 1, Winkler 1 (1W 1I) [MZSP]; same except Winkler 2 (3I) [MZSP]; Winkler 3 (1W 3I) [MZSP]; Winkler 5 (1W) [MZSP]; Winkler 6 (1I) [MZSP]; Winkler 7 (3I) [MZSP]; Winkler 8 (1I) [MZSP]; Winkler 11 (1I) [MZSP]; Winkler 12 (1I) [MZSP]; Winkler 13 (2I) [MZSP]; Winkler 14 (2I) [MZSP]; Winkler 15 (3I) [MZSP]; Winkler 16 (1I) [JLTC]; Winkler 17 (1W 1I) [JLTC]; Winkler 21 (2I) [MZSP]; Winkler 22 (3I) [MZSP]; Winkler 24 (2I 1 indet.) [MZSP]; Winkler 25 (1I) [MZSP]; 05.ii.1999, Transecto 2, Winkler 1 (1I) [MZSP]; Winkler 6 (3I) [MZSP]; Winkler 7 (2W 1I) [MZSP]; Winkler 8 (2I) [MZSP]; Winkler 11 (3I) [MZSP]; Winkler 12 (1I) [MZSP]; Winkler 15 (2I) [MZSP]; Winkler 17 (1W) [MZSP]; Winkler 18 (1I) [MZSP]; Winkler 21 (1W 1I) [MZSP]; Winkler 22 (1I) [MZSP]; Winkler 22 (1W 2I) [MZSP]; Salesópolis, E.B.B.[Estação Biológica de Boracéia], 20-26.x.1997, C. Klingenberg & C.I. Yamamoto col., Winkler 2a (1I) [MZSP]; same except Winkler 3b (1I) [MZSP]; Winkler 8a (1I) [MZSP]; Winkler 9a (1I) [MZSP]; Winkler 9b (1I) [MZSP]; Winkler 10a

(1Q 1I) [MZSP]; Winkler 10b (1I) [MZSP]; Winkler 11a (1W 1I) [MZSP]; Winkler 11b (1I) [MZSP]; Winkler 12a (1I) [MZSP]; Winkler 14a (1I) [MZSP]; Winkler 14b (1I) [MZSP]; Winkler 15a (1I) [MZSP]; Winkler 16a (1I) [MZSP]; Winkler 22a (1I) [MZSP]; Winkler 22b (1I) [MZSP]; Winkler 25a (1Q) [MZSP]; Pitfall 19 (a) (1I) [MZSP]; Pitfall 20 (a) (1Q) [MZSP]; 2-6.v.1997, D. Agosti, C.R.F. Brandão, C.I. Yamamoto col., Transect I, Winkler 5a (1W) [MZSP]; same except Winkler 5b (4I) [MZSP]; Winkler 7 (1W 1Q 2I) [MZSP]; Winkler 12a (2I) [MZSP]; Winkler 12b (1I) [MZSP]; Winkler 13a (1W 1Q) [MZSP]; Winkler 16a (4I) [MZSP]; Winkler 16b (4I) [MZSP]; Winkler 16-2 (1W 5I) [MZSP]; 29.iv.1992, S. Ide (1I) [MZSP]; 12-17.vi.1997, B.H. Dietz & C.I. Yamamoto col., Transect I, Winkler 4 (1Q 1I) [MZSP]; same except Winkler 14a (1Q) [MZSP]; Winkler 16a (1I) [MZSP]; Winkler 16b (1I) [MZSP]; Winkler 17a (1I) [MZSP]; Winkler 17b (1I) [MZSP]; Winkler 24a (2I) [MZSP]; Winkler 24b (1I) [MZSP]; Winkler 25a (1I) [MZSP]; 5-7.vii.1997, C.I. Yamamoto col., Transect I, Winkler 2 (1I) [MZSP]; same except Winkler 4 (1Q 1I) [MZSP]; Winkler 5 (1I) [MZSP]; Winkler 6 (1Q) [MZSP]; Winkler 10 (1I) [MZSP]; Winkler 11 (2I) [MZSP]; Winkler 12 (1I) [MZSP]; Winkler 15 (1I) [MZSP]; Winkler 19 (2I) [MZSP]; Winkler 25 (1I) [MZSP]; Estação Biológica de Boracéia, 21.v-28.vi.2008, Malaise, 23°38'28"S, 45°51'22"W, Nihei, S. Figueiredo, R. & Andrade, M. cols. (1Q 7M) [MZSP]; Boraceia Biological Sta[Station], 850m, wet mt. forest, feb.67, W.L. Brown & R. Croizer cols. (1W 2I) [MCZC]; same except 24-28.may.1971, 850m, wet mt. forest (1I) [MCZC]; 3-5.v.1996, Brandão, Agosti, Diniz, Silvestre & Yamamoto (1I) [MZSP]; 23°31'56"S, 45°50'47"W, em tronco caído (1I) [MZSP]; em tronco caído 36, imaturos em álcool[immatures in alcohol] [these are not immatures of *Holomyrma*] (1I) [MZSP]; Winkler, folhiço (4I) [MZSP]; Trilha do Divisor, Malaise, 23°39'18.2"S, 45°53'18"W, 23.ii.2005, 06:00-18:00hs, J.C. de Souza & A.P. Aguiar cols., HYMPAR-FAPESP (18M) [MZSP]; same except R.S.M. Feitosa & A.P. Aguiar cols., HYMPAR-FAPESP (9M) [MZSP]; same data (1Q 1M) (MZSP67431) [MZSP]; same except 25.ii.2005, 09:00-10:00hs, J.C. de Souza & A.P. Aguiar cols., HYMPAR-FAPESP (1M) [MZSP]; 10:00-11:00hs, J.C. de Souza & A.P. Aguiar cols., HYMPAR-FAPESP (7M) [MZSP]; 11:00-12:00hs, R.S.M. Feitosa & A.P. Aguiar cols., HYMPAR-FAPESP (2M) [MZSP]; 14:00-16:00hs, R.S.M. Feitosa & A.P. Aguiar cols., HYMPAR-FAPESP (13M) [MZSP]; 25-26.ii.2005, 18:00-06:00hs, J.C. de Souza & A.P. Aguiar cols., HYMPAR-FAPESP (1M) [MZSP]; 27.ii.2005, 16:00-17:00hs, R.S.M. Feitosa & A.P. Aguiar cols., HYMPAR-FAPESP (2M) [MZSP]; 17:00-18:00hs, R.S.M. Feitosa & A.P. Aguiar cols., HYMPAR-FAPESP (1M) [MZSP]; 23°39'25.7"S, 45°53'23"W, 18-22.iv.2003, A.P. Aguiar & F.M. Rodriguez cols., pt9, BIOTA-FAPESP (1M) [MZSP]; 23°39'18.1"S, 45°53'18.2"W, pt8, BIOTA-FAPESP (5M) [MZSP]; 23°39'22.9"S, 45°53'48.1"W, 18-28.iv.2003, pt10, BIOTA-FAPESP (1M) [MZSP]; Trilha dos Pilões, Malaise, 23°39'S, 45°53'W, 18-28.iv.2003, pt3, BIOTA-FAPESP (1M) [MZSP]; same except 23°39'05.1"S, 45°53'51.8"W, 23.ii.2005, 06:00-18:00hs, A.P. Aguiar & L.K. Nogueira cols., HYMPAR-FAPESP (16M) [MZSP]; 24.ii.2005, 11:00-12:00hs, L.K. Nogueira & A.P. Aguiar cols., HYMPAR-FAPESP (1M) [MZSP]; 25.ii.2005, 09:00-10:00hs, L.K. Nogueira & A.P. Aguiar cols., HYMPAR-FAPESP (1M) [MZSP]; 10:00-11:00hs, L.K. Nogueira & A.P. Aguiar cols., HYMPAR-FAPESP (2M) [MZSP]; 11:00-12:00hs, A.P. Aguiar & L.K. Nogueira cols., HYMPAR-FAPESP (1M) [MZSP]; 26.ii.2005, 08:00-09:00hs, A.P. Aguiar & L.K. Nogueira cols., HYMPAR-FAPESP (1M) [MZSP]; 27.ii.2005, 07:00-08:00hs, L.K. Nogueira & A.P. Aguiar cols., HYMPAR-FAPESP (2M) [MZSP]; 16:00-17:00hs, A.P. Aguiar & L.K. Nogueira cols., HYMPAR-FAPESP (1M) [MZSP]; São Paulo, P.E. da Cantareira, Núcleo Engordador, 23°21'27"S, 46°29'42"W, 12-22.v.2003, R. Feitosa & A. Soliva cols., Winkler 3 (2I) [MZSP]; same except Winkler 6 (1Q 1I) [MCZC]; Winkler 18 (3I) [MZSP]; Winkler 23 (1Q 1I) [MZSP]; Winkler 28 (2I) [MZSP]; Winkler 33 (2I) [MZSP]; São Vicente, Parque Estadual Xixová-Japuí, 23°59'S, 46°23'W, 01.vii.2011, transecto 1, pitfall 9 (1I) [MZSP]; same except 15.v.2011, mata secundária, transecto 2, winkler 9 (1I) [MZSP]; 23.iv.2011, mata sede, transecto 2, winkler 3 (2I) [CASC]; transecto 1, winkler 9 (1I) [MZSP]; 17-18.vii.2010 (1I) [MZSP]; Tapiraí, 08-14.i.2001, 24°01'55"S, 47°27'56"W, Silva & Eberhardt cols., Transecto I, Winkler 01 (1I) [MZSP]; same except Winkler 03 (1I) [MZSP]; Winkler 06 (1Q) [MZSP]; Winkler 09 (2I) [MZSP]; [MZSP]; Winkler 14 (1I) [MZSP]; Winkler 23 (1I) [MZSP]; Winkler 24 (1W) [MZSP]; Winkler 26 (1I) [MZSP]; Winkler 27 (1I) [MZSP]; Winkler 34 (1I) [MZSP]; Winkler 37 (1I) [MZSP]; Winkler 43 (1I 1M) [MZSP]; Winkler 45 (1I) [MZSP]; Ubatuba, P.E.S.M., N. Picinguaba, alt. 1000m, 23°17'56.4"S, 44°47'13.2"W, 13.iii.2006, Winkler 19 (2I) [MZSP]; same except Winkler 20 (2I) [MZSP]; Winkler 21 (2I) [MZSP]; Winkler 23 (2I) [MZSP]; Winkler 24 (1W 1I) [MZSP]; Winkler 25 (1I) [MZSP]; 10.iii.2006, Winkler 11 (2I) [MZSP]; Winkler 12 (2I) [MZSP]; Winkler 13 (2I) [MZSP]; Winkler 14 (1W) [MZSP]; Winkler 16 (1W) [MZSP]; Winkler 17 (1W) [MZSP]; Winkler 18 (2I) [MZSP]; 03.iii.2006, Winkler 2 (2I) [MZSP]; Winkler 3 (1I) [MZSP]; Winkler 4 (1I) [MZSP]; Winkler 5 (3I) [MZSP]; 07.iii.2006, Winkler 8 (1W) [MZSP]; Winkler 9 (1W 1I) [MZSP]; 800m, 23°17'49.2"S, 44°47'31.2"W, 10.iii.2006, Scott-Santos C.P. & Santos

E.F. cols., Winkler 22 (1W 1I) [MZSP]; Winkler 23 (1W 1I) [MZSP]; Winkler 24 (2W) [MZSP]; 23.i.2006, Winkler 2 (1I) [MZSP]; Winkler 3 (1W 1I) [MZSP]; Winkler 4 (2I 1M) [CASC]; Winkler 5 (2I) [MZSP]; Winkler 6 (2I) [MZSP]; 03.iii.2006, Winkler 15 (2I) [MZSP]; Winkler 16 (2I) [MZSP]; 13.iii.2006, Winkler 25 (1W 1I) [MZSP]; Winkler 26 (2I) [MZSP]; 07.iii.2006, Winkler 18 (2I) [MZSP]; Winkler 19 (2I) [MZSP]; Winkler 20 (2I) [MZSP]; 26.i.2006, Winkler 7 (2I) [MZSP]; Winkler 8 (2I) [MZSP]; Winkler 9 (1W 1I) [MZSP]; Winkler 10 (2I) [MZSP]; Winkler 11 (2I) [MZSP]; 600m, 23°17'54.4"S, 44°47'49.2"W, 05.ii.2006, Winkler 19 (1I) [MZSP]; Winkler 20 (2I) [MZSP]; Winkler 22 (1W 1I) [MZSP]; 23.i.2006, Winkler 2 (2I) [MZSP]; Winkler 3 (2W) [MZSP]; Winkler 6 (1W 1I) [MZSP]; Winkler 7 (1Q 2I) [MZSP]; Winkler 8 (1I) [MZSP]; 26.i.2006, Winkler 9 (2I) [MZSP]; Winkler 10 (2I) [MZSP]; Winkler 15 (2I) [MZSP]; Winkler 17 (2I) [MZSP]; 16.iii.2006, Winkler 21 (1W 1I) [MZSP]; Winkler 23 (2I) [MZSP]; Winkler 24 (1W 1I) [MZSP]; Winkler 25 (1W 1I) [MZSP]; 400m, 23°18'21.6"S, 44°48'25.2"W, 24.iii.2006, Winkler 21 (2I) [MZSP]; Winkler 22 (1W) [MZSP]; Winkler 24 (1W) [MZSP]; 19.iii.2006, Winkler 11 (1W 1I) [MZSP]; Winkler 14 (1I) [MZSP]; Winkler 15 (1I) [MZSP]; Winkler 16 (2I) [MZSP]; 16.iii.2006, Winkler 8 (3I) [MZSP]; Winkler 13 (1W) [MZSP]; 05.i.2006, Winkler 1 (2I) [MZSP]; Winkler 3 (1I) [MZSP]; 200m, 23°19'08.4"S, 44°49'4.8"W, 24.iii.2006, Winkler 21 (1I) [MZSP]; Winkler 22 (1I) [MZSP]; Winkler 23 (2I) [MZSP]; Winkler 24 (2I) [MZSP]; Winkler 25 (1Q 1I) [MZSP]; 18.iii.2006, Winkler 14 (2W 1I) [MZSP]; Winkler 18 (2I) [MZSP]; 18.i.2006, Winkler 1 (1I) [MZSP]; Winkler 4 (2I) [MZSP]; Winkler 5 (3I) [UTEP]; Winkler 7 (3I) [MZSP]; Winkler 8 (1W 1Q) (MZSP67430) [MZSP]; Winkler 9 (2I) [MZSP]; 21.i.2006, Winkler 11 (1I) [MZSP]; Winkler 12 (1Q 2I) [MZSP]; Winkler 12 (4I) [UTLP]; Winkler 13 (3I) [MZSP]; 50m, 23°20'24"S, 44°49'26.4"W, 21.i.2006, Winkler 13 (1W 1I) [MZSP]; 18.i.2006, Winkler 1 (1Q 1I 1 indet.) [MZSP]; Winkler 5 (2I) [MZSP]; Winkler 7 (2I) [MZSP]; Winkler 8 (1I 1 indet.) [MZSP]; Winkler 9 (1I) [MZSP]; 18.iii.2006, Winkler 15 (2I) [MZSP]; Winkler 16 (2I) [MZSP]; Winkler 19 (1W 1I) [MZSP]; Winkler 20 (1I) [MZSP]; 24.iii.2006, Winkler 22 (2I) [MZSP]; Winkler 23 (1I) [MZSP]; Winkler 25 (1Q 1I) [MZSP]; Winkler 26 (2I) [MZSP]; P.E. Serra do mar, N. Picinguaba, 23°17'49.2"S, 44°47'31.20"W, 03-14.iii.2008, Esteves F.A. & Feitosa R.M. cols., altitude 800m, armadilha subterrânea - #14 (1I) [MZSP]; same except 23°17'56.40"S, 44°47'49.20"W, altitude 600m, isca de sardinha sobre o solo - #25 (1I) [MZSP]. **PARAGUAY: Alto Parana:** Pto[Puerto] Pte[Presidente] Stroessner [today Ciudad del Este], 6.xi.79, V. Mahnert, 52 (1W 1I) [MHNG]; **Itapua:** Salto Tembey, 1.xi.82, F. Baud et al. of MHN-Geneva, forest, lf. litt. & wood, winker apparatus (1Q 3I) [MHNG]; same except C. Dlouhy, 82/20 (1I) [MHNG].

### *Hylomyrma sagax* Kempf, 1973

Figures 69, 70, 83 (map)

*Hylomyrma sagax* Kempf, 1973: 249 (W, Q). Holotype: COLOMBIA: Amaz.[Amazonas]: 7km NW Letícia, 20–25 Feb 1972, #230, forest litter, berlesate, S. & J. Peck [leg.] (1W) (MCZ35422) [MCZC] [examined]. Paratypes: same data as holotype (2W 1Q) (MCZ35422) [MCZC] [examined]; (2W) (ANTWEB-1008993 MZSP67450) [MZSP] [examined]; (1W) (MZHY212) [MZSP] [examined].

**Diagnosis.** Vermicular striae on head dorsum and mesosoma; propodeal spine long; dorsal margin of petiole continuous, convex; petiole ventral surface smooth; longitudinal and anastomosed striae on postpetiole and tergum of first gastral segment; subpostpetiolar process prominent, convex; profemur almost entirely striate, apical region of posterior surface smooth; protibia entirely striate; long striae on tergum of first gastral segment.

**Redescription.** WORKER (n=4) (Fig. 69A–C): HL 1.02 (1.02–1.10); HW 0.98 (0.98–1.03); ML 0.68 (0.68–0.72); SL 0.74 (0.74–0.80); MOD 0.27 (0.26–0.28); PNW 0.72 (0.72–0.78); WL 1.38 (1.38–1.50); PSL 0.42 (0.42–0.46); PL 0.66 (0.64–0.68); PW 0.26 (0.26–0.28); PPL 0.40 (0.36–0.42); PPW 0.37 (0.37–0.40); GL 1.10 (1.10–1.28); TL 5.24 (5.24–5.70); CI 96.08 (93.63–97.11); SI 75.51 (75.51–79.20); OI 27.55 (26.53–27.72). Large-sized. Shiny integument. Dark brown body, lighter leg. Thin and unbranched setae, long to midsized, erect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus slightly concave medially, with a pair of large and blunt teeth laterally; median area of clypeus with 10 irregular to regular, longitudinal striae converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 1 sagittal stria. Short scape, not reaching head posterior margin; apical antennomere shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 13 ommatidia. Head dorsum with vermicular to vermiculated-areolated striae, divergent and anastomosed towards posterior margin, interspaces between striae smooth. Striae on

head lateral and laterodorsal regions converge to mandible insertion; longitudinal, irregular to vermicular striae on head lateral; longitudinal striae posteriorly anastomosed on lateral and lateroventral regions; gena striate, around 4–6 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 69.** Paratype worker of *Hylomyrma sagax* (MZSP67450). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Vermicular striae of uniform thickness on mesosoma dorsum, transverse on pronotum anterior region and propodeum (DV), longitudinal on other parts, interspaces smooth. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and more acute than the shorter and blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  of propodeal spine length. Propodeal spine long, straight (LV), divergent (DV), sculptured on base. Thin striae of uniform thickness on procoxa; irregular and transverse striae on C2 and C3. Irregular to regular transverse striae on profemur anterior and posterior surfaces, apical region smooth; ventral surface smooth. Protibia entirely striate.

Dorsal margin of petiole continuous, convex; mostly covered with irregular to vermicular striae; ventral surface smooth. Longitudinal and anastomosed striae on postpetiole; subpostpetiolar process striae restricted to lateral region, midbasal region smooth; subpostpetiolar process prominent, convex.

First gastral segment striation similar to postpetiole striae; long striae on tergum, length similar to postpetiole length; sternite striation covering the laterobasal region.



**FIGURE 70.** Paratype queen of *Hylomyrma sagax* (MCZC35422). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

QUEEN (n=1, paratype) (Fig. 70A–C): HL 1.08; HW 1; ML 0.68; SL 0.78; MOD 0.31; PNW 0.90; WL 1.64; PSL 0.44; PL 0.74; PW 0.30; PPL 0.46; PPW 0.44; GL 1.32; TL 5.92; CI 92.60; SI 78; OI 31. Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 16 ommatidia. Longitudinal, irregular, slightly anastomosed striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Longitudinal striae with interspaces distinguishable on anepisternum and katepisternum, mostly irregular and anastomosed on anepisternum and regular on katepisternum. Axilla with mostly anastomosed striae, striation inclined to anteroposterior body axis. Scutoscutellar sulcus inconspicuous. Mostly vermicular striae on scutellum. Transverse striae on propodeum (DV). Lateral of mesosoma and laterally with irregular to vermicular striae directed to propodeal spine, interspaces distinguishable. Wings unknown.

MALE Unknown.

**Etymology.** *Sagax* (Latin) = wise, sagacious.

**Comments.** This species is similar to *H. virginiae* and *H. mitiae* in the vermicular sculpture on the head dorsum and mesosoma, and the anastomosed striae on the postpetiole and first gastral tergite. *Hylomyrma sagax* is distinguished from *H. virginiae* (characteristic in parentheses) based on the following characters: a pair of large teeth laterally at the clypeus anterior margin (vs. a pair of medium teeth), the propodeal spine comparatively longer and needle-like (vs. shorter and thicker), and the continuous dorsal margin of petiole (vs. discontinuous). *Hylomyrma sagax* is distinguished from *H. mitiae* in the pair of large teeth laterally at the clypeus anterior margin (vs. medium teeth), the presence of smooth interspaces between the vermicular striae on the entire mesosoma (vs. smooth interspaces only on the mesosomal dorsum; the lateral of mesosoma is covered with very thin striae with indistinguishable interspaces), and the convex subpostpetiolar process (vs. subtriangular). All three species are allopatric; *Hylomyrma sagax* is restricted to southeast Colombia (Fig. 83), whereas *H. mitiae* occurs in French Guiana (Fig. 87), and *H. virginiae* is recorded in Ecuador (both sides of The Andes) and in western Colombia (Fig. 89).

**Distribution.** This species is only known from southeast Colombia (Fig. 83).

**Natural history.** Only one worker is known, apart from the type specimens. All material examined was collected from leaf-litter of tropical rainforest, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (1 worker): **COLOMBIA:** Caquetá: [Puerto] Solano, PNN [Serranía de] Chiribiquete, R. Sararamano, B. Verde military, 300m, 0°10'48"N, 72°37'24"W, Winkler 14, 9.iv.2000, E. González leg. (1W covered with gold) [IHVL].

### *Hylomyrma transversa* Kempf, 1973

Figures 71, 72, 80H, 89 (map)

*Hylomyrma transversa* Kempf, 1973: 250 (W, Q). Holotype: PERU: [Loreto]: Islandia, 23.ix.1962, W.L. Brown col., varzia, litter (1W) (MCZ35423) [MCZC] [examined]. Paratypes: same data as holotype (1Q) (MCZ35423) [MCZC] [examined]; (1W) (MZSP67451) [MZSP] [examined].

**Diagnosis.** Regular and longitudinal striae on head dorsum, parallel towards posterior margin, interspaces between thicker striae filled with thinner striae; mesosoma covered with striae of variable thickness assuming multiple directions, interspaces indistinguishable; transverse on mesonotum; dorsal margin of mesonotum straight; lateral of pronotum and mesepisternum with longitudinal striae in part continuing transversely on propodeum dorsum and in part continuing on propodeal spine; dorsal margin of petiole discontinuous; petiole ventral surface entirely covered with transverse striae; regular to irregular and mostly transverse striae on dorsal surface of petiole, interspaces indistinguishable; subpostpetiolar process striate; profemur posterior surface and protibia extensor surface entirely striate; long striae on tergum of first gastral segment; sternite striation weakly marked, covering all basal region; branched setae with multiple branches arising from the main axis; branches relatively long, subequal-sized; branched setae mainly in posterior and lateral regions of head, mesosoma, petiole and postpetiole.

**Redescription.** WORKER (n=4) (Fig. 71A–C): HL 0.98 (0.88–0.98); HW 0.90 (0.82–0.90); ML 0.58 (0.54–0.58); SL 0.68 (0.64–0.70); MOD 0.27 (0.24–0.28); PNW 0.64 (0.60–0.64); WL 1.26 (1.15–1.26); PSL 0.28 (0.22–0.28); PL 0.56 (0.48–0.56); PW 0.24 (0.22–0.24); PPL 0.31 (0.30–0.32); PPW 0.36 (0.33–0.36); GL 1.06 (1.04–1.06); TL 4.75 (4.40–4.80); CI 91.83 (90.81–93.18); SI 75.55 (75.55–78.65); OI 30 (29.26–31.46). Small-sized. Integument shiny to subopaque. Body light brown, head and gaster darker. Many long to short setae, appressed to decumbent; unbranched setae mostly on head dorsum and leg; branched setae with multiple branches arising from the main axis; branches relatively long, subequal in size (Fig. 80H); branched setae mainly in posterior and lateral regions of head, mesosoma, petiole and postpetiole.

Head subquadrate; posterior margin straight to slightly concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of medium teeth laterally; median area of clypeus with regular and longitudinal striae converging to a point on the anterior margin, interspaces indistinguishable. Frontal triangle with 1–3 striae. Short scape, not reaching head posterior margin; apical antennomere length  $\frac{1}{4}$  shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, midsized, larger diameter with 14 ommatidia. Regular and longitudinal striae on head dorsum, paral-

levels towards posterior margin, interspaces between thicker striae filled with thinner and regular to irregular striae. Head lateral and laterodorsal regions with the same striation of head dorsum, striae converging to eye margin; gena striate, regular and semicircular striae circumscribe the torulus almost reaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 71.** Worker of *Hylomyrma transversa* (MZSP67452). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Mesosoma covered with striae of variable thickness assuming multiple directions, interspaces indistinguishable; transverse striae on pronotum anterior region (DV) continuing towards lateral of pronotum; longitudinal striae on promesonotal junction and metanotal groove; transverse striae on mesonotum; lateral of pronotum and mesepisternum with longitudinal striae in part continuing transversely on propodeum dorsum and in part continuing on propodeal spine. Dorsal margin of mesonotum straight. Promesonotal junction and metanotal groove discernible by a depression and altered sculpture. Transverse carina inconspicuous. Dorsal margin of mesosoma discontinuous, dorsal margin of mesonotum straight. Propodeal lobe bidentate, dorsal tooth slightly longer and more acute than shorter and blunt ventral tooth; dorsal tooth length is  $\frac{1}{2}$  of propodeal spine length. Propodeal spine midsized, straight (LV), divergent (DV), sculptured on base. Procoxa with transverse striae of uniform thickness; irregular and transverse striae on C2 and C3. Transverse striae on profemur. Protibia extensor surface entirely striate.

Dorsal margin of petiole discontinuous; ventral surface entirely covered with transverse striae. Node with transverse striae on anterior surface continuing on lateral surface, interspaces distinguishable; regular to irregular and

mostly transverse striae on dorsal surface, interspaces indistinguishable. Postpetiole and subpostpetiolar process with regular, longitudinal striae; subpostpetiolar process weak, straight to convex.

First gastral segment striation similar to postpetiole striae; striae length on tergum slightly longer than postpetiole length; sternite striation weakly marked, covering all basal region.



**FIGURE 72.** Paratype queen of *Hylomyrma transversa* (MCZC35423). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

QUEEN (n=1, paratype) (Fig. 72A–C): HL 0.98; HW 0.90; ML 0.60; SL 0.70; MOD 0.28; PNW 0.70; WL 1.40; PSL 0.26; PL 0.59; PW 0.27; PPL 0.36; PPW 0.36; GL 1.22; TL 5.15; CI 91.83; SI 77.77; OI 31.11. Midsized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 15 ommatidia. Longitudinal and regular striae on scutum going from an anterior central point towards transcutal suture, interspaces indistinguishable. Longitudinal striae on anepisternum and katepisternum with interspaces indis-

tinguishable, striae regular on anepisternum and mostly irregular on katepisternum. Axilla with the same sculpture of scutum. Scutoscutellar sulcus conspicuous. Scutellum with the same sculpture of scutum, striae slightly irregular to vermicular on lateral regions. Transverse striae on propodeum (DV). Lateral of mesosoma with longitudinal and mostly regular striae directed to propodeal dorsum, interspaces indistinguishable. Wings unknown.

MALE Unknown.

**Etymology.** The name *transversa* (Latin, *transversus* = transverse) refers to the conspicuous transverse striae on mesonotal dorsum.

**Comments.** This species is easily distinguished from all congeners by the transverse striae on the mesonotum, and the conspicuous branched setae. Still, *H. transversa* resembles *H. reitteri*, regarding the discontinuous dorsal margin of petiole, and the head pattern of sculpturation. The two species are allopatric and have broad distributions; *H. transversa* occurs in the center-northwest of South America (Fig. 89), and *H. reitteri* in the center-southeast of South America (Fig. 85). *Hylomyrma transversa* can be easily distinguished from *H. reitteri* (characteristic in parentheses) in the drop-shaped eye (vs. reniform), the transverse striae on the mesonotal dorsum (vs. longitudinal striae), and the striate ventral surface of petiole (vs. smooth surface).

Specimens of *H. transversa* collected at Colombia's Parque Nacional Natural Serranía de Chiribiquete have slightly thicker setae, lack branched setae, and the transverse striae on the mesonotum are more weakly marked. We found ten intercastes among specimens examined (four from Arquipélago de Anavilhanas, AM, Brazil; two collected at Rio Negro, and four sampled at Lower Rio Madidi, both in Bolivia), identified as such for being slightly larger than workers [(n=2), HL (0.98); HW (0.90–0.98); ML (0.60–0.64); SL (0.68–0.72); MOD (0.26–0.28); PNW (0.62–0.72); WL (1.24–1.30); PSL (0.24–0.28); PL (0.52–0.58); PW (0.22–0.28); PPL (0.30–0.32); PPW (0.32–0.37); GL (0.94–1.13); TL (4.64–5.02)]; for having one central ocellus, and a discernible promesonotal junction and metanotal groove by a conspicuous depression. Moreover, the specimens from Lower Rio Madidi, Bolivia, have small protuberances on the mesonotum, in the region where wings would be inserted in queens.

**Distribution.** All known specimens were collected in northwestern South America (Brazilian Amazon, Bolivia, Colombia, and Peru) (Fig. 89).

**Natural history.** This species inhabits areas of tropical rainforest. Five specimens were collected with pitfall traps, and another was allured by an attractive bait, which suggests that workers forage on forest floor and that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (27 workers, 8 intercastes): **BOLIVIA:** [La Paz]: Lower Rio Madidi, W.M. Mann, Mulford BioExpt 1921–22, January (7W 2I) [USNM]; same except Jan (4W 2I) [USNM]; Rio Negro, W.M. Mann collector, Mulford Biological Exploration 1921–22, Jan (2I) [MZSP]; same data (2W) [CASC, DZUP]. **[BRAZIL]: AM[Amazonas]:** Itacoatiara, 3.319°S, 58.723°W, PLOT 63—isca #15. J.M.S. Vilhena, 6/114/03 (1W) [MZHY193] [MZSP]; Novo Airão, PNJ R. Unini, mg. esq., com Lago Pedras, 1°38'25"S, 61°39'19"W, Mata Primária, 20–23.xi.1995, Bindá + Alencar, Pitfall trap #5 (1W) [INPA]; same except Pitfall trap #7 (1W) [INPA]; Tarumã-Mirim, 31.iii.1976, Joaquim Dias (1W) [MZSP]; Rio Negro, Arquipélago d. Anavilhanas, iii.76, R. Negre, #13186 (2W 2I, one worker covered with gold) [MZSP67452] [MZSP]; **PA[Pará]:** Porto Trombetas, 01.08.92, Majer J.D., 4552, Jam76 (2W) [CEPLAC]. **COLOMBIA:** **Caquetá:** [Puerto] Solano, PNN [Serranía de] Chiribiquete, R. Mesay, B. Caki, 300m, 0°14'24"N, 72°56'02"W, T. caída, T1.T3, 27.i.2000, F. Quebedo leg. (2W, one covered with gold) [IHVL]; same except T1.T2 (1W) [MZSP]; **Cauca:** Isla Gorgona, 14.xi.1987, M. Baena (1W) [IHVL]; **Guaviare:** RN Nukak Maku, 02°10'40N, 71°11'25W, Cñ Cucuy Cr Moyano, Rebalse, F. Fernandez F.E., feb. 96 (1W without postpetiole and gaster) [IHVL]; same data (1W) (MZHY221) [MZSP].

### *Hylomyrma versuta* Kempf, 1973

Figures 73, 74, 75, 80F, 80J, 81C, 82C, 88 (map)

*Hylomyrma versuta* Kempf, 1973: 253 (W, Q). Holotype: BRIT. HONDURAS[BELIZE: Cayo]: Belmopan, 7.viii.1972, S. & J. Peck, 2<sup>nd</sup> growth forest, #244 (1W) (MCZENT00035424 MCZ35424) [MCZC] [examined]. Paratypes: same data as holotype (1Q) (MCZENT00594551 MCZ35424) [MCZC] [examined]; (5W 2Q) (MZSP67454, MZSP67455, MZSP67456) [MZSP] [examined]; Caves Branch, viii.1972, S. & J. Peck (5W) (MZSP67457, MZSP67458) [MZSP] [examined]; same data (10W 3Q) (MCZ35424) [MCZC] [examined]; [Stann Creek]: Humming Bird Pass, 27mi NW Stann Creek, 19.viii.1972, S. & J. Peck, #246, forest litter, berlesate (1W) (MZSP67459) [MZSP] [examined]; same data (1W 1Q) (MCZ35424) [MCZC] [examined]. MEXICO: VeraCr.[Veracruz]: Pueblo Nuevo, nr. Tetzonapa, Aug. 14 -53, E.O. Wilson col., #221, rain forest (1W) (MZSP67460) [MZSP] [examined]; same data (2W) (MCZ35424) [MCZC] [examined].

**Diagnosis.** Irregular and longitudinal striae on head dorsum slightly diverge towards posterior margin, interspaces between thicker striae mostly smooth or filled with thinner striae; irregular striae on mesosoma mostly longitudinal, interspaces between thick and thin striae distinguishable by smooth areas; dorsal margin of petiole discontinuous; petiole ventral surface almost entirely covered with transverse striae, anterior region smooth; node dorsal surface mostly covered with irregular striae; subpostpetiolar process smooth at middle and laterally striate; profemur and protibia mostly smooth; striae length on tergum slightly shorter than postpetiole length; branched setae of two types: 1) thin setae with multiple small branches of subequal size arising from the main axis; 2) thick setae flattened at its final half, with several branches of subequal size.

**Redescription.** WORKER (n=6) (Fig. 73A–C): HL 0.94 (0.88–0.97); HW 0.86 (0.84–0.92); ML 0.56 (0.54–0.60); SL 0.60 (0.60–0.66); MOD 0.22 (0.22–0.25); PNW 0.62 (0.60–0.65); WL 1.20 (1.16–1.26); PSL 0.26 (0.22–0.26); PL 0.56 (0.52–0.60); PW 0.28 (0.25–0.28); PPL 0.32 (0.28–0.34); PPW 0.33 (0.33–0.35); GL 1 (1–1.14); TL 4.58 (4.40–4.88); CI 91.49 (91.30–95.83); SI 69.76 (69.56–75); OI 25.58 (23.80–27.17). Small-sized. Shiny integument. Brownish body, lighter appendices, darker gaster. Mostly thin setae, unbranched or branched, long to midsized, suberect to subdecumbent; branched setae of two types: 1) thin setae with multiple small branches of subequal size arising from the main axis, mostly in mesosoma (Fig. 80F); 2) thick setae flattened in its final half, with several branches of subequal size, mainly in postpetiole and gaster (Fig. 80J).

Head subquadrate; posterior margin straight to slightly concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 7–9 regular to irregular, longitudinal and thick striae converging to a point on the anterior margin, interspaces between thick striae mostly smooth. Frontal triangle with 1–3 striae. Short scape, not reaching head posterior margin; apical antennomere as long as previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye reniform, midsized, larger diameter with 11 ommatidia. Irregular and longitudinal striae on head dorsum, slightly divergent towards posterior margin, interspaces between thicker striae mostly smooth or filled with thinner and regular to irregular striae. Head lateral and laterodorsal regions with irregular to vermicular striae converging to eye margin; anterior laterodorsal region rugose; gena striate, 2–5 irregular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Mesosoma covered with irregular striae mostly longitudinal, interspaces between thick and thin striae distinguishable by smooth areas; transverse striae on pronotum anterior region (DV) directed towards lateral of pronotum, striae mostly longitudinal in other regions (DV). Promesonotal junction and metanotal groove discernible by a slight depression. Transverse carina inconspicuous. Dorsal margin of mesosoma discontinuous, convex. Propodeal lobe bidentate, dorsal tooth slightly longer and more acute than the shorter and blunt ventral tooth; dorsal tooth length is slightly shorter than propodeal spine length. Propodeal spine short, straight (LV), divergent (DV), sculptured. Procoxa with transverse striae of uniform thickness; irregular and transverse striae on C2 and C3. Profemur and protibia mostly smooth.

Dorsal margin of petiole discontinuous; ventral surface almost entirely covered with transverse striae, anterior region smooth. Convex node; transverse, regular to irregular, striae on anterior surface continuing on lateral surface, interspaces distinguishable; mostly longitudinal, regular to irregular striae of variable thickness on dorsal surface, interspaces distinguishable. Postpetiole and lateral regions of subpostpetiolar process with regular, longitudinal, adjacent striae; subpostpetiolar process weak, straight to convex, smooth at middle.

First gastral segment striation thinner than postpetiole striae; striae length on tergum slightly shorter than postpetiole length; sternite striation weakly marked, covering all the basal region.

QUEEN (n=4) (Fig. 74A–C): HL 0.98 (0.94–1); HW 0.90 (0.90–0.95); ML 0.61 (0.58–0.62); SL 0.66 (0.64–0.70); MOD 0.26 (0.26–0.28); PNW 0.78 (0.74–0.82); CMS 1.44 (1.40–1.50); PSL 0.30 (0.26–0.30); PL 0.63 (0.63–0.70); PW 0.30 (0.28–0.30); PPL 0.34 (0.34–0.40); PPW 0.40 (0.38–0.42); GL 1.30 (1.24–1.36); TL 5.30 (5.18–5.58); CI 91.83 (91.83–95.92); SI 73.33 (71.11–73.68); OI 28.88 (28.88–29.78). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger diameter of eye with 15 ommatidia. Longitudinal, regular to irregular and thick striae of variable thickness on scutum going from an anterior central point towards transcutal suture, interspaces between thicker striae filled with thinner striae. Longitudinal striae on anepisternum and katepisternum with interspaces distinguishable, striae mostly regular on anepisternum, irregular to vermicular on katepisternum. Axilla and scutellum with longitudinal, regular to irregular and slightly vermicular, with interspaces distinguishable. Scutoscutellar sulcus inconspicuous. Transverse and irregular striae on propodeum (DV). Lateral of mesosoma with longitudinal, mostly irregular to vermicular striae directed in part to

propodeal dorsum and in part to propodeal spine, interspaces between thicker striae filled with thinner striae. Wings as in Fig. 81C.



**FIGURE 73.** Worker of *Hylomyrma versuta* (MZSP67453). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

MALE (first description) (n=1) (Fig. 75A–C): HL 0.75; HW 0.68; ML 0.44; SL 0.25; MOD 0.30; PNW 0.62; WL 1.30; PL 0.54; PW 0.26; PPL 0.30; PPW 0.30; GL 1.06; TL 4.39; CI 90.66; SI 36.76; OI 44.11. Head, mesosoma and appendices light brown, other parts dark brown. Mandible with 5 teeth. Interspaces between thicker striae on head dorsum partly smooth and partly filled with thinner striae. Scutum mostly smooth on anterior region and with few thinner, regular to irregular striae on posterior region, interspaces distinguishable. Anepisternum mostly covered with longitudinal, regular and thinner striae, interspaces distinguishable; katepisternum mostly smooth. Scutellum with regular to irregular striae, thicker than scutum striae, interspaces distinguishable. Propodeum with irregular striae assuming multiple directions, interspaces distinguishable. Dorsal region of propodeal lobe forming a blunt tooth, ventral region rounded. Petiole dorsum covered with irregular striae assuming multiple directions, interspaces distinguishable. Postpetiole and gaster missing. Wings as in Fig. 82C.



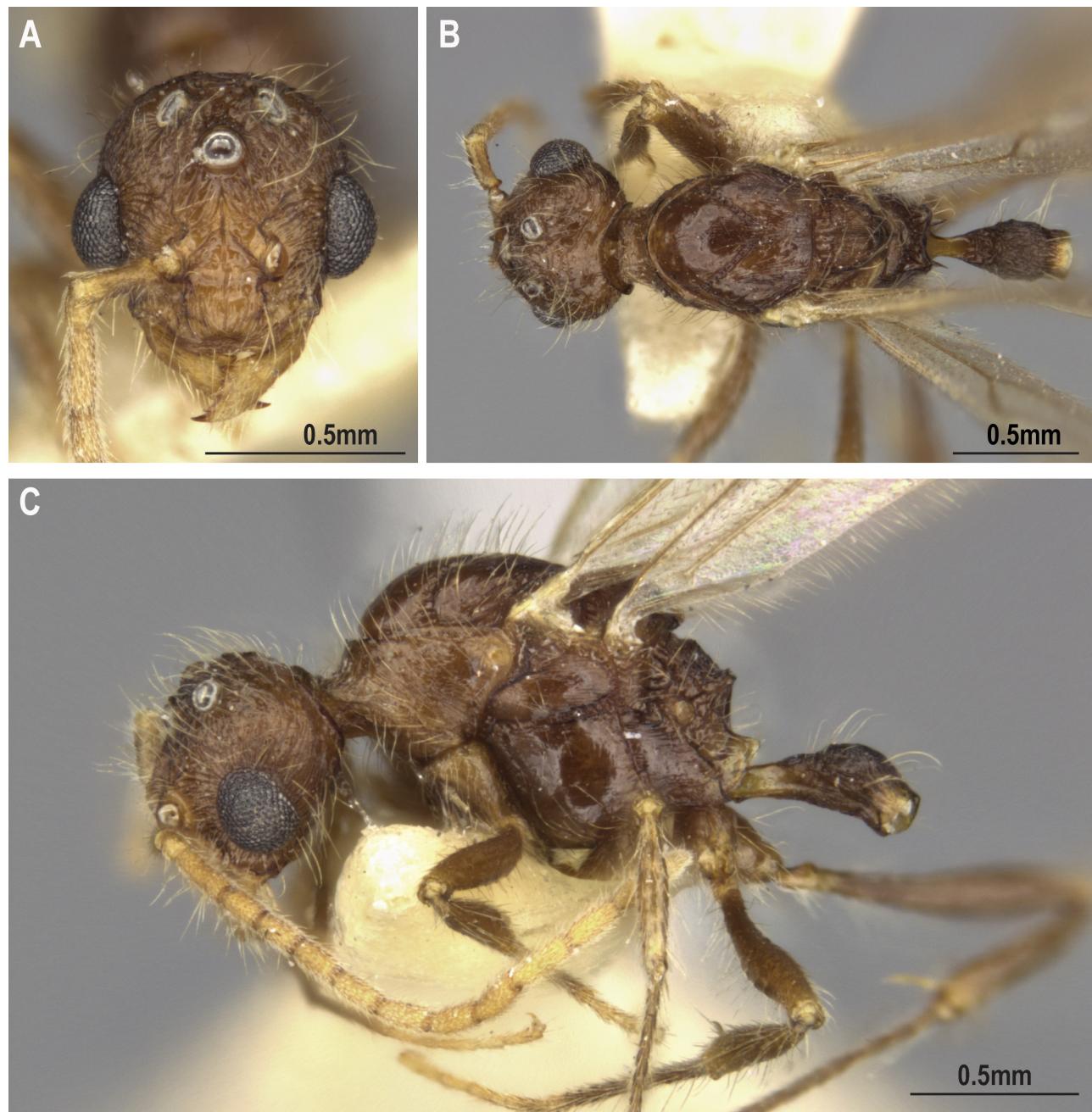
**FIGURE 74.** Paratype queen of *Hylomyrma versuta* (MCZC35424). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Etymology.** *Versutus* (Latin) = crafty, sly. Probably the name *versuta* refers to the difficulty in identifying this species, given its similarity with *H. balzani*, according to comments made by Kempf (1973).

**Comments.** The study of the type specimens, in addition to specimens from Guatemala, Honduras, Nicaragua, Costa Rica, and Panama, have allowed us to understand that this species has both unbranched and branched setae. The observation of the branched setae is difficult, because in some specimens the lateral branches are small, and also because sometimes both short and long branches collapse to the seta main axis, giving the wrong impression that the setae is unbranched and thick.

*Hylomyrma versuta* is very similar to *H. plumosa*. There are not great differences in body sculpture. In *H. versuta*, the propodeum is laterally covered by thinner striae (microsculpture) with indistinguishable interspaces between irregular and thicker striae (macrosculpture), whereas *H. plumosa* has thinner striae (microsculpture) with indistinguishable interspaces superimposed on irregular and thicker striae (macrosculpture). The conspicuous and trifid setae of *H. plumosa* are easily observed, but *H. versuta* has unbranched and branched setae. *Hylomyrma*

*versuta* and *H. plumosa* are restricted to Central America, co-occurring near La Virgen and in La Selva Biological Station, Heredia, Costa Rica. *Hylomyrma plumosa* is only known from these two localities (Fig. 85), but *H. versuta* has a broader distribution, from southern Mexico to western Colombia (Fig. 88). Molecular analysis using UCE and COI also confirms the proximity of these two species, with *H. plumosa* sister to the *H. cf. dentiloba* sp.2–*H. versuta* clade (Pierce *et al.* 2017). We emphasize that *H. cf. dentiloba* sp.2 is understood here as the true *H. dentiloba*, but the voucher specimens of sp.2 still need to be examined.



**FIGURE 75.** Male of *Hylomyrma versuta* (MEXICO: VeraCr., Pueblo Nuevo, nr. Tetzonapa, Aug.14 -53, E.O. Wilson, #221, rain forest [MCZC]). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

Pierce *et al.* (2017) stated that there are no known morphological differences between *H. versuta* and *H. dentiloba*, with both species being differentiated only in their geographical distribution. However, we found that *H. versuta* can be distinguished from *H. dentiloba* (the *H. cf. dentiloba* sp.2) in the striation with distinguishable interspaces on the head dorsum (vs. striation with indistinguishable interspaces), the mesosoma and petiolar node covered by thinner striae with indistinguishable interspaces between on irregular and thicker striae (vs. thinner striae with indistinguishable interspaces superimposed irregular and thicker striae), the profemur predominantly smooth

(vs. with regular and transverse striae weakly marked), the protibia predominantly smooth (vs. mainly covered with regular and weakly marked striae), and the longer striae on tergum of the first gastral segment (vs. shorter striae). Also, *Hylomyrma versuta* can be distinguished from *H. jeronimae* (the *H. cf. dentiloba* sp.1) in the longitudinal striae on the mesosomal dorsum (vs. striae assuming multiple directions), the striae interspaces on the mesosoma distinguishable (vs. indistinguishable), and the discontinuous dorsal margin of petiole (vs. continuous).

*Hylomyrma versuta* also resembles *H. reitteri* (characteristic in parentheses), from which it can be distinguished in the irregular striae on the dorsum of head and mesosoma (vs. regular striae), the transverse striae on the ventral surface of petiolar node (vs. smooth surface), and the long striae on tergum of the first gastral segment (vs. short striae, restrict to its basal region). The two species are allopatric; *Hylomyrma versuta* occurs in Central America and Colombia, and *H. reitteri* in eastern Brazil and Paraguay.

There is morphological variation across the range of *H. versuta*. Striae on the petiolar dorsum vary from being irregular and longitudinal or vermicular or transversal. The first two conditions are present in the type specimens of *H. versuta*, and all three can be observed in the material from Chiquiri, Panama, and Costa Rica. Additionally, the striae on the mesosomal dorsum of the specimens from Puntarenas Province, Costa Rica, vary from being more regular to irregular, and mostly longitudinal to forming semi-ellipses. The specimens from Chocó, Colombia, have an anteriorly divergent and posteriorly convergent striae on the most lateral regions of the mesial area of the head dorsum, and a drop-shaped eyes. Notwithstanding these two extremes of variation, and even being the first record to South America, we refer to the specimens from Colombia as *H. versuta* until we have the opportunity to re-evaluate this material deposited at MCZC.

Intercastes are also present in this species, having the combination of the following characters: one inconspicuous central ocellus, and the metanotal groove discernible by a depression. In some specimens, darker areas on the head dorsum coincident with the ocelli location in winged queens are also observed.

**Distribution.** *Hylomyrma versuta* is recorded in southern Mexico, Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, and western Colombia (Fig. 88).

**Natural history.** This species inhabits sites at elevations between 50 and 1520 m. Most specimens were collected in the leaf-litter in wet montane forests, and a few were sampled in dry forest, bamboo, coffee and cardamom plantations. One specimen was collected from the stomach contents of *Incilius coniferus* (Cope, 1862) in Nicaragua. Wilson observed a *H. versuta* nest (firstly identified as *H. columbica* and later as *H. versuta* by Kempf) in captivity; workers captured flies, springtails, and other selected small invertebrates offered in the feeding chamber, where they fed directly the larvae (Wheeler & Wheeler 1960).

**Additional material examined** (178 workers, 1 male, 16 queens, 21 intercastes): **BRIT. HONDURAS[BELIZE: Cayo]:** Caves Branch, 4–14.aug.1972, B-248, hi-canopy for., S. & J. Peck, berlese (1Q) [MCZC]; Belmopan, 1–15.aug.1972, B-243, sift under termite nest, Berlese, S. & J. Peck (1Q) [MCZC]; Pine Mtn. Ridge Rubber Camp, Macal River, N1651'57", W88 58'3", 415m, 21 Feb 1992, leg Gary D. Alpert (1W, lost specimen) [MCZC]. **COLOMBIA: Chocó:** 10km SW S.[San] José del Palmar, Rio Torito, 1-4.june.1978, C. Kugler col., Finca Los Guaduales, 800m, in *Guadua* sp. litter (17W) [MCZC]. **COSTA RICA: Alajuela:** 27k N & 8k W San Ramón, 14.vi.1997, 950m, R. Anderson, #18698B, 10°13'30"N, 84°35'30"W, wet premontane forest, litter, 97-014A, E.B. San Ramón, #97-014B (1W) [MZSP]; **Guanacaste:** Parque Rinco de la Vieja, F. Fernández, oct.96 (1W) [IHVL]; Maritza Field Station, 850m, 13.ii.1996, R. Anderson, #17663, Dry and Wet montane, Forest litter (6W) [MZSP]; same except 875m, #17736, Forest transition litter, sample B (9W 2I) [MZSP]; #17736 (2W) [UFSC, UFGD]; 875m, #96-009, #17678, Dry tropical, wet mountain forest trans. litter (1W) [MZSP]; 17.ii.96, #17737, Dry tropical, wet mountain forest trans., sample C (1W) [MZSP]; #17737 (2W) [DZSP]; #17737 (2W) [MCZC]; #17735, sample B (3W 1Q 1I) [MZSP]; #17734, sample A (1Q 1I) [MZSP]; #96-010, 13.ii.96, 950m, #17667, Dry tropical, wet mountain forest trans. litter (5W 1Q 1I) [MZSP]; 13.xi.1996, #17668 (4W, one covered with gold) (MZSP67461) [MZSP]; #96-019, 17.ii.96, 875m, #17666 (9W) [MZSP]; Pitilla Field Station, 600m, 2.v.1995, R. Anderson, #17723, Berlese leaf litter, old growth Dry tropical forest, sample C, litter (4W) [MZSP]; same except #17720 (2W) [USNM]; #17722 (1W) [MZSP]; Cacao Field Station, 96-008, 850m, 13.ii.96, R. Anderson, #17681, Dry tropical wet montane forest trans. litter (5W) [MZSP]; #17681 (3W) [UTLP, IHVL, CASC]; **Heredia:** P. Viejo, La Selva Biol. Station, 3.june.1996, M.E. Kaspari col., MEK45148.00b, *H. dentiloba* M. Kaspari comp. type MCZ (2W) [MCZC]; 11km ESE La Virgem, 10.35, -84.05 + 2km, 300m, 10.iv.2004, ALAS #03/WF/02/all montane wet forest, ex sifted leaf litter (1Q 2W) (MZSP67471, MZSP67672, MZHY87) [MZSP]; La Selva Biological Station, 10.41639, -84.02 + 500m, 50m, 16.iii.2004, TEAM #AMI-1-W-006-05, mature wet forest, ex sifted leaf litter (1Q 2W) [JTLC]; **Puntarenas:** Est.

Biol. Las Cruces, 4k S San Vito, 1150m, 19.vi.98, R. Anderson, 8°47'3"N, 82°59'36"W, Upper wet montane forest, litter extraction, 18662B (2W) [MZSP]; same except 18662A (2W) [MZSP]; 18662D (2W) [MZSP]; 18662G (2W) [MZSP]; 18662H (3W) [MZSP]; 5k SW Est. Biol. Las Cruces, 1400m, 22.vi.98, R. Anderson, 18665C, 8°47'13"N, 82°59'13"W, Wet cloud forest, litter extraction (2W) [MZSP]; same except 18665E (2W) [MZSP]; 18665D (1W) [MZSP]; 18665I (1W) [MZSP]; 18665H (1W) [MZSP]; 1425m, 18666A (2W) [MZSP]; 18666B (2W 1Q 1I) [MZSP]; 1100m, 8°47'N, 82°59'W, Wet cloud for, litter, 18660 (2W) [MZSP]; 11k SW Est. Biol. Las Cruces, 9.vii.1999, 1450m, R. Anderson, #19908, 8°46'43"N, 83°01'50"W, Wet cloud forest, litter, 99-124A (1W) [MZSP]; same except 99-124C, #19910 (1Q) [MZSP]; Estacion Biol. Las Alturas, 10.vii.1999, 1520m, R. Anderson, 8°56'56"N, 82°50'01"W, Upper montane/cloud forest transitional, litter, 99.126B, #19905 (1W) [MZSP]; same except 99.126D, #19907 (1W) (MZHY211) [MZSP]; 2k NE Alturas, 1520m, 20.vi.1998, R. Anderson, 8°56'56"N, 82°50'01"W, Upper montane/cloud forest transitional, litter extraction, 18663Q (1W) [MZSP]. **HONDURAS: Cortés:** PN Cusuco, 15.48713, -88.23472 ± 20m, 1330m, 30.v.2010, LLAMA, #Wa-C-06-1-11, mesophyll forest, ex sifted leaf litter (1W 1Q) [MZSP]. **GUATEMALA: Alta Verapaz:** 22.5km SO Panzós, Finca Pablo Juc, Cancoy, 10-12.iii.2013, 15.23036, -89.71507, 811m, bosque, winkler, F. Pacay col., 303-5 (1W) [MCZC]; same except 122-9 (2W) [MZSP]; Finca Miguel Putul Tut, Cancoy, 4-6.iv.2013, 15.23252, -89.71961, 905m, bosque, winkler, F. Pacay col., 133-4 (1W), 289-1 (1Q) [MZSP]; 24km SO Panzós, Finca Edgar Caal, San Vicente I, 24-26.viii.2012, 15.2424942, -89.774883, 1116m, café, winkler, F. Pacay col., 209-4 (1W) [UTEP]; same except 20-22.iii.2013, 15.24317, -89.77438, 1135m, cardamomo, winkler, E. Sierra col., 331-8 (1W) [USNM]; **Petén:** 13km NW Machaquilá, 16.44522, -89.55024 ± 50m, 400m, 27.v.2009, LLAMA, #Wa-B-06-1-11, tropical forest, ex sifted leaf litter (1W 1Q) [MZSP]. **MEXICO: Chiapas:** 12 mi NW Ocozocoautla, 3200ft, 4-5.ix.73, A. Newton (1Q 2W, one worker covered with gold) (MZSP67453) [MZSP]; same except forest litter (2W) [MZSP]; berl. log & leaf litter (2W) [MIZA]; (1W 1Q) [MCZC]; hojarasca, madera podrida, A. Newton (3W) [MIZA]; Ocozingo, 2.june.1969, J.M. Campbell col. (2W) [MCZC]; **Vera Cr.[Cruz]:** Pueblo Nuevo, nr. Tetzonapa, Aug. 14-53, E.O. Wilson, #221, rain forest (1W 1Q 1M) [MCZC]. **NICARAGUA: Masilena Creek:** near Bluefields, stomach of *Bufo coniferus*, W.M. Wheeler (1W) [MZSP]; RAAN: PN Cerro Saslaya, 13.76810, -84.98546 + 10m, 360m, 7.v.2011, LLAMA, #Wa-D-02-1-50, mature wet forest, ex sifted leaf litter (1W 1Q) [MZSP]. **PANAMA: Chiriquí:** La Fortuna, area Finca la Suisse, 11.vi.95, R. Anderson, #17838, Oak ridge, forest litter (5W 2I) [MZSP]; same data (1W 1I) [DZUP]; (2W) [IHVL]; (2W) [UFSC]; (2W) [CASC]; same except 10.vi.95, #17787, sample C (1W 2I) [MZSP]; #17787 (1W 1I) [USNM]; #17787 (1W 1I) [MCZC]; #17788, Oak ridge, bamboo forest litter, sample E (4W 1I) [MZSP]; #17789, sample D (6W 1I) [MZSP]; #17789 (2W) [UTLP]; #17790, Raparina oak, forest litter, sample F (5W 1I) [MZSP]; #17839, Oak forest litter, 1200m (6W 2I) [MZSP]; #17839 (3W) [UFGD]; 20.4km North San Felix, 950m, 08.vi.95, R. Anderson, #17768, Wet mountain forest litter, sample B (1W 3I) [MZSP].

## *Hylomyrma villemantae* Neves & Lacau, 2018

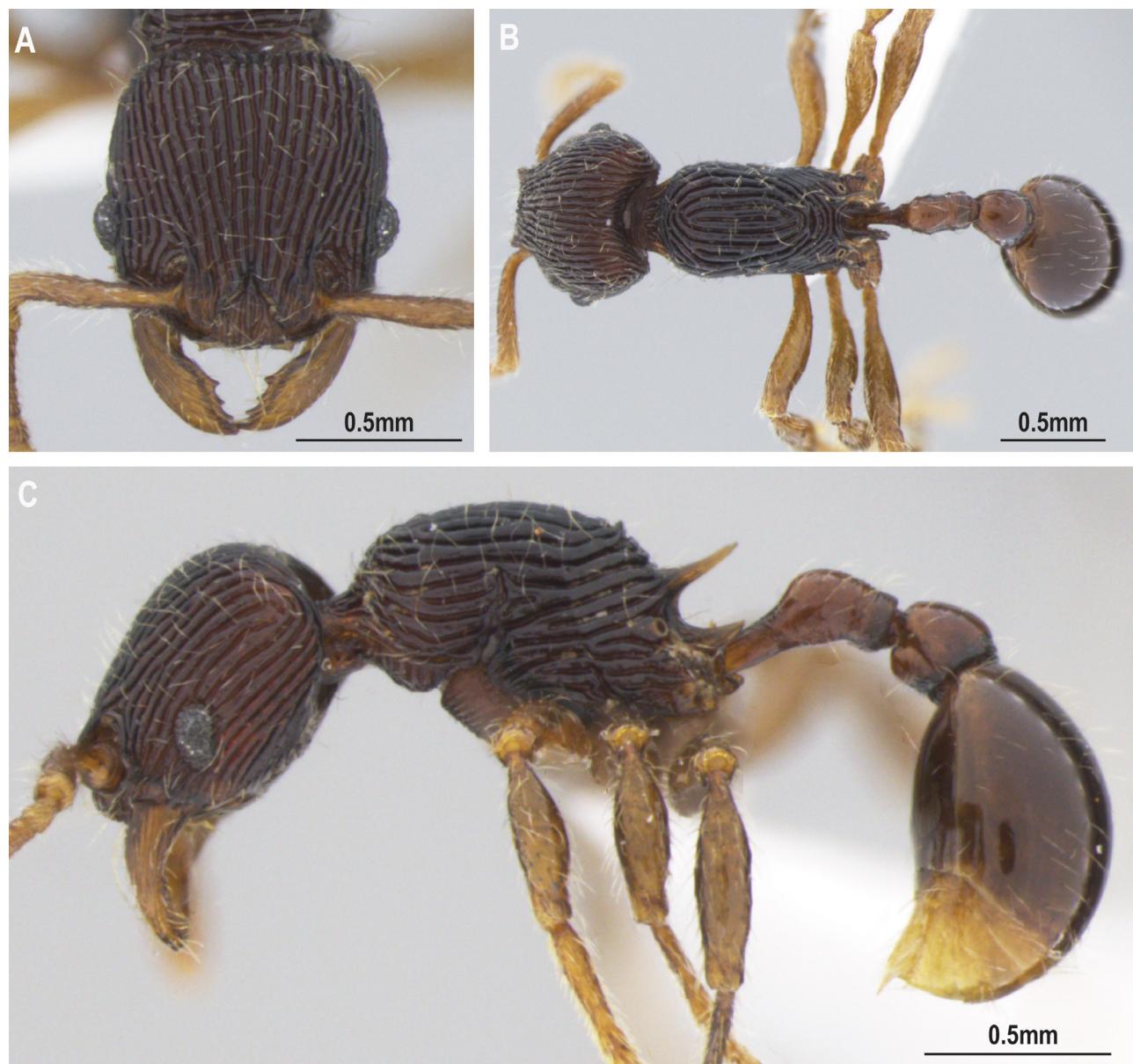
Figures 76, 86 (map)

*Hylomyrma villemantae* Neves & Lacau, 2018: 203 (W). Holotype: BRAZIL: Bahia: Ibicuí, Serra das Piabas, 14°51'57.93"S, 40° 2'34.54"W, elev. 1070 m, 12.v.2017, Lacau S., Neves M.S., Rocha I.N., Oliveira M.L., Silveira B.A., Rodrigues F.S. cols., LBSA\_SA\_14015869 (1W) [CPDC] [examined by image]. Paratypes: same data as holotype, LBSA\_SA\_14016086, LBSA\_SA\_14016087, LBSA\_SA\_14016088, LBSA\_SA\_14016089, LBSA\_SA\_14016093, LBSA\_SA\_14016094, LBSA\_SA\_14016095, LBSA\_SA\_14016096, LBSA\_SA\_14016097 (9W) [CPDC] [not examined], LBSA\_SA\_14016091 (1W) [CPDC] [examined by image]; same locality as holotype, 02.v.2017, LBSA\_SA\_14016100, LBSA\_SA\_14016101, LBSA\_SA\_14016102 (3W) [according Neves & Lacau (2018) this material should be at MZSP, but it has not deposited there] [not examined]; LBSA\_SA\_14016092, LBSA\_SA\_14016099, LBSA\_SA\_14016103 (3W) [MPEG] [not examined]; same locality as holotype, 29.vi.2008, Silva Jr M.R., Godinho L.B., Lacau S., Prado J.V., Ramos Lacau L.S. cols., LBSA\_SA\_14016104, LBSA\_SA\_14016105, LBSA\_SA\_14016109, LBSA\_SA\_14016110, LBSA\_SA\_14016111, LBSA\_SA\_14016115, LBSA\_SA\_14016116, LBSA\_SA\_14016117, LBSA\_SA\_14016118, LBSA\_SA\_14016119, LBSA\_SA\_14016120, LBSA\_SA\_14016123, LBSA\_SA\_14016124, LBSA\_SA\_14016125, LBSA\_SA\_14016126, LBSA\_SA\_14016128, LBSA\_SA\_14016129, LBSA\_SA\_14016162, LBSA\_SA\_14014791 (19W) [CPDC] [not examined], LBSA\_SA\_14011273 (1W) [CPDC] [examined by image]; LBSA\_SA\_14016106, LBSA\_SA\_14016107, LBSA\_SA\_14016108 (3W) [MZSP] [according Neves & Lacau (2018) this material should be at MZSP, but it was not deposited there] [not examined]; LBSA\_SA\_14016112, LBSA\_SA\_14016113, LBSA\_SA\_14016114 (3W) [MPEG] [not examined]; 14°54'50.06"S, 40°2'9.49"W, 951 m alt., 19.xi.2004, Jahyny B.J., Lacau S., Ramos Lacau L.S. cols, LBSA\_SA\_14011396, LBSA\_SA\_14011397 (2W) [CPDC] [not examined].

Worker (Fig. 76A–C) **Diagnosis.** Regular and longitudinal striae on head dorsum diverge towards posterior margin, interspaces between striae smooth, striae crest smooth; mesosoma covered with concentric and elliptical, regular and thick striae; longitudinal striae on lateral of pronotum and mesepisternum in part continuing transversely on propodeum and in part continuing on propodeal spine; transverse carina inconspicuous; propodeal spine midsized; dorsal margin of petiole continuous, strongly convex, mesoventral surface unarmed; petiole, postpetiole, subpostpetiolar process, profemur posterior surface, protibia extensor surface and tergum of first gastral segment smooth; subpostpetiolar process weak, convex.

QUEEN Unknown.

MALE Unknown.



**FIGURE 76.** Worker of *Hylomyrma villemantae* (MZHY199 [MZSP]). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Etymology.** This species was named in honor of Dr. Claire Villemant, a French entomologist, curator of the Hymenoptera Collection at Muséum National d'Histoire Naturelle de Paris.

**Comments.** The diagnostic characters of this species are sufficient to easily distinguish it from most of its congeners. Still, *Hylomyrma villemantae* is very similar to *H. peetersi* and *H. margaridae*. All three species have a strongly convex petiole, with indistinguishable petiolar peduncle and node, and the body mainly covered with regular and longitudinal striae. Even so, *H. villemantae* can be easily distinguished from both (characteristic in

(parenthesis) in the striae on the head dorsum with smooth crests (vs. with punctuated crests), the mesosoma with few elliptical and concentric striae (vs. longitudinally striate), the longer propodeal spine (vs. shorter), the unarmed mesoventral surface of petiole (vs. armed), and the smooth dorsum of postpetiole and gaster (vs. with longitudinal striae). All three species are allopatric; *H. villemantae* is recorded from Brazil (BA) (Fig. 86), whereas *H. peetersi* and *H. margaridae* occur in relatively close areas in northern South America (French Guiana, Guyana, and Venezuela) (Fig. 89).

**Distribution.** This species occurs in Ibicuí and Itororó, Bahia, Brazil (Fig. 86).

**Natural history.** The biology of this species remains unknown. Type specimens were collected in leaf-litter with winkler extractors, at elevations between 951 and 1070 m in the region known as “Serra das Piabas”, a fragment of Atlantic forest in the Brazilian state of Bahia.

**Additional material examined** (1 worker): **BRAZIL: BA[Bahia]:** Itororó, [área] C, 08.08.00, 14.57.31S, 40.02.33W, Santos J.R.M. dos (1W) (MZHY199) [MZSP].

### *Hylomyrma virginiae* Ulysséa new species

Figures 77, 78, 80D, 89 (map)

Holotype: ECUADOR: Napo: Limoncocha, 250m, 25.vi.1976, B-355, S. & J. Peck [leg.] (1W) (MCZENT00524688) [MCZC]. Paratypes: same data as holotype (5W) (MCZENT00525482, MCZENT00524690, MCZENT00525503, MCZENT00525523, MCZENT00524689) [MCZC]; (1W) (MCZENT00525522 MZSP67462) [MZSP]; (1W) (MCZENT00525518 MZHY196) [MZSP]; (1W) (MCZENT 00525524) [USNM]; (1W) (MCZENT00525517) [DZUP]; (1W) (MCZENT00525521) [IHVL]; (1W) (MCZENT00525519) [CASC]; same except 18.vi.1976, B-348 (4W) (MCZENT00525501, MCZENT00524677, MCZENT00524676, MCZENT00525499) [MCZC]; (1W) (MCZENT00525506 MZSP67463) [MZSP]; (1Q) (MCZENT00524678 MZSP67464) [MZSP]; 20km S of Tena, 600m, 11Jul 1976, B360, S. & J. Peck [leg.] (1W) (MCZENT00525490) [MCZC]; Pichincha: Centr. Cient. R. Palenque, 20.xii.1980, Sonia Sandoval col., Bosque primario cerrado, 584 (1W covered with gold) [IHVL]; Los Ríos: C.C.R. Palenque, 79°45'10"W, 01°25'56"S, 02MAR1979, S. Sandoval (1Q) (QCAZ I 114012) [QCAZ]; Pastaza: 22km SW Puyo, 15 July 1976, B-362, S. & J. Peck [leg.] (1Q) (MCZENT00524681) [MCZC].

**Diagnosis.** Vermicular to vermiculated-areolated striae on head dorsum and mesosoma; petiole anterior surface well-marked; transverse striae on node ventral surface; longitudinal and anastomosed striae on postpetiole and tergum of first gastral segment; subpostpetiolar process weak, slightly convex; profemur posterior surface mostly smooth; protibia extensor surface entirely striate; long striae on tergum of first gastral segment; setae with 2 short branches of equal size arising from the main axis.

**Description.** WORKER (n=3) (Fig. 77A–C): HL (0.94–1.04); HW (0.90–1.04); ML (0.66–0.70); SL (0.68–0.80); MOD (0.26–0.27); PNW (0.64–0.74); WL (1.24–1.40); PSL (0.28–0.38); PL (0.59–0.64); PW (0.24–0.27); PPL (0.36–0.40); PPW (0.36–0.38); GL (1.02–1.12); TL (4.94–5.20); CI (95.74–100.97); SI (73.07–77.67); OI (25–28.90). Medium to large-sized. Shiny integument. Head, postpetiole and gaster dark brown, lighter mesosoma, leg and petiole. Thin and branched setae, long to midsized, erect to subdecumbent; 2 short branches of equal size arising from the main axis (Fig. 80D).

Head subquadrate; posterior margin concave at middle. Mandible masticatory margin with 6 teeth. Anterior margin of clypeus concave medially, with a pair of medium teeth laterally; median area of clypeus with 5 irregular and longitudinal striae converging to a point on the anterior margin, interspaces distinguishable. Frontal triangle with 1–2 striae. Short scape, not reaching head posterior margin; apical antennomere slightly shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal socket. Eye drop-shaped, small-sized, larger diameter with 10 ommatidia. Head dorsum with vermicular to vermiculated-areolated striae, divergent towards posterior margin, interspaces smooth. Striae on head lateral and laterodorsal regions converge to eye margin; very thin striae with interspaces indistinguishable (microsculpture) superimposed on vermicular to vermiculated-areolated striae (macrosculpture); gena striate, with the same striation of head lateral, 2–3 regular and semicircular striae circumscribe the torulus, not reaching eye margin. Interspaces between striae on head ventral surface distinguishable.

Vermicular to vermiculated-areolated striae on mesosoma, interspaces between thicker striae smooth on mesosoma dorsum and filled with thinner striae on mesosoma lateral. Promesonotal junction and metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma continuous, slightly convex. Propodeal lobe

bidentate, dorsal tooth longer and more acute than the shorter and blunt ventral tooth; dorsal tooth length  $\frac{1}{2}$  of propodeal spine length. Propodeal spine midsized, straight (LV), divergent (DV), sculptured on base. Procoxa with thin and transverse striae of uniform thickness; irregular and transverse striae on C2 and C3. Irregular to regular transverse striae on profemur dorsal surface; posterior surface mostly smooth; anterior and ventral surface completely smooth. Protibia extensor surface entirely striate.



**FIGURE 77.** Holotype worker of *Hylomyrma virginiae* (MCZENT00524688). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

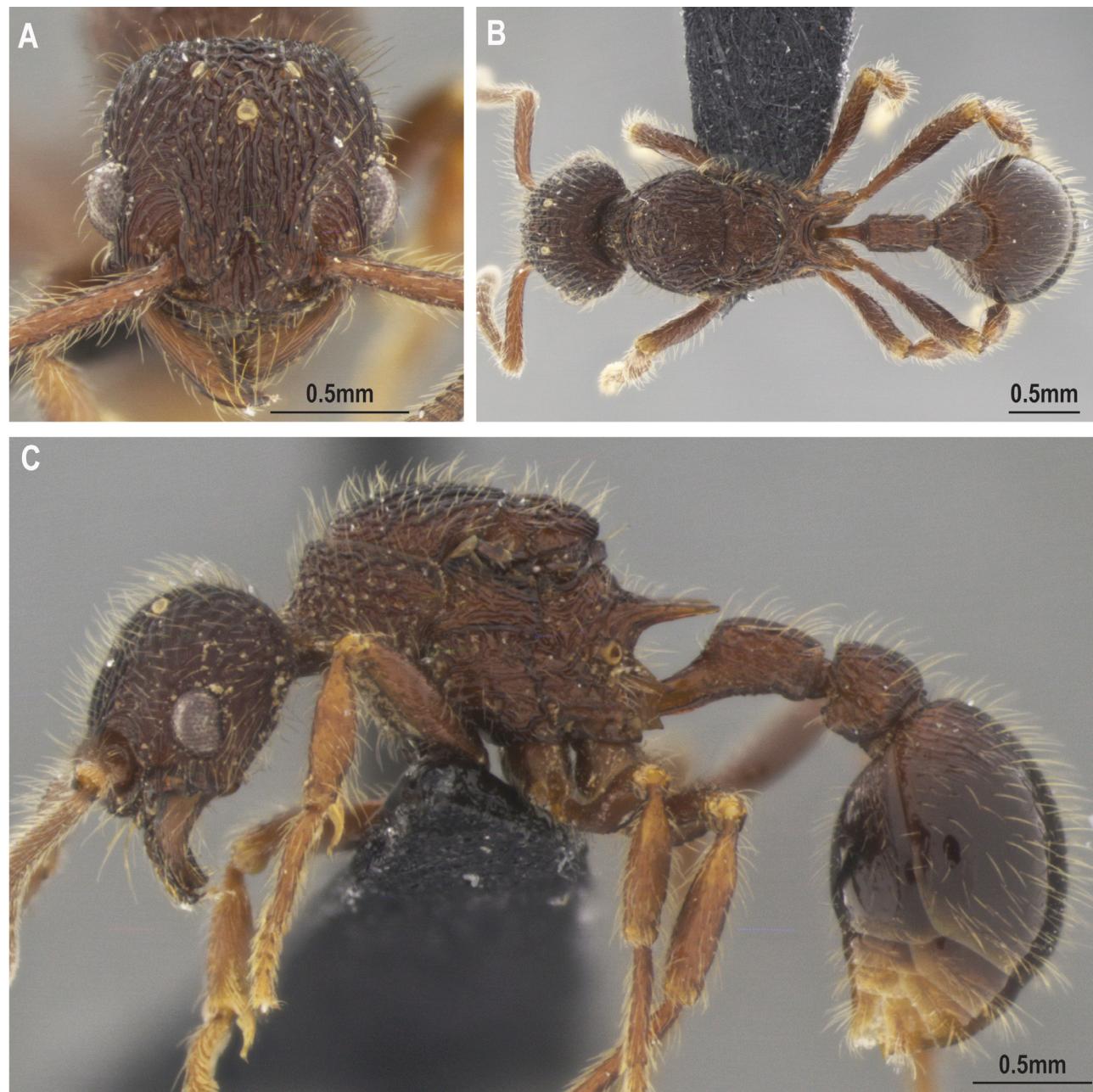
Dorsal margin of petiole discontinuous, smooth dorsum. Node with irregular and transverse striae on anterior surface continuing on lateral surface; vermiculated-areolated striae on lateral and dorsal surfaces; irregular and transverse striae on ventral surface, interspaces distinguishable. Longitudinal and anastomosed striae on postpetiole; subpostpetiolar process striae restricted to lateral region; subpostpetiolar process weak, slightly convex.

First gastral segment striation similar to postpetiole striae; long striae on tergum,  $\frac{1}{4}$  longer than postpetiole length; sternite striation weakly marked, covering the laterobasal region.

QUEEN (n=3) (Fig. 78A–C): HL (0.98–1.12); HW (1.01–1.10); ML (0.66–0.74); SL (0.76–0.90); MOD (0.28–0.33); PNW (0.80–0.96); WL (1.48–1.72); PSL (0.35–0.43); PL (0.66–0.74); PW (0.26–0.30); PPL (0.40–0.44); PPW (0.40–0.49); GL (1.40–1.64); TL (5.58–6.40); CI (98.09–103.06); SI (75.24–81.81); OI (27.20–30). Large-sized. Color, pilosity, and some sculpture characters shared with conspecific workers, only slightly larger. Larger

diameter of eye with 13–14 ommatidia. Longitudinal, irregular to vermicular striae on scutum going from an anterior central point towards transcutal suture, interspaces distinguishable. Anepisternum, katepisternum, axilla and scutellum with the same sculpture of scutum. Scutoscutellar sulcus inconspicuous. Transverse and regular striae on propodeum (DV). Lateral of mesosoma with irregular to vermiculated-areolated, thicker striae directed mostly to propodeal dorsum, interspaces between striae smooth. Wings unknown.

MALE Unknown.



**FIGURE 78.** Paratype queen of *Hylomyrma virginiae* (MCZCEN00524681). A) frontal view; B) dorsal view; C) lateral view. Photos by M.A. Ulysséa.

**Etymology.** The epithet *virginiae* is a Latin noun in the genitive case created by adding the singular Latin genitive case suffix -e to the first name of a female person. This species is named in honor of Virginia Leone Bicudo (1910–2003), a sociologist and psychoanalyst born in São Paulo, daughter of an Italian immigrant and a black Brazilian. She was the first non-medical practitioner to be recognized as a psychoanalyst, therefore essential for the development and institutionalization of psychoanalysis in Brazil. She was a pioneer in the study of relations between races, which was the subject of her dissertation in 1945.

**Comments.** *Hylomyrma virginiae* is not known to co-occur with *H. mitiae* or *H. sagax*, but all three occur in

northwestern South America. *Hylomyrma virginiae* has been recorded in Ecuador (both sides of The Andes) and in western Colombia (Fig. 89), whereas *H. sagax* is restricted to southeast Colombia (Fig. 83), and *H. mitiae* only occurs in French Guiana (Fig. 87). *Hylomyrma virginiae* is typically smaller (TL 4.94–5.20 mm, WL 1.24–1.40 mm) than *H. mitiae* (TL 5.27–5.52 mm, WL 1.41–1.52 mm). Also, the gena and laterodorsal region of the head are covered by very thin striae with indistinguishable interspaces superimposed on vermicular to vermiculated-areolated striae (vs. very thin striae with indistinguishable interspaces between the vermicular to vermiculated-areolated striae in *H. mitiae*) (not seen in SEM images of *H. mitiae* due to coating artifacts), the indistinct metanotal groove (vs. distinguished by slight depression), the discontinuous dorsal margin of petiole (vs. continuous), and the weak and slightly convex subpostpetiolar process (vs. very prominent and subtriangular). *Hylomyrma virginiae* can be distinguished from *H. sagax* (characteristic in parentheses) in the medium lateral teeth at clypeus anterior margin (vs. well-developed teeth), the propodeal spine comparatively shorter and thicker (vs. longer and needle-like), and the discontinuous dorsal margin of petiole (vs. continuous).

There are relatively few specimens collected of this species; most were sampled in Limoncocha, Ecuador. Specimens from Chocó, Colombia, have a more developed propodeal spine and subpostpetiolar process, and the anterior surface of petiolar node is slightly marked. These characteristics may lead to the misidentification of these specimens as *H. sagax*, but their body size and sculpture are more similar to those found in *H. virginiae* specimens recorded in Ecuador.

**Distribution.** *Hylomyrma virginiae* is known from Colombia and Ecuador (Fig. 89).

**Natural history.** This species occurs in tropical rainforests and areas of bamboo (*Guadua* sp.) plantations, at elevations between 250 and 850 m. Specimens were collected in the leaf-litter, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers.

**Additional material examined** (8 workers): **COLOMBIA: Chocó:** 10km SW S.[San] José del Palmar, Rio Torito, 1–4.june.1978, C. Kugler col., Finca Los Guaduales, 800m, in *Guadua* sp. litter (6W) [MCZC]; same except 610m, by river (1W) [MCZC]; 850m, on ridge, litter (1W) [MCZC].

### *Hylomyrma wachiperi* Ulysséa new species

Figures 79, 86 (map)

Holotype: PERU: Cusco: Kcosñipata District, Estac. Climatologica Ordinaria Rocotal, 1828m, 71°34.059'W, 13°6.735'S, 25.ix.2004, T.R. Schultz, J. Sosa-Calvo, C.J. Marshall, litter sample, nr. river, =JSC040925-04, JSC040925-01-LS04 (1W) [USNMENT00534691] [USNM]. Paratypes: same data as holotype (1W) [USNMENT00534693] [CASC]; same except =JSC040925-05, JSC040925-01-LS05 (1W) [USNMENT00534702] [USNM]; (1W) [USNMENT00534699] [MCZC]; =JSC040925-03, JSC040925-01-LS03 (2W) [USNMENT00534671, USNMENT00534669] [USNM]; =JSC040925-16, JSC040925-01-LS16 (1W) [USNMENT00534760] [USNM]; =JSC040925-14, JSC040925-01-LS14 (1W) [USNMENT00534750] [USNM]; (1W) [USNMENT00534751] [IHVL]; =JSC040925-13, JSC040925-01-LS13 (1W) [USNMENT00534748] [USNM]; (1W) [USNMENT00534742] [DZUP]; =JSC040925-11, JSC040925-01-LS11 (1W 1I) [USNMENT00534729 MZSP67465, USNMENT00534730 MZSP67466] [MZSP]; =JSC040925-12, JSC040925-01-LS12 (1W) [USNMENT00534736 MZHY206] [MZSP]; =JSC040925-02, JSC040925-01-LS02 (2I, one covered with gold) [USNMENT00534648 MZSP67467, USNMENT00534653 MZSP67468] [MZSP].

**Diagnosis.** Midsized. Propodeal lobe unidentate, dorsal region rounded, ventral region with a small and blunt tooth; apex of propodeal spine curved upwards.

**Description.** WORKER (n=3) (Fig. 79A–C): HL (0.96–0.98); HW (0.92–0.94); ML (0.60–0.62); SL (0.70–0.72); MOD (0.20–0.28); PNW (0.62–0.64); WL (1.22–1.26); PSL (0.22–0.24); PL (0.58–0.60); PW (0.24–0.26); PPL (0.28–0.34); PPW (0.34–0.37); GL (1.22–1.28); TL (4.95–5); CI (93.87–97.91); SI (74.46–78.26); OI (21.27–23.40). Midsized. Shiny integument. Dark brown body, lighter trochanter, tarsi and antenna. Many thin and unbranched setae, long to midsized, erect to subdecumbent.

Head subquadrate; posterior margin slightly concave at middle. Mandible masticatory margin with 5 teeth. Anterior margin of clypeus straight medially, with a pair of small teeth laterally; median area of clypeus with 8–9 regular, longitudinal and thicker striae (macrosculpture) covered by thinner striae with indistinguishable interspaces (microsculpture). Frontal triangle with 1–3 striae. Short scape, not reaching head posterior margin; apical antennomere  $\frac{1}{4}$  shorter than previous 3 antennomeres together. Frontal carina slightly concave posterior to antennal

socket. Eye oval, small-sized, larger diameter with 9 ommatidia. Regular and longitudinal striae on head dorsum, slightly divergent towards posterior margin, interspaces between thicker striae filled with thinner striae. Head lateral and laterodorsal regions with the same striation of head dorsum; striae converging to eye margin, anterior part of laterodorsal region with few striae connecting the region posterior to frontal carina with eye margin; gena striate, 6 thicker, regular and semicircular striae circumscribe the torulus, approaching eye margin. Interspaces between striae on head ventral surface distinguishable.



**FIGURE 79.** Holotype worker of *Hylomyrma wachiperi* (USNM 00534691). A) frontal view; B) dorsal view; C) lateral view. Photos by Ricardo Kawada.

Mesosoma covered with irregular and longitudinal striae, interspaces smooth; transverse striae on pronotum anterior region (DV) directed to lateral of pronotum, longitudinal in other regions of pronotum (DV); lateral of pronotum and mesepisternum with longitudinal striae in part continuing transversely on propodeum dorsum and in part continuing towards propodeal spine. Dorsal margin of mesonotum convex. Promesonotal junction discernible by a depression. Metanotal groove indistinct. Transverse carina well-marked. Dorsal margin of mesosoma discontinuous, convex. Propodeal lobe unidentate, dorsal region rounded, ventral region with a small and blunt tooth. Pro-

podeal spine midsized, apex curved upwards (LV), divergent (DV), sculptured on base. Procoxa striae of uniform thickness; regular and transverse striae on C2 and C3. Profemur predominantly covered with regular and transverse striae, ventral surface smooth. Protibia extensor surface entirely covered with regular and longitudinal striae.

Dorsal margin of petiole discontinuous; ventral surface with few transverse, regular and thin striae, slightly marked. Petiole mesoventral surface armed with subtriangular projection. Convex node; regular and transverse striae on anterior surface continuing inclined and irregular on lateral surface, striae weakly marked; irregular and transverse striae on dorsal surface. Postpetiole covered with regular and longitudinal striae; subpostpetiolar process with the same sculpture of postpetiole on laterobasal region, striae weakly marked, midbasal region smooth; subpostpetiolar process weak, straight.

First gastral segment striation similar to postpetiole striae; longitudinal striae on tergum longer than postpetiole length; sternite striation covering the laterobasal region.

QUEEN Unknown.

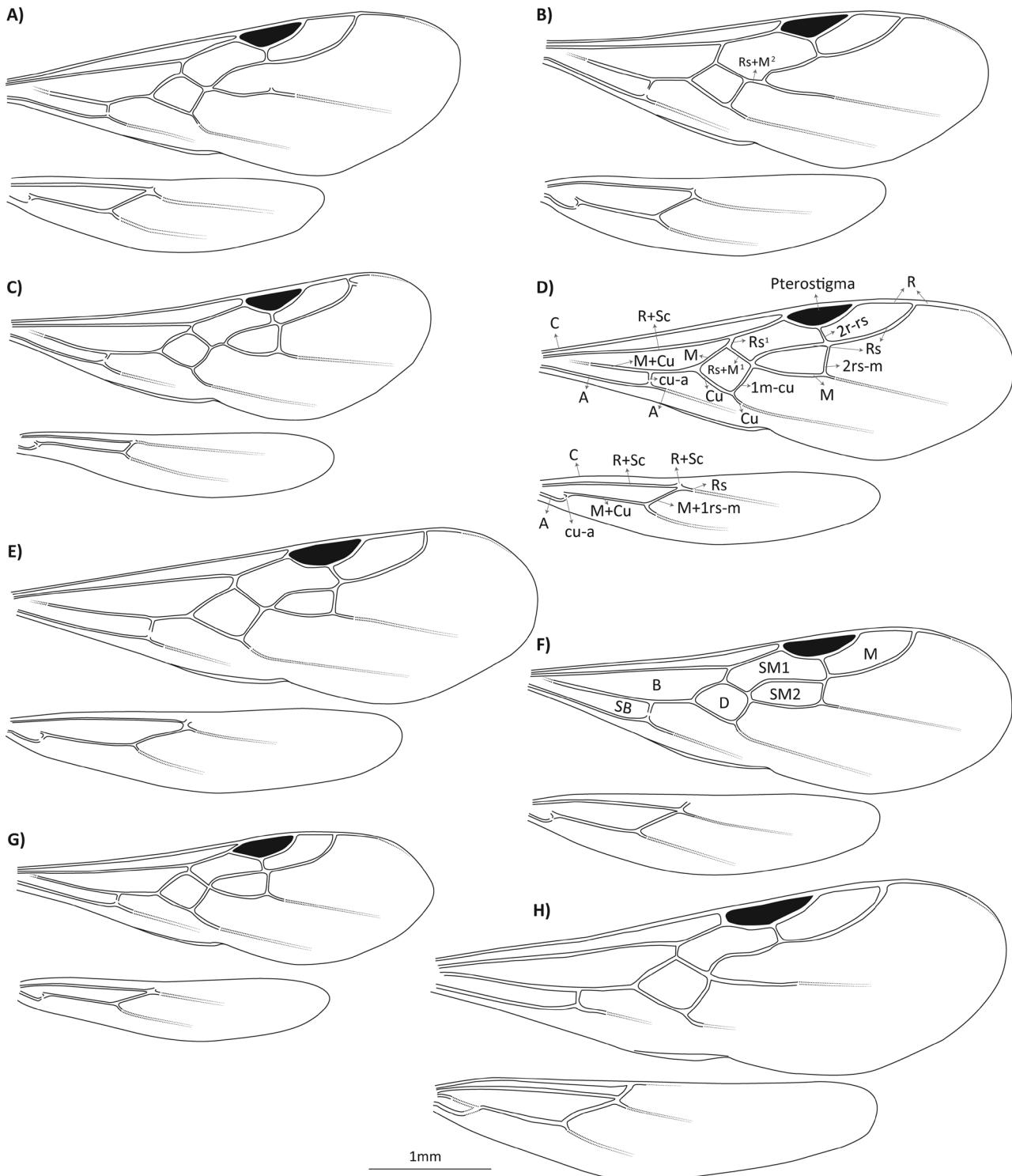
MALE Unknown.

**Etymology.** The epithet *wachiperi* is a non-Latin noun used in apposition and refers to the local ethnic group. The distribution of this species is restricted to Kcosñipata, Peru and the native ethnic group of this region identify itself as “*wachiperi*”. The species name is also a tribute to the indigenous populations for protecting biodiversity, maintaining the forest, and guarding creole seeds. The specific epithet is a noun in apposition, indeclinable in accordance to articles 31.2.1 and 31.2.3 of the International Code of Zoological Nomenclature.

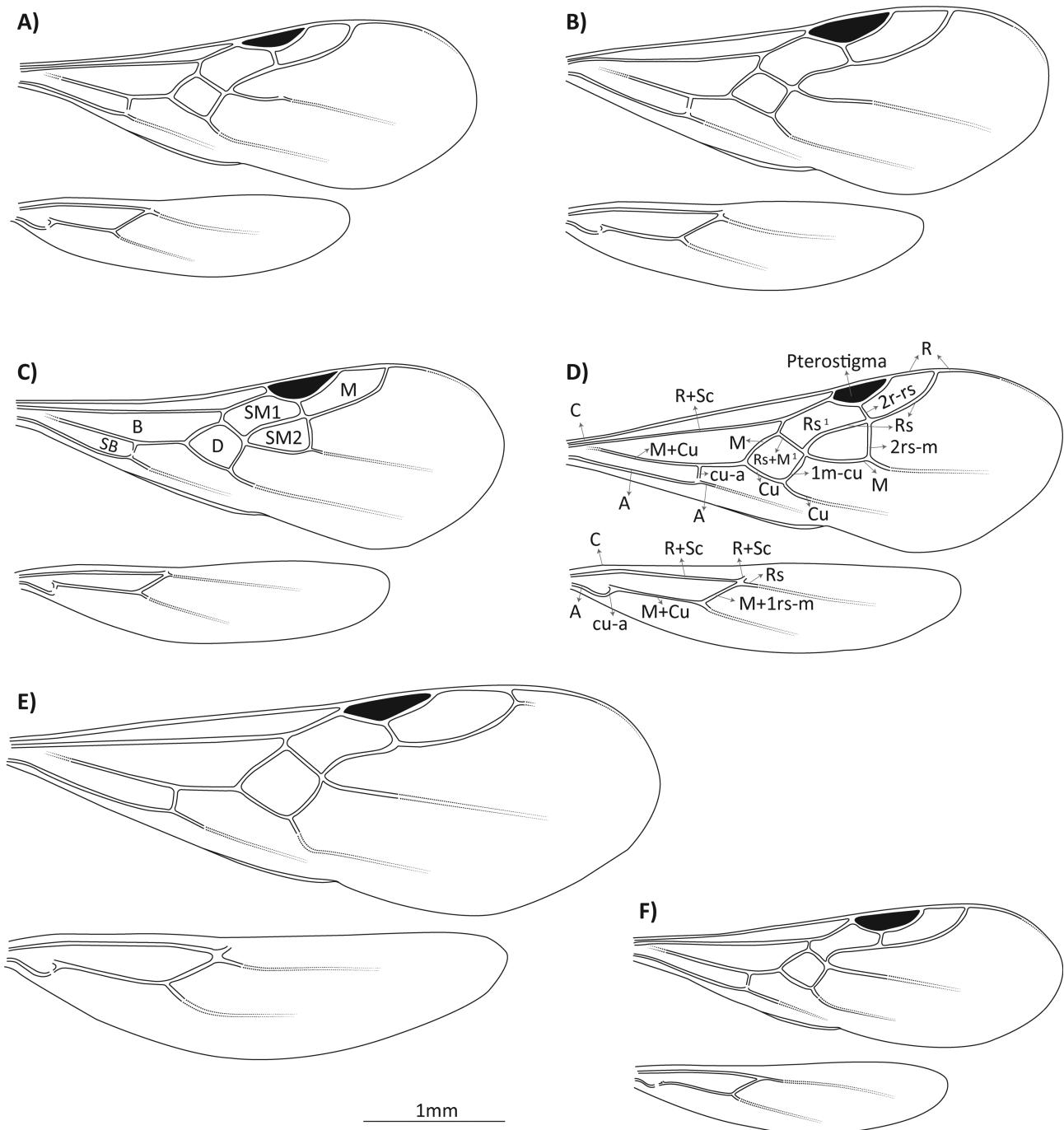
**Comments.** This species is unlikely to be confused with any other congener. The combination of the apex of propodeal spine curved upwards, the propodeal lobe unidentate (only the ventral tooth is present), and the dorsal region of propodeal lobe rounded is unique in the genus. *Hylomyrma wachiperi* is similar to *H. reitteri* and *H. dandarae*. All three are allopatric; *H. wachiperi* occurs in Peru (Fig. 86), *H. dandarae* occur in Bolivia and Colombia (Fig. 83), and *H. reitteri* in Brazil and Paraguay (Fig. 85). *Hylomyrma wachiperi* differs from *H. reitteri* (characteristic in parentheses) in the oval eye (vs. reniform), the striate ventral surface of petiole (vs. smooth surface), and the tergum of the first gastral segment with long striae (vs. short striae). *Hylomyrma wachiperi* can be distinguished from *H. dandarae* in the regular striae on the head dorsum (vs. irregular striae), the irregular striae on the mesosomal dorsum (vs. rugose striae), the indistinct metanotal groove (vs. distinct), the long propodeal spine (vs. short), and the tergum of the first gastral segment with short striae (vs. long striae).



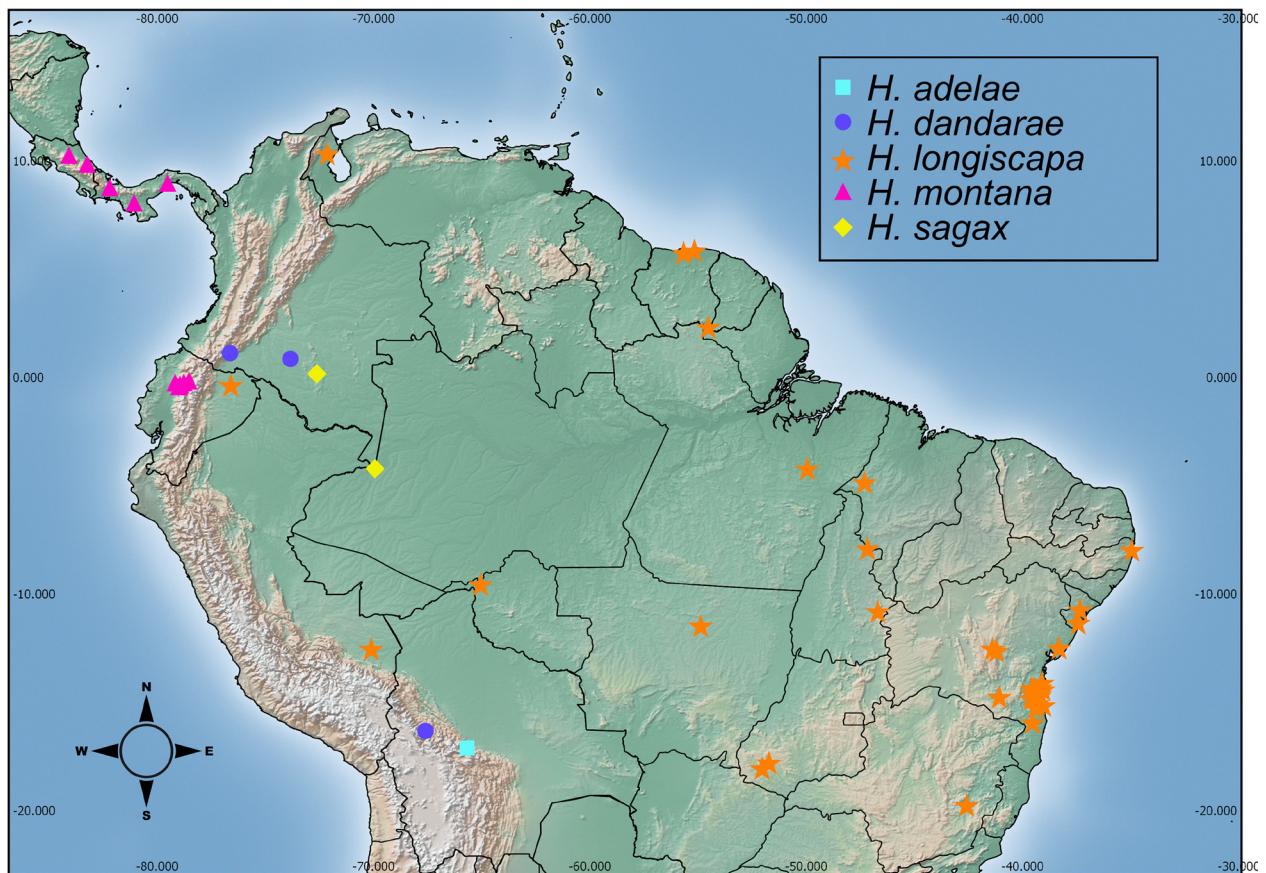
**FIGURE 80.** Types of setae found in the species of *Hylomyrma*. Unbranched setae: A) *Hylomyrma adelae*, *H. blandiens*, *H. macielae*; B) *H. immanis*; C) *H. marielleae*. Branched setae: D) *H. dentiloba*, *H. linspectoriae*, *H. mitiae*, *H. peetersi*, *H. virginiae*; E) *H. balzani*, *H. lopesi*; F) *H. blandiens*, *H. jeronimae*, *H. versuta*; G) *H. dolichops*; H) *H. transversa*; I) *H. longiscapa*; J) *H. balzani*, *H. lopesi*, *H. primavesi*, *H. reitteri*, *H. versuta*; K) *H. plumosa*.



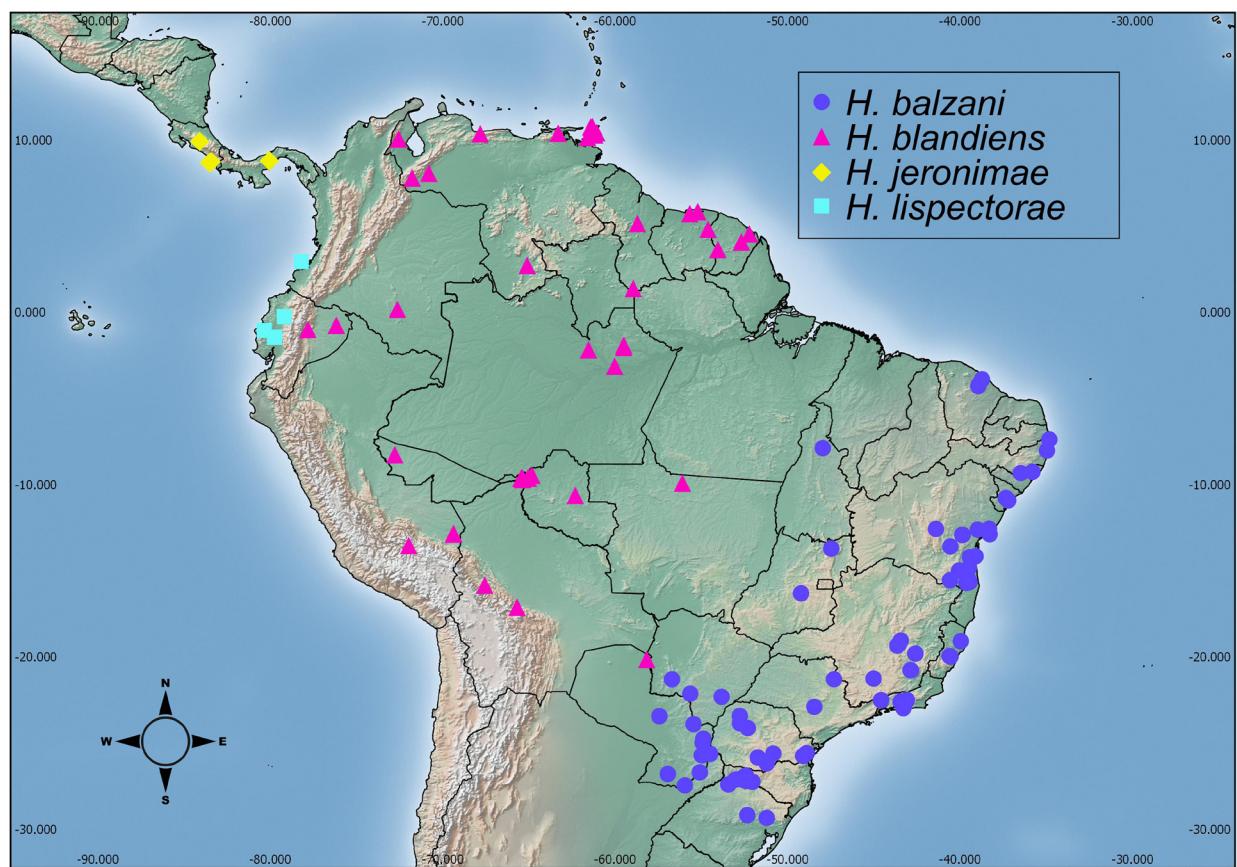
**FIGURE 81.** Queen's wings. A) *Hylomyrma balzani* (MZSP67324); B) *H. reitteri* (MZSP67431); C) *H. versuta* (MEXICO: VeraCr.: Pueblo Nuevo, nr. Tetzonapa, Aug. 14 -53, E.O. Wilson, #221, rain forest [MCZC]); D) *H. longiscapa* (MZSP67352); E) *H. lispctorae* (MZSP67348); F) *H. adelae* paratype (MZSP67316); G) *H. dentiloba* (MZSP67319); H) *H. mitiae* paratype (MZSP67402). Venation: costa (C), radial (R), radial sector (Rs), media (M), cubitus (Cu), anal (A), radial-subcosta (R+Sc), media-cubitus (M+Cu), cubitus-anal crossvein (cu-a), first media-cubitus crossvein (1m-cu), radial sector-media 1 (Rs+M<sup>1</sup>), radial sector-media 2 (Rs+M<sup>2</sup>), second radial-radial sector crossvein (2r-rs), radial-subcosta (R+Sc), media-first radial sector-media (M+1rs-m), submarginal 1+2 (2rs-m). Cells: basal (B), sub-basal (BS), discal (D), sub-marginal 1 (SM1), marginal (M), sub-marginal 2 (SM2).



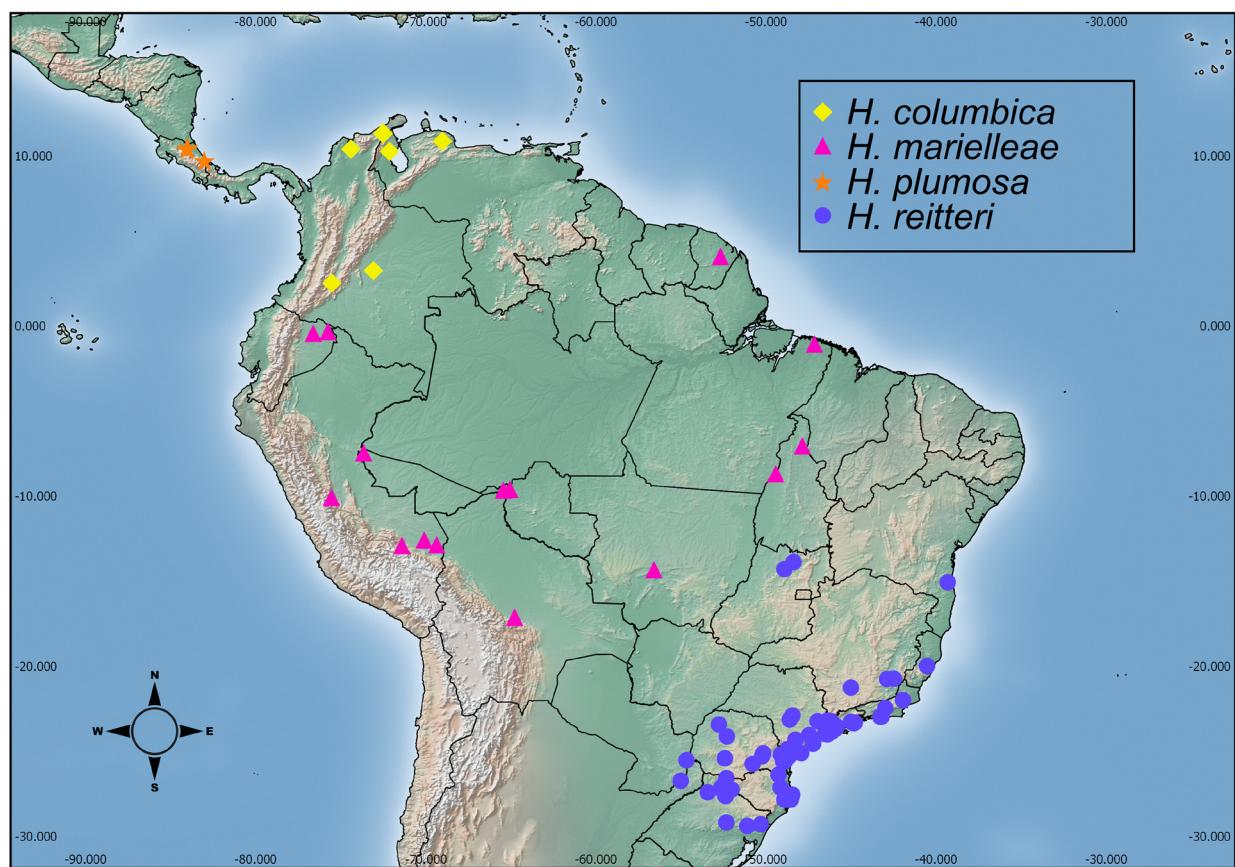
**FIGURE 82.** Male's wings. A) *Hylomyrma balzani* (MZSP67323); B) *H. reitteri* [MZSP 67431], C) *H. versuta* (MEXICO: VeraCr.: Pueblo Nuevo, nr. Tetzonapa, Aug. 14-53, E.O. Wilson, #221, rain forest [MCZC]); D) *H. longiscapa* (MZSP67353); E) *H. immanis* (MZSP67334); F) *H. blandiens* (USNMENT00537690). Venation: costa (C), radial (R), radial sector (Rs), media (M), cubitus (Cu), anal (A), radial-subcosta (R+Sc), media-cubitus (M+Cu), cubitus-anal crossvein (cu-a), first media-cubitus crossvein (1m-cu), radial sector-media 1 (Rs+M<sup>1</sup>), second radial-radial sector crossvein (2r-rs), radial-subcosta (R+Sc), media-first radial sector-media (M+1rs-m), submarginal 1+2 (2rs-m). Cells: basal (B), sub-basal (BS), discal (D), sub-marginal 1 (SM1), marginal (M), sub-marginal 2 (SM2).



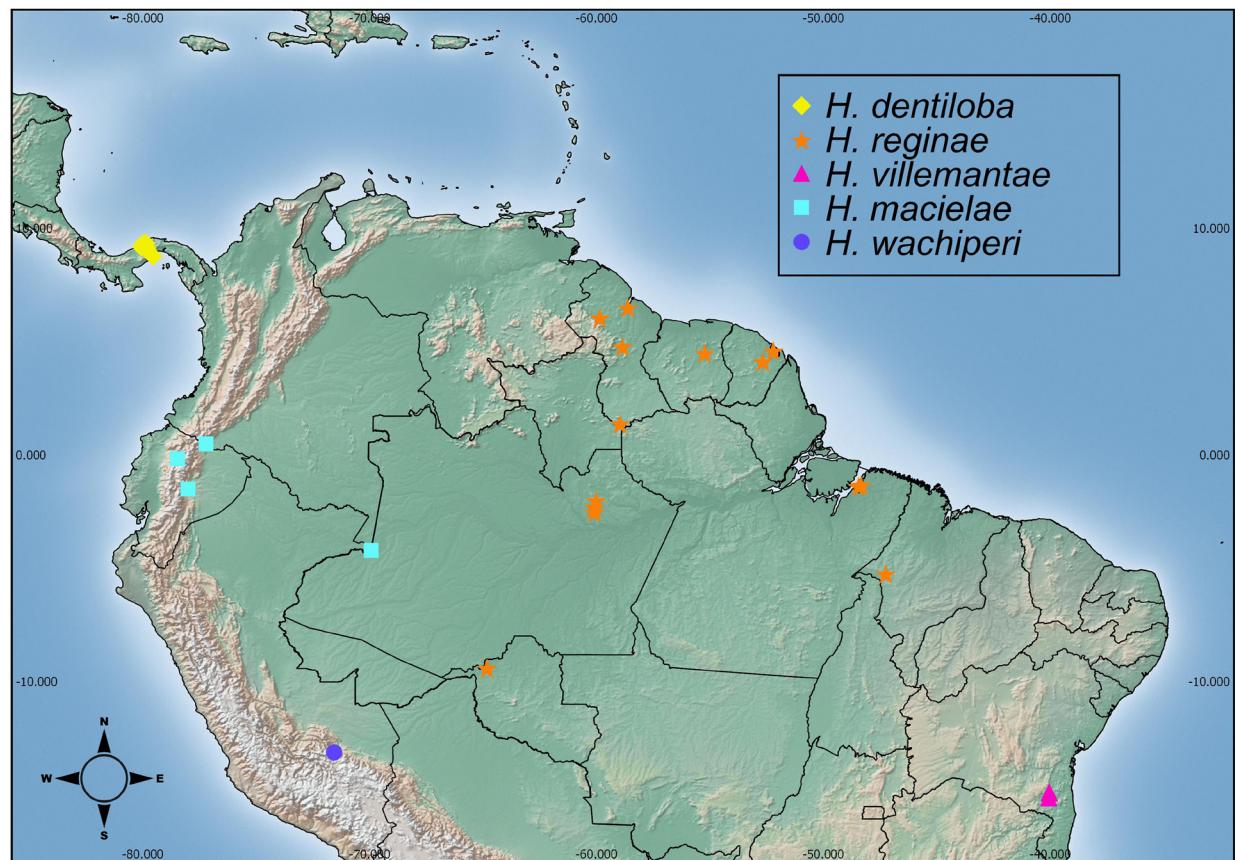
**FIGURE 83.** Distribution records of *Hylomyrma adelae*, *H. dandarae*, *H. longiscapa*, *H. montana*, and *H. sagax*.



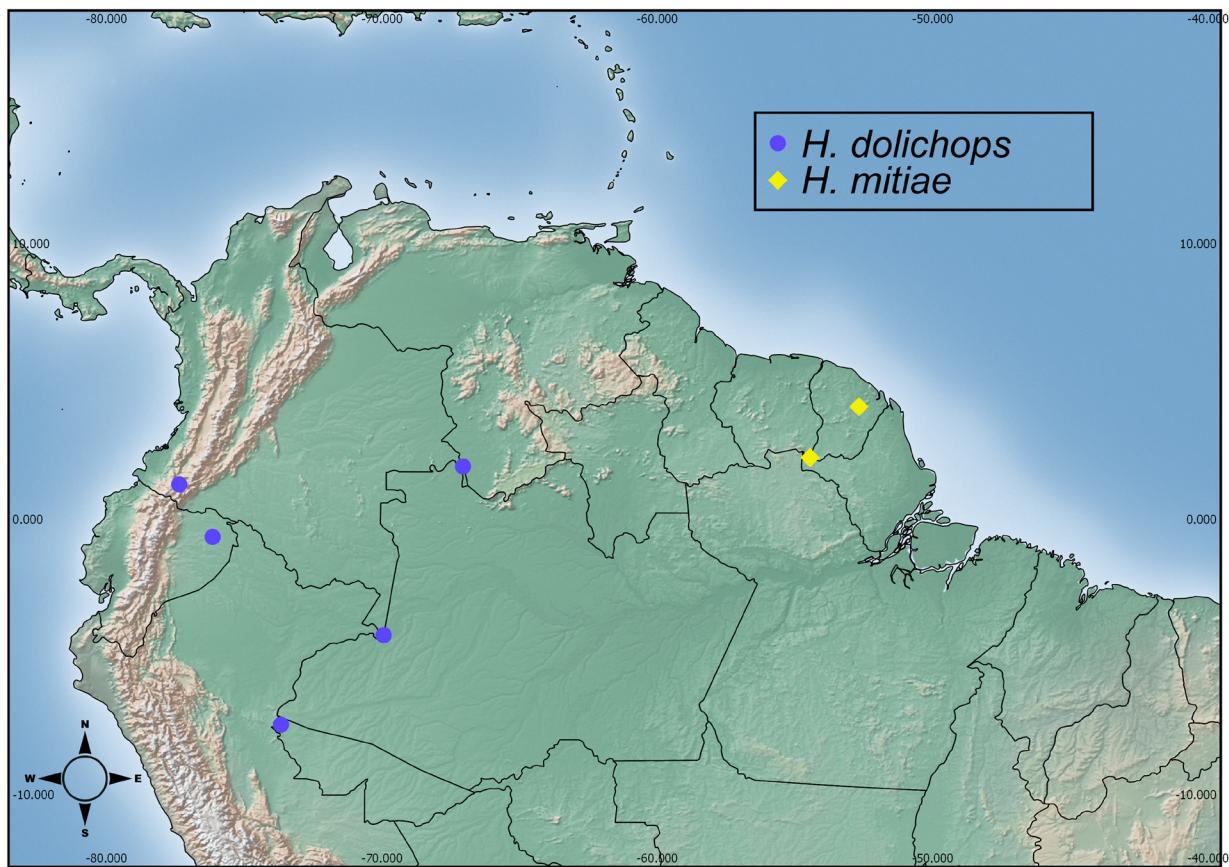
**FIGURE 84.** Distribution records of *Hylomyrma balzani*, *H. blandiens*, *H. jeronimae*, and *H. lispectorae*.



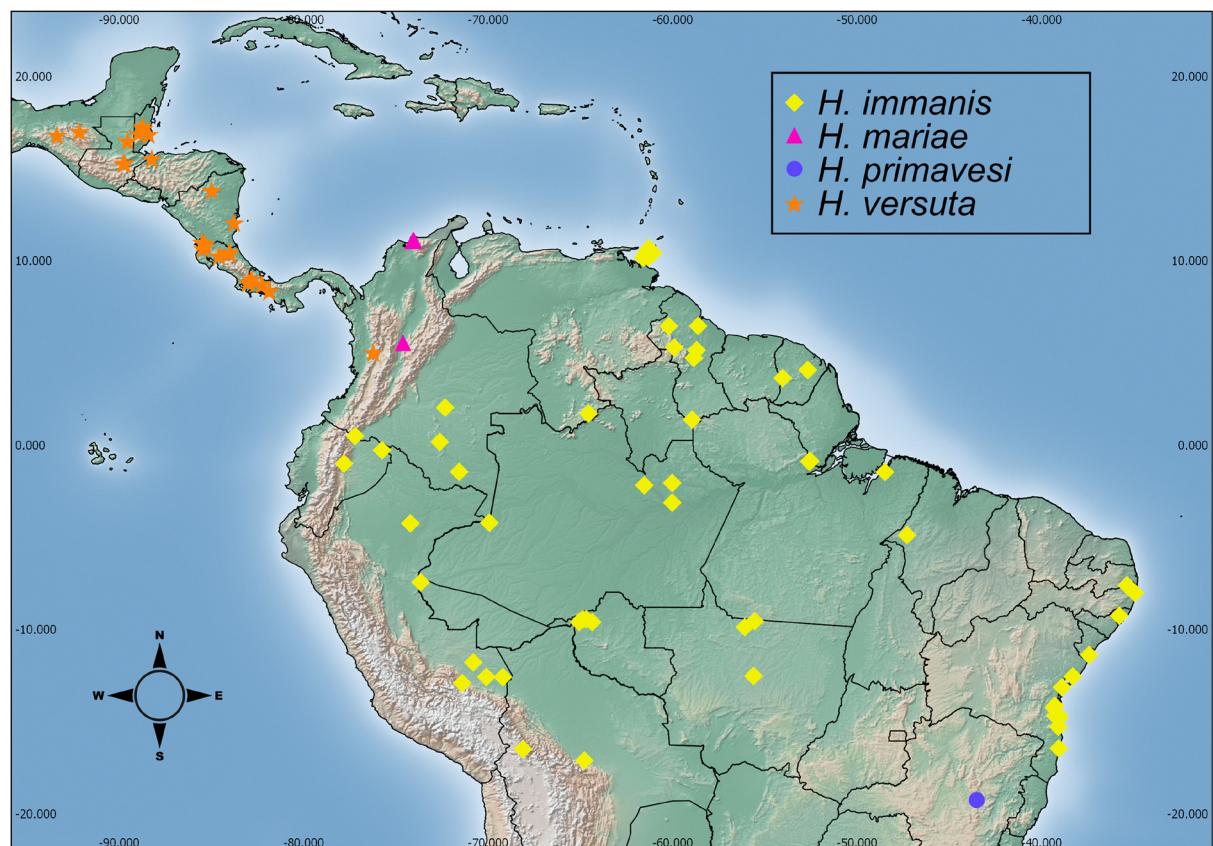
**FIGURE 85.** Distribution records of *Hylomyrma columbica*, *H. marielleae*, *H. plumosa*, and *H. reitteri*.



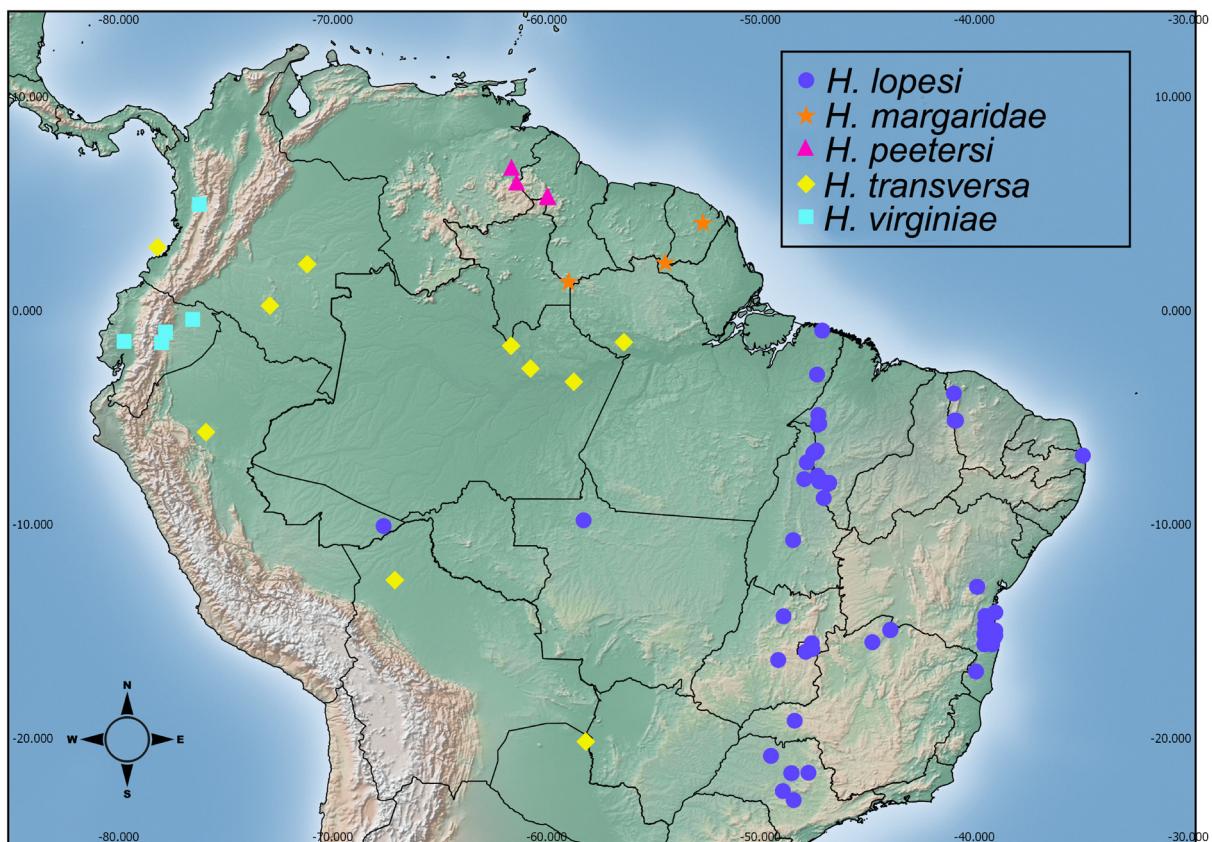
**FIGURE 86.** Distribution records of *Hylomyrma dentiloba*, *H. macielae*, *H. reginae*, *H. villemantae*, and *H. wachiperi*.



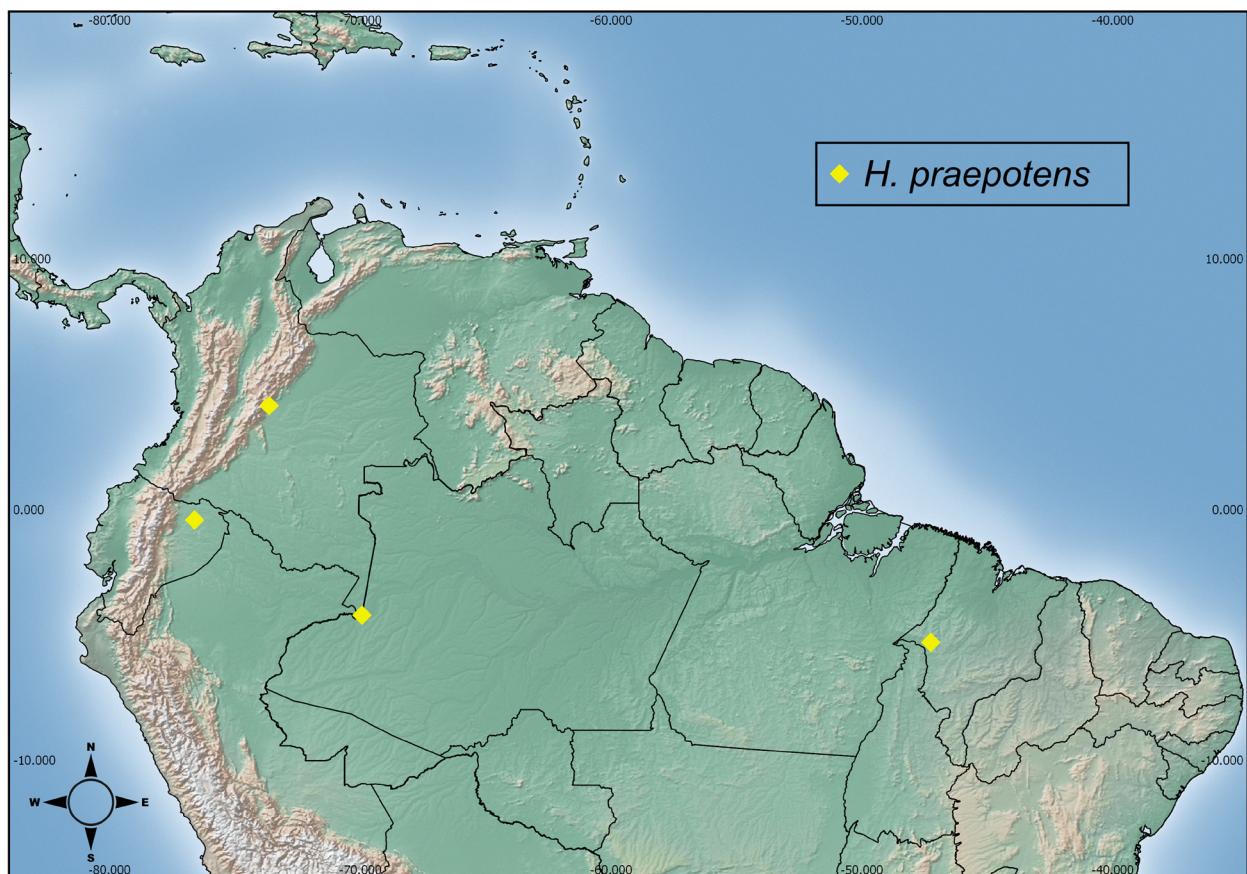
**FIGURE 87.** Distribution records of *Hylomyrma dolichops*, and *H. mitiae*.



**FIGURE 88.** Distribution records of *Hylomyrma immanis*, *H. mariae*, *H. primavesi*, and *H. versuta*.



**FIGURE 89.** Distribution records of *Hylomyrma lopesi*, *H. margaridae*, *H. peetersi*, *H. transversa*, and *H. virginiae*.



**FIGURE 90.** Distribution records of *Hylomyrma praepotens*.

Two specimens were identified as intercastes by the presence of three ocelli, a more pronounced depression on the promesonotal junction than that found in workers, modifications on the mesonotum and metanotum, and the larger body measures [HL (1.02–1.05); HW (0.98–1); ML (0.64); SL (0.72–0.74); MOD (0.24); PNW (0.70); WL (1.36); PSL (0.27–0.28); PL (0.64–0.66); PW (0.25–0.27); PPL (0.40); PPW (0.38); GL (1.32–1.40); TL (5.38–5.51)].

**Distribution.** *Hylomyrma wachiperi* is only known from Kcosñipata District, Cusco, Peru (Fig. 86).

**Natural history.** This species inhabits sites in tropical rainforest at elevations of 1,825 m. All specimens were collected in leaf-litter, which suggests that nests are located in fallen logs, rotten wood, between leaves, or inside natural cavities of the superficial soil layers. Except for the presence of intercastes, there is no further information available regarding the biology of *H. wachiperi*.

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