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Revision of the New World species of the genus *Leptogenys* Roger (Insecta: Hymenoptera: Formicidae: Ponerinae)

John E. Lattke

Museo del Instituto de Zoología Agrícola, Universidad Central de Venezuela, Apartado 4579, Maracay, Venezuela 2101-A
[john.lattke@miza-ucv.org.ve]

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> Abstract

The New World species of the genus *Leptogenys* are revised based upon their external morphology. The genus is present from southern U.S.A. to northern Argentina, including the Caribbean and Galapagos Islands. Eighty-one species are recognized, 13 are synonymized, and 49 are described as new. The New World fauna can be divided into 12 informal species groups and 8 species considered *incertae sedis*. A phylogeny using morphology recovers *L. linearis* as sister to the rest of the New World taxa, besides existence of a basal polytomy and two large clades. Reproduction is mostly through ergatoid queens, with gamergate reproduction apparently only present in several taxa outside of the *pusilla* clade, while winged queens are present only in 3 species of the *pusilla* clade. The African tramp species *L. maxillosa* is also present. Most species dwell in humid forested areas, but there are several arid zone endemics. Most species are specialist predators of oniscomorph isopods. There is no evidence for army ant behavior in the New World species. The generic diagnosis and a key for the identification of the workers is included, as well as illustrations of all the known New World species.

> Key words

Ants, taxonomy, identification, neotropical, diversity.

> Resumen

Las especies americanas del género *Leptogenys* se revisan en base a su morfología externa. El género se halla desde el sur de los EEUU hasta el norte de la Argentina, incluyendo islas caribeñas y las Islas Galapagos. Se reconocen 81 especies, 13 especies son sinonimizadas y 49 se describen como nuevas. La fauna americana se puede dividir en 12 agrupaciones informales de especies además de 8 especies sin afinidad conocida. Una filogenia basada en morfología señala *L. linearis* como taxón hermano de las demás especies americanas, además de la existencia de una politomia basal y dos grandes clados. La reproducción es realizada principalmente por reinas ergatoides pero gamergates aparentemente existen sólo en varios taxones externos al clado de *pusilla*, mientras que reinas aladas sólo se conocen en tres especies del clado de *pusilla*. La especie invasora africana *L. maxillosa* también esta presente. La mayoría de las especies habitan bosques húmedos, sin embargo hay algunas especies endémicas a zonas áridas. La mayoría de las especies son depredadoras especializadas en cazar isópodos oniscomorfos. No hay evidencia para comportamiento semejante a las ecitoninas en las especies americanas. Se presenta una diagnosis del género y se incluye una clave para identificar a las obreras y cada especie es ilustrada.

> Palabras clave

Hormigas, taxonomía, identificación, neotrópico, diversidad.

1. Introduction

The genus *Leptogenys* is a mostly pantropically distributed group of ants that includes over 200 species (Bolton 1995a,b), the most speciose within the Ponerinae. The taxonomy of the genus needs attention as the only recent revisionary work is that of Bolton (1975) for the African region, which recognizes 70 species. In a mo-

lecular based study of ponerine relationships, SCHMIDT (2009, in thesis) explicitly points out the high priority of completing systematic studies of *Leptogenys* because of the group's complex historical biogeography, and its value as a model system for studying the evolution of foraging and reproductive behavior in ants. The New World fauna was summarily covered by a key in WHEELER (1923) but his treatment has been rendered woefully inadequate due to the subsequent accumulation of isolated species descriptions, and dozens of specimens representing undescribed species in different institutions. LATTKE & LONGINO (2009) informally reviewed the Costa Rican fauna, and LATTKE (2007) reviewed the Colombian *Leptogenys*. Despite their great diversity, they are not amongst the most common ants found in collections. In a survey of leaf litter ants WARD (2000) recorded the genus in last place amongst the forty most frequently encountered genera, found in only 6% of his samples. Fortunately the last years have seen more specimens accumulate in collections as ant studies gather impetus in the tropics with the timely development of local human resources, and the widespread use of improved collecting techniques such as pitfall traps and leaf litter sifting. Some of the difficulties in collecting *Leptogenys* lay with the nocturnal activity apparent in many species (BOLTON 1975; LATTKE & LONGINO 2009), a rhythm that would be synchronised with activity of their favorite prey, terrestrial isopods (DEJEAN & EVRAERTS 1997). Additionally, upon the uncovering of a nest the usual response of the ants is to flee and hide beneath any suitable cover, some species are extremely fast and nest members will be rapidly lost in the surrounding leaf litter before the collector has time to react. This paper revises the taxonomy of all the known species for the New World based on worker morphology, redescribes known species, describes new species, reviews their natural history, proposes a phylogeny, and provides an identification key and images for each of the known species.

2. Materials and methods

2.1. Measurements and indices

A series of measurements was taken from a selected number of specimens of each species and several indices were derived from them. The measurements are intended to give a general view of the size of each species and not detailed morphometrics. The criteria used for selecting specimens were size extremes and representatives from throughout the distribution range of a species. Most morphological measurements were made using a Nikon SMZ1500 stereoscope with an ocular micrometer. Measurements were entered into a spreadsheet for calculating indices and choosing the minimum and maximum values. All measurements are expressed in millimeters. Most of the following measurements as well as some of the terms used can be visualized in Fig. 1:

HL Head length: mid-line length of the cephalic capsule, measured in full-face (dorsal) view, from the anterior margin of the clypeus to the mid-point of a line drawn across the posterior margin.
HW Head width: maximum width of head, measured in the same plane as HL, excluding the eyes.
ML Mandible length: straight-line length of a mandible, measured from the base at the insertion into the head capsule, to the apex. Measured in the same plane as HL.
EL Eye length: maximum length of the compound eye, in the same plane as HL.
SL Scape length: maximum length of the first antennal segment, excluding the neck and basal condyle.
PW Pronotal width: maximum width of pronotum in dorsal view.
WL Weber's length of the mesosoma (alitrunk): diagonal length, measured in lateral view from the anterior margin of the pronotum (excluding the collar) to the posterior extremity of the propodeal lobe.
PH Petiole height: Height of the petiole measured in lateral view from the apex of the ventral (subpetiolar) process vertically to a line intersecting the dorsalmost point of the node.
PL The length of the petiole from the anterior process to the posteriormost point of the tergite, where it surrounds the gastral articulation.
PDW The maximum width of the petiole in dorsal view.

The following ratios were calculated from the preceding measurements and are denominated indices even though they have not been multiplied by 100:

CI Cephalic index: HW/HL
MI Mandibular index: ML/HW
OI Ocular index: EL/HW
SI Scape index: SL/HW
LPI Lateral petiole index: PH/PL
DPI Dorsal petiole index: DPW/PL

2.2. Morphology

Descriptive terms for cuticular sculpturing features follow HARRIS (1979) as closely as possible. Most morphological terms used here are standard for ant taxonomic descriptions, as defined in HÖLLDOBLER & WILSON (1990), BOLTON (1994), and SHATTUCK (1999), except for the following terminology:

Clypeal lamella – narrow and thin transverse strip of cuticle found along the anterior clypeal border; also referred to as the clypeal apron (BROWN 1958).

Occipital carina – low ridge on the posterior cephalic surface that separates the occiput from the vertex and gena.

Strigil – the curved comb-like movable spur on the apex of the fore tibia (TORRE-BUENO 1989).

Many of the descriptions and diagnoses describe outlines of particular body margins; these are best seen by

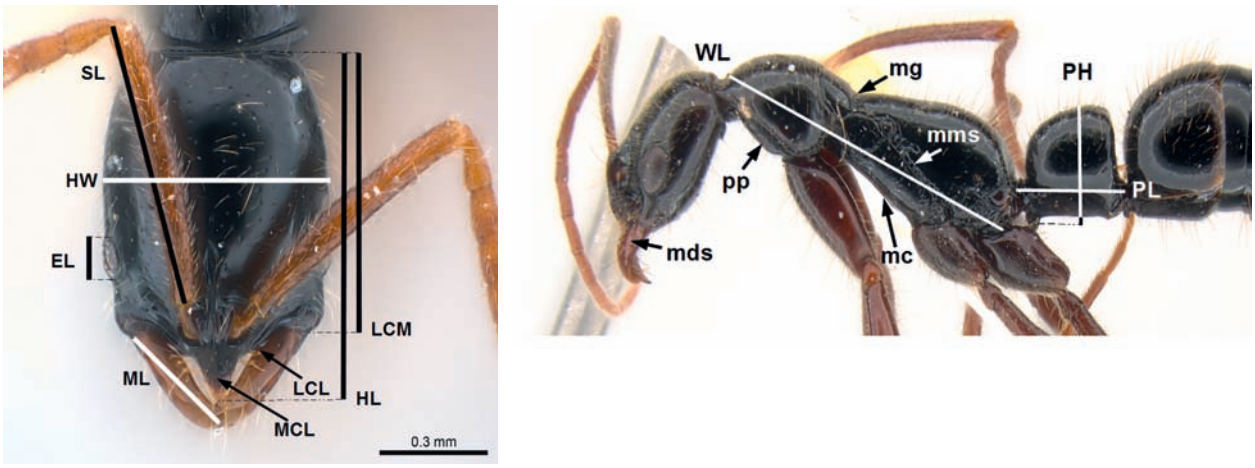

Fig. 1. Some measurements and terms. **A**. Full-face view of a *Leptogenys* worker head. EL – eye length; HW – head width; LCL – lateral clypeal lobe; LCM – lateral cephalic margin; MCL – median clypeal lobe; ML – mandibular length; SL – scape length. **B**. Lateral view of a *Leptogenys* worker body. mc – mesopleural carina; mds – mandibular sulcus; mms – mesometapleural suture; mg – metanotal groove; PH – petiole height; PL – petiole length; pp – propleuron; WL – Weber's length.

using reflected background lighting. The shiny cuticle common in these ants makes observing sculpture details difficult because of reflected light. This is attenuated by using a small rectangle of mylar plastic to diffuse light and create an opaque image similar to a scanning electron micrograph. The plastic is held erect and as close as possible to the specimen, and a concentrated light source is pointed at the specimen from the other side of the mylar. A bit of experimentation should determine the best setup. All the standardized images of the ants were produced by the staff of Antweb in the California Academy of Sciences, San Francisco, California. The images contained in this revision, plus dorsal views of the body and images of the specimen labels are available for viewing and downloading on www.antweb.org. Specimen codes used by Antweb (CASENT number) are included in the figure legend for each ant imaged.

2.3. Species boundaries

The species proposed here are recognized by the occurrence of discrete morphological boundaries which are inferred to indicate the existence of reproductive boundaries, considering *Leptogenys* populations within the context of the biological species concept. Insufficient sampling, and discrete intraspecific polymorphism certainly render some proposals speculative, but I have tried to be as conservative as possible, recognizing polytypic entities, such as the *pubiceps* complex, when the continuous breadth of phenotypes made any species proposal arbitrary. Not all specimens scrutinized during the course of this study were necessarily forced into one species or another. This was the case of several morphotypes represented by single specimens that seemed to resemble new species proposed in this revision, but with a morphological distinctness that surpassed what was usually found separating most other species. Such cases have been noted in the discussions for the appropriate taxa.

2.4. Phylogenetic analysis

A tentative phylogeny was obtained using 51 discrete morphological characters of the worker caste and 25 taxa, with *Pachycondyla impressa* (Roger, 1861) used as an outgroup (Table 1). Twelve species groups were defined *a priori* based on putative apomorphies by comparison with *P. impressa* and *Myopias maligna* (F. Smith, 1861). The apparent apomorphies for each group are defined and discussed under the description for each species group. Due to the inevitable appearance of at least some conflicting character states when defining a species group, each group is represented by a single species in the matrix and not by a composite description. The "representative" species were selected avoiding ones that simultaneously presented characters such as relative small size, relatively reduced eyes, predominantly smooth and shining sculpturing, and apparent very restricted distribution ranges, a situation inferred to be indicative of more recent diversification events within a group than species with opposing characteristics.

Twelve species (Table 1) which could not be confidently assigned to any of the groups were individually treated for the phylogenetic analysis. All characters were gleaned from direct observation of museum specimens. Character definitions, considerations, coding problems, and sources of information are discussed under each character description. Characters which were missing, or could not be applied to a determined taxon were coded as "?". The taxon/character matrix was processed

with the phylogeny inference program TNT v.1.1 by GOLOBOFF et al. (2008b) using a traditional (heuristic) parsimony search consisting of 100 replicates of Wagner trees, with random addition sequences, followed by tree bisection reconnection swapping (saving 10 trees per replicate) and collapsing trees after each search. All characters were treated as unordered and unweighted.

For evaluating node support of the unweighted trees, jackknife resampling (FARRIS et al. 1996) with a 36% independent character removal probability was performed as well as both standard and Poisson bootstrapping (FELSENSTEIN 1985), all with 1000 pseudoreplicates and with results expressed both as absolute frequencies and differential frequencies (GC). Groups with low support will not be detected with resampling using absolute frequencies and the use of the difference in frequencies (for Group present/Contradicted) overcomes this limitation. It is calculated as the difference between the frequency in which a given group is retrieved in jacknife replicates and the most frequent contradictory group (GOLOBOFF et al. 2003). Bremer support (BREMER 1994) was calculated by successively increasing by one the number of steps in suboptimal trees obtained by heuristic searches. An implied weights analysis (GOLOBOFF 1993; GOLOBOFF et al. 2008a) with traditional search in TNT for 1000 replicates was done with the concavity constant value *k* varying from 3, 5, 7, 10 (strong weighting) to 15, 20, 30, 50, 75, 100 (weak weighting) to find the most parsimonious implied weight trees. Implied weighting improves the cladistic analysis of morphological datasets by using differential downweighting of characters according to their degree of homoplasy, an *a posteriori* weighting (GOLOBOFF et al. 2008a). Characters were mapped on the single most parsimonious tree using Winclada software (NIXON 2002).

3. Abbreviations of collections

Specimens were examined or deposited in the following collections listed below. Codes for public institutions follow those in ARNETT et al. (1993) where available or follow usage favored by the institution:

AMNH American Museum of Natural History, New York, New York, U.S.A.
BMNH The Natural History Museum, London, England, U.K.
CASC California Academy of Sciences Collection, San Francisco, California, U.S.A.
CDRS Charles Darwin Research Station, Galápagos Islands, Ecuador
CEPEC Laboratório de Mirmecologia, Centro de Pesquisas do Cacau, Itabuna, Bahia, Brazil
CIUSM Colección de Insectos de la Universidad de Santa Marta, Santa Marta, Colombia
FCUR Facultad de Ciencias, Universidad de la República, Montevideo, Uruguay
IAvH Instituto de Investigación de Recursos Biológicos Alejandro von Humboldt, Villa de Leyva, Boyacá, Colombia
ICNB Instituto de Ciencias Naturales, Universidad Nacional, Bogotá, Colombia
IEXA Instituto de Ecología, Xalápa, Veracruz, México
INBIO Instituto Nacional de Biodiversidad, San José, Costa Rica
LACM Los Angeles County Museum of Natural History, Los Angeles, California, U.S.A.
MCSN Museo Civico di Storia Naturale, Genova, Italy
MCZC Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.
MEKOU Mike E. Kaspari Collection, Oklahoma University, Oklahoma, U.S.A.
MHNG Musee d'Histoire Naturelle, Geneva, Switzerland
MIZA Museo del Instituto de Zoología Agrícola, Universidad Central de Venezuela, Maracay, Aragua, Venezuela
MPEG Museu Paraense Emilio Goeldi, Belém, Pará, Brazil
MZSP Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil
NHMW Naturhistorisches Museum, Vienna, Austria
OXUM Hope Entomological Collections, University Museum, Oxford, England, U.K.
PSWC Philip S. Ward Collection, University of California, Davis, California, U.S.A.
QCAZ Museo de Zoología de la Pontificia Universidad Católica del Ecuador, Quito, Ecuador
RAJC Robert A. Johnson Collection, Tempe, Arizona, U.S.A.
UCDC Bohart Museum of Entomology, University of California, Davis, California, U.S.A.
USBC Universidad Simón Bolívar Collection, Caracas, Miranda, Venezuela (housed in MIZA)
USNM United States National Museum, Washington, D.C., U.S.A.
ZMHB Museum für Naturkunde der Humboldt Universität, Berlin, Germany

4. Phylogenetic analysis

4.1. Character states list

Head

0. Horizontal position of compound eye on head in full-face view is: (1) dorsolateral; (2) lateral. The dorsolateral eye position is considered plesiomorphic as it is frequent in many unrelated fossil groups, as well as plesiomorphous genera such as *Myrmecia* Fabricius, 1804 and *Nothomyrmecia* Clark, 1934. Most *Leptogenys* have dorsolaterally placed eyes and just a few have them laterally placed, but a series of modifications may give the impression of lateral displacement. Factors involved in evaluating this character are eye diameter, eye shape (especially that of the ventral margin), and curvature of the dorsolateral cephalic surface.

1. Position of compound eye along longitudinal axis of cephalic capsule (excluding median clypeal lobe) in full-face view is: (1) mid-length; (2) anterad of mid-length. In most species the eye exhibits state 1, and none of the New World species has the eye posterad on the head.

2. Eye diameter: (1) greater than apical scape width; (2) less than apical scape width. The relative size of the eye seems to be more or less constant within the species groups and with few exceptions relatively smaller eyes tend to be present amongst smaller species of the genus. Reduction of the eyes associated with hypogaeic habits is morphoclinal (Baroni Urbani et al. 1992).

3. Compound eye: (1) with the lens of each ommatidium distinct and entirely convex, fitting snugly to neighboring lens; (2) the perimeter of each lens tends to become indistinct or all lenses becoming fused. Loss of lens distinctness is considered derived and is probably associated with specialised cryptic habits, such as being subterranean or foraging in or below the leaf litter. It is always associated with reduced eyes, but reduced eyes are not always associated with this trait. Homoplasy in this trait is suggested by differences between the *rufa* group, where each lens conserves a more or less convex shape, and *L. australis*, where each lens has a flattened or truncate apex, as if a hot iron has been passed over the eye, partially melting each lens. In some *pusilla* group species a single large lens covers the few discernible ommatidia. *L. langi* and *L. melena*, for example, also show partial fusion of the perimeter of each lens but the main body is sharply convex. Despite greatly reduced compound eyes in some species, none of the New World taxa lack eyes.

4. Eye shape is: (1) convex, ranging from subglobulose to broadly convex; (2) flattened, ranging from weakly convex to just flat. While large body size in these ants seems associated with relatively large and more convex eyes, this is not always the case, and some species groups may exhibit both states. Protruding subglobulose eyes are assumed to be a derived trait in most Hymenoptera (Brothers 1975) and are usually associated with epigaeically diurnal foraging ants. Convex eyes are probably plesiomorphic and since flattened eyes are usually associated with reduced eye diameter, they probably are derived. In the course of this study a whole range of curvatures was encountered making fine separation impossible, so a rough two state condition was used as a compromise. Future studies should consider separating subglobulose from broadly convex, but will probably necessitate the use of morphometric methods.

5. Cephalic capsule in full-face view is: (1) longer than wide; (2) as wide as long, (3) wider than long. For appreciation of this character the length of the lateral cephalic margin was used instead of HL. Most heads are longitudinally rectangular, followed in frequency by subquadrate heads. Broadly shaped heads tend to be associated with large sickle shaped mandibles, but such mandibles are not always associated with a broadened head.

6. Head in full-face view with lateral margins: (1) subparallel to wider posterad than anterad; (2) wider anterad than posterad.

7. Hypostomal tooth: (1) not visible in full-face view; (2) entirely or partially visible in full-face view. Visibility of the hypostomal tooth depends not only upon its development, but also upon the mandibular configuration as mandibles that shut tightly against the clypeus may impede viewing the hypostomal tooth even if it is of decent size.This tooth may also vary in shape; sometimes straight, sometimes arched, so such detail may find some use in future studies. This character can also be studied in ventral view as several taxa have a hypostomal tooth but it is not visible in full-face view.

8. Tentorial pit situated: (1) mid-distance between antennal sclerite and lateral cephalic margin; (2) doser to antennal sclerite than to lateral cephalic margin. The relative location of the tentorial pit has not been used as a character for ant phylogeny studies, yet it may offer great help for interpreting changes in anterior cephalic structures (Keller 2009).

9. Frontal lobe: (1) covers ≥ 3/4 of the basal antennal condyle with head in full-face view; (2) covers ≤ 1/2 of the condyle.

10. Clypeal median lobe: (1) without a lamella along its lateral margins; (2) with a lamella. This lamella is usually seen as a thin, translucent strip. Back lighting may help to ascertain if it is present or not in some cases.

11. Clypeal median lobe: (1) thick and opaque; (2) thin and translucent. In this case it is the whole median lobe that changes and not just a lateral fringe.

12. Clypeal median lobe: (1) without setae on apex; (2) with setae on apex.

13. Anterior clypeal margin: (1) convex, without a median lobe or process; (2) with a broadly triangular process; (3) median process reduced, either triangular or truncate; (4) median process short and rounded, lobe-like. The variability shown in shape of the median clypeal lobe and the fact that it forms part of the apparatus of prey manipulation implies it is subject to considerable selective pressures and consequently may be particularly homoplasious. Especially suspect are multiple independent origins of a reduced and elongate triangular shape.

14. Anterior clypeal margin: (1) lacking a narrow carina between the median lobe and mandibular insertion; (2) with a narrow carina between the median lobe and mandibular insertion. This carina defines the lateral clypeal lobe, typical of New World *Leptogenys*, but absent in *L. maxillosa*, an African tramp species. It is usually modestly expanded along part of its length, either as a rounded lobe or bluntly triangular lobe.

15. Mandible in cephalic full-face view: (1) triangular to subtriangular; (2) elongate to subfalcate, with subparallel internal and external margins; (3) hooked/falcate. Triangular mandibles are inferred to be the plesiomorphic state, with elongate shapes as derived, a trend that repeats itself in other ant groups (Ward & Brady 2003; Schmidt 2009, in thesis). Within *Leptogenys* one can observe, in at least some SE Asian species, truly robust, triangular and toothed mandibles, unlike any New World species.

16. Mandible: (1) without a sinuate basal margin, straight to uniformly curved; (2) with sinuate basal margin, con-

vex at base, concave apicad. The mandibular shape in some instances may be influenced by a crest or lamella along the basal margin, and not always by the main body itself.

17. Mandible: (1) with a toothed or serrate masticatory margin; (2) masticatory margin edentate or with a single pre-apical tooth at most. Clearly a major trend in the New World fauna has been a marked obliteration of the dentition of the masticatory margin.

18. Basal internal mandibular margin: (1) without setae; (2) with 2–5 setae or thickened hairs. This character is not always easy to gauge as some thickened hairs seem borderline setae. Relative size also causes confusion as thickened hairs may seem like setae in small sized species. The use of scanning electron microscopy in such cases could clarify detail that remains dubious with optical stereoscopes.

19. Dorsal surface of mandible: (1) with striae on at least half or more of its area, sometimes faint; (2) mostly smooth and shining save sparse punctulae.

20. Number of labial palpomeres: (1) 4; (2) 3.

21. Scape surpasses posterior cephalic margin: (1) by over one-fourth but less than one-third its length; (2) by at least one-third its length and over; (3) by not more than one-fourth its length, when orientated as closely as possible (without disarticulation from the socket!) to an imaginary line parallel to the longitudinal axis of the head in full-face view. For *Leptogenys* a median length was assumed to be the plesiomorphic state with deviations towards very long or very short taken to be apomorphic. The relatively longest scapes tend to be associated with large species with large eyes, but there are exceptions (*L. cracens*), whilst the relatively shorter scapes are associated with smaller species such as those of the *pusilla* group.

22. Scape: (1) with pubescence; (2) without pubescence though abundant pilosity may be present. In a few cases abundant short pilosity will be difficult to separate from pubescence.

23. Third antennal segment: (1) not noticeably elongate, approximately similar length to neighbouring funicular segments; (2) elongate, markedly longer than neighbouring funicular segments. Describing the relative length and width of funicular segments has been standard in many ant descriptions since long ago. In ants the usual pattern is a progressive lengthening of the funicular segments apicad. In New World *Leptogenys*, an elongation of the third antennal segment is common and this has also been observed in some African species and species groups (BOLTON 1975). Other characters of the funiculus that should be examined with more detail for future studies are the shape of each antennomere and the extent of the constriction between each segment.

24. Cephalic dorsum: (1) with pubescence; (2) lacking pubescence.

Mesosoma

25. Mesosoma: (1) with a well-developed metanotal groove, usually dividing the dorsal mesosomal margin into two distinct convexities in lateral view; (2) weakly developed metanotal groove in lateral view, the dorsal mesosomal margin forms more or less a single convexity.

26. Propleuron: (1) with abundant sculpturing; (2) mostly smooth and shining, with scattered punctae or striae at most. In ponerines the presence of a smooth and shining exoskeleton is commonly associated with avoiding the effects of chemical defenses of prey organisms (BROWN 1976).

27. Mesosomal dorsum: (1) with standing hairs; (2) without standing hairs. Absence or presence of hairs was used by BOLTON (1975) to help define some African species groups.

28. Pronotal dorsum: (1) with pubescence; (2) without pubescence. This character tends to be uniform within species groups but there are some exceptions such as the *luederwaldti* group, which lacks pubescence except for *L. imperatrix*.

29. Metanotal-propodeal dorsum: (1) with pubescence; (2) without pubescence.

30. Anteroventral mesopleural carina: (1) well developed; (2) absent to diminished in size.

31. Anteroventral mesopleural carina: (1) not projecting as a fin; (2) projecting perpendicular to the body as a fin.

32. Mesonotum: (1) longer than wide; (2) wider than long; (3) narrow and transverse in dorsal view.

33. Metapleural-propodeal suture: (1) present; (2) absent.

34. Propodeal spiracle: (1) elongate to slit-like; (2) round to oval.

35. Propodeum: (1) without lobes or teeth; (2) with lateral lobes or teeth. The propodeal teeth in most *Leptogenys* seem associated with transverse crests or striae on the propodeal declivity. Generally both teeth or lobes are joined by a transverse crest, the crest being expanded and apparently forming, at least in part, the tooth. The presence of strong crest(s) alone was not interpeted as state 2.

36. Propodeal declivity: (1) with transverse striae; (2) mostly smooth and shining.

37. Mesosomal sculpturing: (1) mostly rugulose, striate, or rugulose-punctate; (2) tending to smooth and shining with scattered punctae or sulci at most.

Abdominal segments II–VII

38. Petiolar node in dorsal view: (1) wider than long; (2) as long as wide; (3) longer than wide. Ergatoid queens will typically have the node wider than long, even though the workers will have a node longer than wide in dorsal view.

39. Anterior margin of petiolar node in dorsal view: (1) ≥ 1/2 width of posterior margin; (2) < 1/2 width of posterior margin.
40. Petiole in lateral view: (1) subquadrate to subrectangular; (2) triangular to subtriangular.
41. Posterior apex of petiolar node in lateral view: (1) without any overhanging process; (2) with a tooth or crest.
42. Posterolateral margin of petiole: (1) rounded; (2) with sharp angle separating lateral and posterior petiolar faces.
43. Cross-section of petiolar node at mid-length: (1) with convex sides, roughly O-shaped; (2) with relatively straight sides, roughly V-shaped.
44. Abdominal segment III: (1) with a mostly vertical anterior margin in lateral view, the anterior and dorsal margins joined through a very strong curve; (2) the anterior and dorsal margins joined through a continuous convexity, roughly bell shaped.
45. Constriction between abdominal segments III and IV: (1) weak (Figs. 24–27); (2) moderate (Figs. 5, 39, 43); (3) strong (Figs. 12, 60, 82, 86).

Legs

46. Protibia: (1) without setae basad of strigil insertion; (2) with such setae.
47. Mesotibia: (1) with seta on external face close to apex; (2) seta absent.
48. Metatibia: (1) with seta on external face close to apex, (2) seta absent.
49. Dorsum of metacoxa: (1) lacking posterior tumosity or swelling; (2) with posterior swelling.
50. Base of protibia opposite the strigil: (1) with a comb of stout setae; (2) without setae.

4.2. Results

The unweighted parsimony analysis yielded one tree of length 162 steps, ci = 0.364, and ri = 0.593 (Fig. 2). The implied weights analysis yielded one tree for each value of k. The trees produced by $3 \leq k \leq 15$ were identical (Fig. 3), whilst trees produced by $20 \leq k \leq 30$ were quite similar, differing only in a few rearrangements of basal taxa. Trees produced by $k \geq 50$ were identical to each other and also identical to the most parsimonious tree (Fig. 2). In general most nodes are poorly supported save for monophyly of the ingroup, and the sister relation between the *unistimulosa* and *arcuata* groups. This meagre support becomes very apparent when both bootstrap and jackknife resampling with absolute frequencies produce identical totally pectinate trees for the ingroup save the aforementioned sister relations. Bremer support values are also low and restricted to a few nodes (Fig. 2). Despite such low support, the trees obtained from all analyses and GC resampling showed much consistency amongst each other, with a number of groupings repeating on each occasion. All analyses recover *L. linearis* as the sister taxon to the rest of the species. The *arcuata*, *elongata*, *famelica*, *ingens*, *luederwaldti*, *unistimulosa*, and *wheeleri* groups, along with *L. panops*, are consistently placed in a relatively basal position to the rest of the taxa. Amongst these taxa, the strongest grouping is a clade (*L. panops* (*L. unistimulosa*, *L. donisthorpei*)), recovered in almost all results and complemented by the inclusion of *L. famelica* in all implied weights trees save with $20 \leq k \leq 30$, where *L. panops* is sister to *L. famelica*, but they are not sister to (*L. donisthorpei*, *L. unistimulosa*). A sister relation between the *elongata* and *wheeleri* groups is implied by the MPT and implied weights trees with $k \geq 20$, as well as Jackknife, and bootstrap resampling. A large clade consisting of *L. ciliata*, *L. tama*, *L. toxeres*, *L. cracens*, *L. melena*, *L. crudelis*, *L. corniculans*, *L. australis*, *L. foveonates*, *L. langi* as well as the *antillana*, *quiriguana*, *rufa*, and *pusilla* groups was recovered in all analyses and GC resampling. This clade is designated informally as the *pusilla* clade in this study. The first two of the aforementioned species consistently figure as an unresolved polytomy sister to the rest of the taxa. The grouping (*L. australis* (*L. corniculans*, *L. ritae*)) is recovered in all runs, as is a sister relation between *L. toxeres* and *L. cordoba*, and a sister relation between *L. nigricans* and *L. erugata*. A sister relation between *L. antillana* and *L. langi* is found in all results except implied weights trees with $k \leq 30$.

4.3. Discussion

Besides morphological support for a clade formed by the *L. donisthorpei*, *L. famelica*, and *L. unistimulosa* groups, and *L. panops*, reproduction by gamergates is strongly suspected for almost all these species, except *L. panops*, only known from a single specimen. This assemblage will be informally called the *arcuata* clade. Within the groups these species represent, ergatoid queens are only known from two of the *famelica* group species. *L. panops* is thus a candidate for the presence of egg laying workers, and a single origin of worker reproduction for this group is implied, with a return to ergatoid queens in the *famelica* group species, except for *L. famelica* itself. The proximity of the *ingens* group (apparently all species with gamergates), and the *luederwaldti* group, with at least one possible gamergate reproducing species hint to a larger *arcuata* clade. Within this basal collection of taxa, the implied sister grouping of *L. volcanica* to *L. wheeleri*, species representing groups where ergatoid queens seem to be the norm as far as presently known, does not contradict this suspicion of a larger *arcuata* clade. The shared presence of a node shape that departs

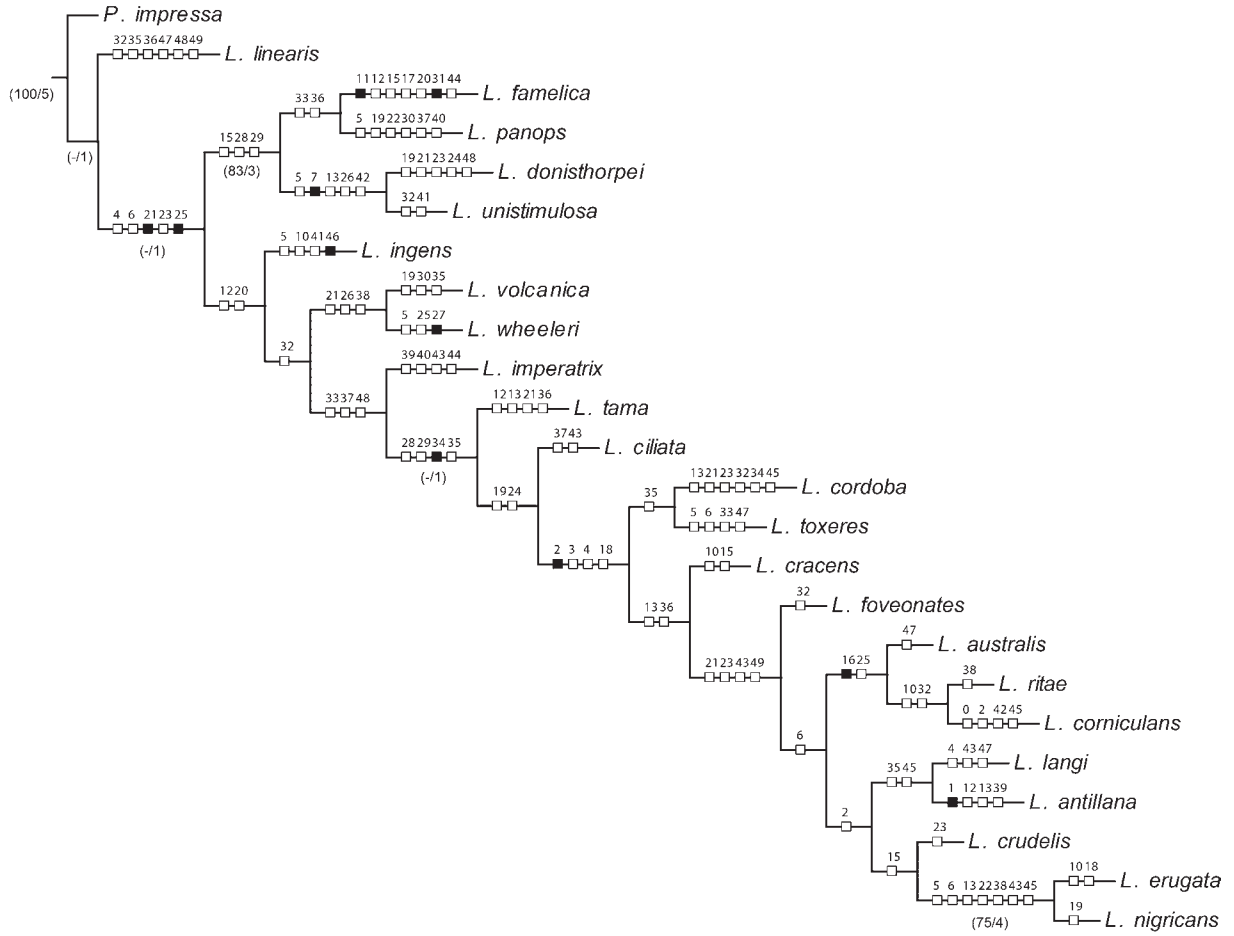

Fig. 2. The single most parsimonious tree for New World *Leptogenys* ants, obtained from the heuristic unweighted analysis of morphological characters, also identical to results from implied weights analyses with $k \geq 50$. Black square: unique apomorphy. Empty square: homoplasy. Character numbers are given above each square and support values below some branches as (jackknife support / bremer support).

from the usual subquadrate to subrectangular shape seen in the genus also seems to support the proximity of these taxa. *L. panops* has a conoidal shaped petiole, whilst selected species in the *arcuata*, *famelica*, *ingens*, *luederwaldti*, and *unistimulosa* groups have subtriangular to triangular node shapes, many with apical points or crests. If these taxa form a single clade, this could imply a single origin of gamergates with two losses, one in the *luederwaldti* group and another in the *famelica* group, or independent origins in each of these two groups. Whatever the case, additional data is needed for producing a better supported phylogeny for these taxa, as well as more natural history observations, to clarify the instances of origin and loss of worker reproduction. What does seem fairly certain is the likely presence of gamergates in the New World *Leptogenys* outside of the *pusilla* clade.

The postulated sister position of *L. linearis*, with ergatoid queens and endemic to the Amazon-Orinoco watershed, to all other New World *Leptogenys* supports its status as *incertae sedis* and suggests it could be a relict of an older richer fauna. The presence of morphologically distinct queens, a plesiomorphic condition compared with wingless queens, in *L. langi* and *L. nigricans*, both Amazon-Orinoco endemics and members of the *pusilla* clade, and their absence in *L. linearis* or any of the other taxa outside of the *pusilla* clade implies a conserved condition given the improbability of developing *de novo* in ergatogynes or gamergates the complicated structures associated with flight. Both, the *pusilla* group taxa and the taxa outside of the *pusilla* group are quite widespread throughout the Americas, suggesting a similarly long history for all even though some individual species groups do have localized distributions. Using molecular markers, SCHMIDT (2009, in thesis) argues for the occurrence of at least two separate invasions of the New World by the genus. Perhaps the present day New World fauna is a product of one invasion event, or several events but closely spaced in time by several species of a single lineage, or from more than one lineage. This could be reflected by the distribution of winged queens, and gamergates for the New World species. A more comprehensive phylogeny, including Paleotropical taxa, could shine more light on the origins of the New World *Leptogenys*. SCHMIDT (2009, in thesis) also mentions invasion at least once by "relatives of *L. falcigera*", which likely means *L. maxillosa*, a well known tramp species. The similarly appearing *wheeleri* group species, native to Mexico and Central America, are clearly a case of convergence (see

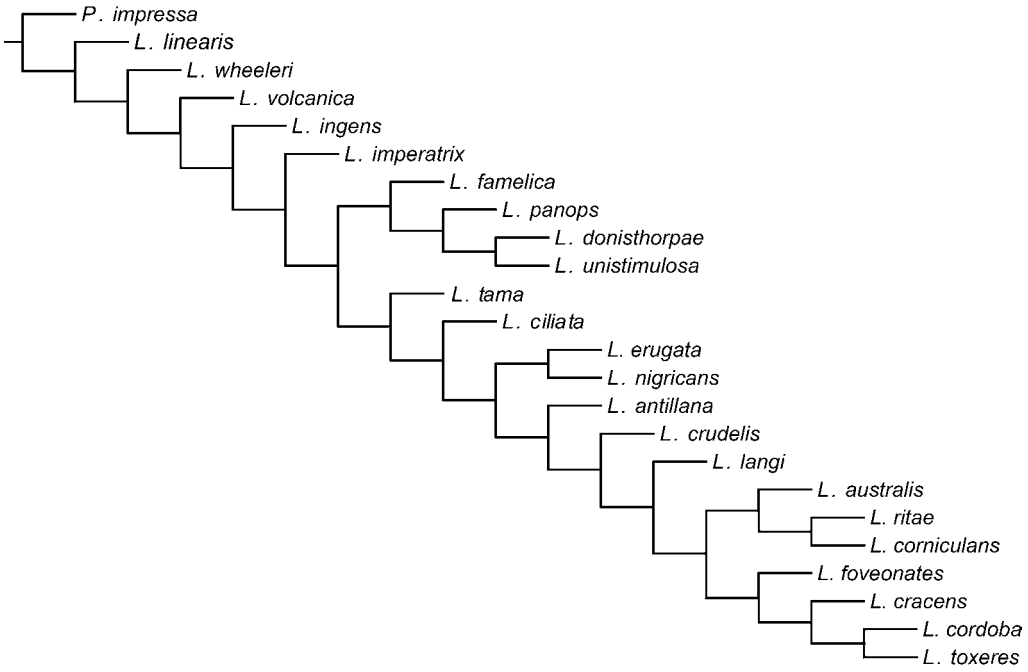

Fig. 3. The putative phylogeny of New World *Leptogenys* ants according to implied weights analyses with $3 \leq k \leq 15$.

discussion for *maxillosa* group). This implies at least two different invasions of the Americas by *Leptogenys*.

Most of the species included in the basal taxa tend to be relatively fair sized ants, ranging from large to medium compared with the rest of their New World congeners. With the exception of few *arcuata* group species, the smaller species are all in the *pusilla* clade, especially in the lineage formed by *L. australis* and the *pusilla* and *rufa* groups. The larger species of the *pusilla* clade are *L. ciliata* and *L. tama*, and both are in the basal polytomy of this clade. This apparent pattern of relatively more plesiomorphic and larger sized taxa, positioned as sister to mostly smaller sized species is also repeated in the *famelica*, *luederwaldti*, and (perhaps) the *quiriguana*, *unstimulosa* and *arcuata* groups. In any case, the variation in size between different species of a group is not great, with the notable exception of the *famelica* group, and to a lesser extent, the *unistimulosa* group. This suggests that size could be profitably used as a character in future analyses. With the exception of *L. vogeli* and *L. melena*, both medium sized species, the presence of iridescence is mostly limited to large sized taxa outside of the *pusilla* clade: *L. honduriana* and *L. oaxaca* of the *elongata* group; *L. tiobil* and *L. ingens* of the *ingens* group; *L. maya* and *L. wheeleri* of the *wheeleri* group, *L. famelica* of the *famelica* group; all of the *luederwaldti* group (*L. gaigei* is medium sized); and *L. panops*. Various degrees of fusion of the ommatidial lenses are found amongst the *pusilla* clade species but not in the taxa outside of the clade (see discussion for Character 4). The appreciably greater occurrence of smooth and shining cuticle is to be found in the *pusilla* clade taxa, especially in the smaller species. Brown (1976) has associated such smoothness in ponerines as protection against the defensive chemicals that prey may produce and direct against their assailants. Production of an adhesive proteinaceous compound by a terrestrial isopod has been reported by Deslippe et al. (1995) as a defense mechanism against ants. Support for the widespread occurrence in terrestrial isopods of glands that might play a role in chemical defense is suggested by the studies of Gorvett (1951, 1952).

Based upon the results of the phylogenetic analysis *L. corniculans* is included as a member of the *pusilla* group, *L. toxeres* is included in the *rufa* group, and *L. nigricans* in the *quiriguana* group. All other implied relations are deemed too tenuous for modifying species group composition. Many of the patterns described and more or less explained here are quite preliminary given that of the 81 recognized species, more than half are new and a good number of these are known only from unique specimens or a single collection event, enough to suspect that New World diversity will easily surpass the hundred mark. It is hoped this revision will encourage further research into this fascinating group of ants.

5. Natural history

5.1. Habitat preferences

Schmidt (2009, in thesis) undertook a comprehensive review of *Leptogenys* biology which at the time of this

writing is being organised into publishable form. It promises to be a valuable resource of succinct information not only for this genus but for all other ponerine genera as well. *Leptogenys* may be locally abundant in some areas, which are usually of humid forest and with an abundance of isopod prey. In such an area direct collecting may uncover up to 5 or more nests in a single day, usually of the same species. Personal observations in at least 3 Venezuelan collecting localities with notably abundant *Leptogenys* colonies coincided with abundant isopod populations as evidenced by the scattering of numerous of these crustaceans upon treading the leaf litter late afternoon and early evening. DEJEAN (1997) confirms the pattern of abundant *Leptogenys* colonies in areas with an elevated presence of isopods in Mexico and Cameroon, even in anthropized areas. Collections during several years in single localities, such as La Selva in Costa Rica or Rancho Grande in Venezuela, indicate that as many as 5–6 species may be present in a given locality. Nests of New World *Leptogenys* may vary from 20 to 30 workers, rarely surpassing 50 (pers. obs). Small nest sizes (30 <) are also reported for over 15 species of this genus in the Oriental Tropics by ITO (2000) with the outstanding exception of some SE Asian *Leptogenys* with army ant habits, which have colonies numbering in the thousands (WITTE & MASCHWITZ 2000). During the course of this study no evidence was found hinting at army ant habits in any of the New World *Leptogenys*.

Nests may be found from ground level to higher than 2000 m above sea level, though most are lowland dwellers. The nests may be found in rotten wood on the ground, usually within cavities in logs or large branches, and also beneath bark. The wood-soil and rock-soil interfaces are also used for nesting, as well as rock crevices, and a few may nest directly in the soil such as *L. famelica*. Some species may be adapted to disturbed areas, such as the pantropical tramp *L. maxillosa*, which has been found nesting in cracks and fissures of buildings in urban areas in Brazil (FREITAS 1995). Nest entrances of the larger ground nesting species may be recognized by the scattered exoskeletons of isopod prey discarded from the nest, At least one species, *L. elegans* Bolton, 1975 from West Africa, will nest in dead wood above the ground and forage on tree-trunks (BOLTON 1975). DEJEAN & OLMSTED (1995) report 4 species of *Leptogenys* (*L. donisthorpei*, *L. maya*, *L. sianka*, *L. wheeleri*) nesting in epiphytic bromeliads and orchids in inundated forests in northern Yucatan. This record is of interest due to the arboreal nest sites, a situation unknown for any other New World species of the genus, and rarely encountered in other faunas (BOLTON 1975). The Reserva Sian Ka'an site is lowland forest flooded with 20–60 cm of water, a situation discouraging the establishment of nests on the ground, but the rich epiphytic flora has created a suspended soil and is home to abundant isopods. At least three of the aformentioned *Leptogenys* species have also been found nesting on the ground (see species accounts) so there is no evidence yet for obligate arboreal *Leptogenys*, at least for the New World fauna. In this reserve Dejean (pers. comm.) frequently found *Leptogenys* in mangroves on the brackish water lagoon side of the stands, but not on the oceanic side.

Even though these ants are more common in mesic habitats, they are no strangers to arid, desert conditions, with a number of species endemic to xeric areas such as Baja California (*L. peninsularis*), the Sonora desert (*L. sonora*), or the Galapagos Islands (*L. santacruzi*, *L.* cf. *gorgona*). The dry, interior part of Australia is also habitat for a number of *Leptogenys* species (SHATTUCK 1999), and several species of *Leptogenys* are known from semiarid parts of Africa (BOLTON 1975). One species has been found deep in two caves in Laos, both caves being rich in guano and isopods (RONCIN & DEHARVENG 2003). The authors venture the idea *L. khammouanensis* Roncin & Deharveng, 2003 might be a troglobitic species on account of the cave habitat, and several morphological traits associated with adaptation to an underground life such as elongate body and extremities, pale colored exoskeleton, and atrophied eyes. While such a possibility can not be ruled out, the suspect morphology is also found in several epigaeic foraging species of the genus. Hopefully future research into this Laotian *Leptogenys* will include intensive collecting in above ground habitats near the caves to rule out that cave populations are recent colonizations from epigaeic colonies that are simply exploiting an abundant food source. *Leptogenys elongata* may be found in caves in Texas (COKENDOLPHER et al. 2009), though in the same paper the authors record an apparently undescribed *Leptogenys* found in one Texas cave. It appears to be a *pusilla* group member and does not have traits that could be deemed troglobitic save the reduced eyes, which is frequent in said group.

5.2. Relations with other organisms

Specialized predation seems to dominate in this genus, with observations throughout its range corroborating oniscoid isopods as the prey of choice for most species (DEJEAN & EVRAERTS 1997; DEJEAN 1997). That a group of ants should specialise on oniscideans should come as no surprise as these crustaceans frequently constitute an important part of the soil fauna with population densities reaching in the hundreds per square meter (QUADROS & ARAUJO 2008). The earliest known fossils of oniscideans are from Baltic Amber, with fossils also known from the lower Miocene of Kenya and Dominican Amber as well. The earliest known remains of other crustaceans within the Scutocoxifera, in which terrestrial isopods are included, range from the Middle to Upper Jurassic (SCHMIDT 2008), implying the existence of a diverse terrestrial isopod fauna before the ma-

jor radiation in *Leptogenys* (Schmidt 2009, in thesis). Other predatory specializations have been detected such as earwigs (Steghaus-Kovac & Maschwitz 1993) for an Oriental species and termite predation for the African *nitida* group (Bolton 1975), and also for *Leptogenys unistimulosa* Roger, 1861 in Brazil (Mill 1982). The Oriental species that follow an army ant lifestyle are generalists, taking diverse prey (Witte & Maschwitz 2000). Individuals in the larger species carry isopod prey slung beneath their bodies, between the legs, and smaller species will carry large prey items amongst several individuals. In Costa Rica a group of workers of *L. volcanica* were observed and photographed carrying an isopod considerably larger than the size of each individual ant, suggesting either group raiding (E. Rodríguez, D. Kronauer, pers. comm.), or perhaps recruitment to a victim disabled by one original worker (B. Bolton, pers. comm.). Duncan & Crewe (1993) report both individual foraging and group raiding amongst South African species of *Leptogenys*. Dejean & Evraerts (1997) also report group raiding in the genus. A phorid fly of the genus *Megaselia* Rondani, 1856 has been reported attacking *L. mutabilis* (F. Smith, 1861) in Borneo (Disney & Fayle 2008). *Pheidole megacephala* (Fabricus, 1793), a common invasive ant in the tropics, has been scored in laboratory experiments (Dejean et al. 2008) as an effective enemy of *Leptogenys*, killing off colonies of a native species of *Leptogenys* in Cameroon, sometimes in less than a hour, as well as *L. elongata* from Mexico. A diverse number of symbionts have been recorded for army ant *Leptogenys*, including the only known molluscan myrmecophile in *L. distinguenda* (Emery, 1887) (Witte et al. 2002).

5.3. Reproduction

The two most common modes of reproduction in the genus are either through ergatoid queens or egg-laying workers (Ito 1997; Ito & Ohkawara 2000). The queen in *Leptogenys* is generally an ergatoid, and only in three New World species are "normal" queens found in addition: in *L. langi* (Wheeler 1923), in *L. nigricans* described in this paper, and in an undescribed species of *Leptogenys* collected in Texas (mentioned in Cokendolpher et al. 2009). The latter apparently is a member of the *pusilla* clade judging from the images illustrating the publication. Wingless queens, but with well-developed wing-base sclerites and ocelli are also known for *L. ergatogyna* Wheeler, 1922 in Africa (Bolton 1975). Ergatoid queens generally lack any trace of ocelli, though when present it is a single, somewhat reduced median ocellus. The gaster is usually larger in comparison to the workers, the petiolar node, when seen dorsally, is generally wider than long, and the propodeal margin is more convex when observed laterally than in the worker. Additional characters that may characterize queens are larger overall body dimensions, broader head with more convex sides when seen in full-face view, and the compound eyes may be slightly larger.

At least three species belonging to the *pusilla* group: *L. pusilla*, *L. ritae*, and *L. josephi* have ergatoid queens with greatly swollen mandibles of a pale yellow color. This unusual character was first reported for *L. josephi* by MacKay & MacKay (2004), and was thought to be diagnostic for the species. The only queens so far known for *L. josephi* and *L. pusilla* are of the enlarged mandibular type, whilst in *L. ritae* normal mandibulate queens as well as swollen mandibulate queens have been found. The first two species are sympatric in Central America, with *L. ritae* perhaps having some sympatry with the other two in Panama, though it is mostly distributed throughout northern South America, including Trinidad. The possibility exists the two queens may correspond to different species. Not only is the purpose of the unusual mandibles a mystery, but also the nature of the relation between the two forms. Perhaps the enlarged mandibles habour hypertrophied glands. It should also be noted that the gaster of the queen of these species is comparatively larger than in most other *Leptogenys* queens. The morphology of these queens is not unlike that of dichthadiiform queens of nomadic species such as *Simopelta* or ecitonines on account of the enlarged gaster and modified mandibles, but no New World species are known to have an army ant lifestyle.

Reproduction by workers is suspected in all species of at least 3 species groups (*arcuata*, *ingens*, and *unistimulosa*) and in one species each of two groups, *L. famelica* of the *famelica* group and *L. gaigei* of the *luederwaldti* group. This possibility is based on the total lack of recognizable queens in these species despite the repeated collection of many nests. Gamergate reproduction could be more widespread in *Leptogenys* as indicated by Bolton's (1975) observation that out of the 56 species known for the Ethiopian Region, females are known for only 6 or 7. Freitas (1995) reported males copulating with "workers" just outside the nests of *L. maxillosa*, and never observed winged queens during nuptial flights or nest relocation events. In a survey of 11 species from Malaysia and Indonesia, Ito (1997) found gamergates in 4 species, with the rest having ergatoid queens.

The predominance of ergatoid queens leaves open the question of colony reproduction. While most nests apparently are monogynous, nests have been found with two or more queens in *L. ritae* and *L. orchidioides* (see individual species accounts). A small, apparently incipient, nest of approximately 3 queens and 4 workers was found in *L. ritae* (R. Johnson, pers. comm.), suggesting polygyny. Perhaps some of the nest series represent virgin queens that have yet to leave the nest, indicating that several virgin queens may accumulate in the nest before dispersing. Do they leave the nest by themselves or does each take an escort of workers, or perhaps they leave as a group or groups? Nest fission, as in ecitonine army

ants, is known for the army ant lifestyle *diminuta* group in SE Asia (ITO & OHKAWARA 2000).

5.4. Distribution ranges

Most species seem to have relatively modest, localized ranges, usually smaller than those observed in other Ponerini. None have a range that extensively includes both North and South America, or most of either continent such as the case for some species in *Pachycondyla* F. Smith, 1858, *Hypoponera* Santschi, 1938, or *Odontomachus* Latreille, 1804. The species with the largest ranges almost all include the Orinoco-Amazon watershed as the core area of their distribution, with the most widely ranging species, *L. famelica* and *L. unistimulosa*, extending marginally into Colombia and Central America, and *L. arcuata* including some records from the Caribbean. *L. arcuata* may eventually prove to be more than a single species, and the *pubiceps* complex, found throughout the Caribbean is most certainly a collection of species. Save for *L. langi* and *L. nigricans*, the species with the most extensive distributions are found outside of the *pusilla* clade. *L. langi* has winged queens and *L. nigricans* queens have a full set of sclerites associated with flight but it is unknown if their wings are functional. African *Leptogenys* also suggest a similar pattern of reduced geographic ranges (BOLTON 1975). The only exceptions to this are tramp species such as *L. falcigera* Roger, 1861, *L. maxillosa*, and *L. pavesii* Emery, 1892, which now enjoy a human mediated pantropical distribution (BOLTON 1975), and Australasian *Leptogenys* with army ant behavior. *L. diminuta* (F. Smith, 1857), for example, ranges from Ceylon and India eastward into Melanesia and Queensland, Australia (WILSON 1958; SHATTUCK 1999). "True" army ants, despite possessing wingless queens, have far ranging geographic distributions (KEMPF 1972; WATKINS 1976). Presumably in these cases the nomadic life-style of the species has contributed to overcoming the apparent dispersal and colonization limitations of wingless queens (PEETERS 2001) that conceivably make it more difficult to cross unsuitable habitat than in species with winged queens. Males in *Leptogenys* are not particularly robust and do not seem strong fliers, nor would be expected to fly very far since potential mates must be sought at ground level in forests. Male production per colony is probably not very high given the modest nest sizes in the genus, and the scant number of males seen in colonies collected by the author. With few exceptions males were not considered in this study, but a cursory look at the unidentified *Leptogenys* males in MIZA attracted to light traps show that in some places the number of flying males can be considerable. It remains to be seen if the males from a single light trap collection event are all from one nest or from several nests. If we add to this the frequent specializations in prey and habitat, and a highly diverse fauna with the certainty that this revision has missed a significant amount of species, it seems likely *Leptogenys* populations are more likely to be affected by potential vicariant processes than more mobile and less specialized species of other ponerine genera (SCHMIDT 2009, in thesis).

With the exception of *L. cracens*, known only from southern Mexico, all *incertae sedis* species are found only in South America. If this is not a sampling artefact some ideas could be entertained to explain the pattern. Possible explanations for the majority of *incertae sedis* species in South America could be simply since most species are from South America, they represent a subset of said fauna. The species-area relation could be another factor given the greater area of South America compared with Central America and Mexico. Another explanation could be a longer history of the group in South America, as compared with Central and North America. This longer history implies more time for both speciation and extinction, and perhaps the isolated species are relicts of previously more widespread and diverse groups which have mostly been decimated by extinctions. The Amazon-Orinoco watershed seems to play an important role in the evolution of these ants as most species with the largest distributions include it as the core range, additionally *L. linearis* F. Smith, the apparent sister species to the rest of the New World fauna is endemic to the region as well as two species with winged queens.

6. Taxonomy

6.1. Synonymic checklist

amazonica Borgmeier, 1930; eastern Ecuador – northeastern Brazil
amu **n.sp.**; southeastern Colombia
antillana Wheeler & Mann, 1914; Hispaniola
arcuata Roger, 1861; eastern Bolivia – Guianas, Lesser Antilles
  deletangi Santschi, 1921; Bolivia; **n.syn.**
australis (Emery, 1888); northern Argentina – southern Brazil
  hanseni Borgmeier, 1930; Brazil; **n.syn.**
bifida **n.sp.**; Honduras
bohlsi Emery, 1896b; Paraguay, southern Brazil – northern Argentina
  weiseri Santschi, 1925; Argentina; **n.syn.**
carbonaria **n.sp.**; northwestern Colombia
chamela **n.sp.**; western Mexico
ciliata **n.sp.**; eastern Ecuador
consanguinea Wheeler, 1909; southern Mexico – Guatemala
cordoba **n.sp.**; eastern Mexico
corniculans **n.sp.**; southeastern Brazil
cracens **n.sp.**; southeastern Mexico
crudelis (F. Smith, 1858); southeastern Brazil
  rubicunda Borgmeier, 1930; Brazil
cuneata **n.sp.**; Panama – eastern Peru
deborae **n.sp.**; northcentral Venezuela
donisthorpei Mann, 1922; southern Mexico – Honduras
elongata (Buckley, 1866); eastern Mexico – southcentral USA

septentrionalis (Mayr, 1886b); USA
texana (Buckley, 1866); USA
mexicana (Mayr, 1870); Mexico; **n.syn.**
erugata **n.sp.**; northern Colombia – northern Venezuela
famelica Emery, 1896a; Costa Rica – western Colombia, Amazon watershed, Guianas
foraminosa **n.sp.**; Costa Rica – northwestern Colombia
foveonates **n.sp.**; northcentral Venezuela
gagates Mann, 1922; Honduras
gaigei Wheeler, 1923; Amazon-Orinoco watershed
defuga Wheeler, 1923; Guiana; **n.syn.**
melzeri Borgmeier, 1930; Brazil; **n.syn.**
gatu **n.sp.**; Costa Rica – western Colombia
glabra **n.sp.**; southwestern Colombia
gorgona **n.sp.**; northwestern Colombia – eastern Ecuador
guianensis Wheeler, 1923; Guiana – northern Brazil
honduriana Mann, 1922; Honduras
iheringi Forel, 1911; southeastern Brazil
imperatrix Mann, 1922; Honduras – Panama
ingens Mayr, 1866; northwestern Colombia? – northern Venezuela
ixta **n.sp.**; central Mexico
josephi MacKay, 2004; Costa Rica
kiche **n.sp.**; Guatemala
langi Wheeler, 1923; Amazon-Orinoco watershed
linda **n.sp.**; central Colombia
linearis (F. Smith, 1858); Amazon-Orinoco watershed
dasygyna Wheeler, 1923; Guiana; **n.syn.**
luederwaldti Forel, 1913; southeastern Brazil
anacleti Borgmeier, 1930; Brazil; **n.syn.**
manni Wheeler, 1923; southeastern USA
mavaca **n.sp.**; southern Venezuela
maxillosa (F. Smith, 1858); southeastern Brazil, Cuba
falcata Roger, 1861; Cuba
maya **n.sp.**; Yucatán Peninsula
minima **n.sp.**; central Brazil
melena **n.sp.**; northeastern Venezuela
montuosa **n.sp.**; Costa Rica – Panama
nigricans **n.sp.**; Amazon watershed
oaxaca **n.sp.**; southern Mexico
orchidioides **n.sp.**; Guatemala
panops **n.sp.**; Guianas
paraense **n.sp.**; northeastern Brazil
peninsularis Mann, 1926; Baja Peninsula, Mexico
peruana **n.sp.**; eastern Peru
pinna **n.sp.**; Costa Rica
phylloba **n.sp.**; southeastern Colombia – eastern Ecuador
pittieri **n.sp.**; northern Venezuela
pubiceps complex (Caribbean Basin)
pubiceps Emery, 1890a; Venezuela
mucronata Forel, 1893; Antilles Is
columbica Forel, 1901b; Colombia
vincentensis Forel, 1901b; Antilles Is
cubaensis Santschi, 1930; Cuba
pucuna **n.sp.**; eastern Ecuador
punctaticeps Emery, 1890a; Costa Rica – northwestern Colombia
ambigua Santschi, 1931; Panama; **n.syn.**
pusilla (Emery1890b); Costa Rica – Panama
quadrata **n.sp.**; Costa Rica – eastern Ecuador
quiriguana Wheeler, 1923; southern Mexico – Guatemala
quirozi **n.sp.**; southern Mexico
rasila **n.sp.**; eastern Ecuador
reggae **n.sp.**; Jamaica
ritae Forel, 1899; Panama – northern South America
panamana Wheeler, 1923; Panama; **n.syn.**
venatrix Forel, 1899; Panama; **n.syn.**
rufa Mann, 1922; southern Mexico – Honduras
santacruzi **n.sp.**; Galápagos Islands
serrata **n.sp.**; Panama – Colombia
sianka **n.sp.**; southeastern Mexico
socorda **n.sp.**; northwestern Colombia
sonora **n.sp.**; western Mexico
tama **n.sp.**; northeastern Colombia
tiobil **n.sp.**; northcentral Venezuela
toxeres **n.sp.**; Costa Rica
unistimulosa Roger, 1863a; Colombia – Guianas, Amazon watershed
trinidadensis Forel, 1901; Trinidad; **n.syn.**
bahiana Santschi, 1929; Brazil; **n.syn.**
vogeli Borgmeier, 1933; southeastern Brazil
volcanica **n.sp.**; Costa Rica – southwestern Colombia
wheeleri Forel, 1901a; central Mexico – Panama
yocota **n.sp.**; Honduras

6.2. Species group checklist

Species marked with an asterisk (*) were chosen to represent their species group for the phylogenetic analysis.

***antillana* group:** *L. antillana**, *L. reggae*.
***arcuata* group:** *L. arcuata*, *L. donisthorpei**, *L. montuosa*, *L. santacruzi*.
***crudelis* group:** *L. crudelis**, *L. iheringi*, *L. vogeli*.
***elongata* group:** *L. bifida*, *L. chamela*, *L. elongata*, *L. foraminosa*, *L. honduriana*, *L. manni*, *L. peninsularis*, *L. oaxaca*, *L. sianka*, *L. sonora*, *L. volcanica**.
***famelica* group:** *L. famelica**, *L. phylloba*, *L. pinna*, *L. pittieri*, *L. serrata*.
***ingens* group:** *L. carbonaria*, *L. ingens**, *L. socorda*, *L. tiobil*.
***langi* group:** *L. langi**, *L. mavaca*, *L. minima*.
***luederwaldti* group:** *L. cuneata*, *L. gaigei*, *L. imperatrix**, *L. linda*, *L. luederwaldti*, *L. pucuna*.
***maxillosa* group:** *L. maxillosa*.
***pusilla* group:** *L. corniculans*, *L. glabra*, *L. gorgona*, *L. guianensis*, *L. josephi*, *L. melena*, *L. pusilla*, *L. quadrata*, *L. rasila*, *L. ritae**.
***quiriguana* group:** *L. amu*, *L. erugata**, *L. deborae*, *L. consanguinea*, *L. gagates*, *L. kiche*, *L. nigricans*, *L. orchidioides*, *L. quiriguana*, *L. yocota*.
***rufa* group:** *L. cordoba**, *L. rufa*, *L. toxeres*.
***unistimulosa* group:** *L. amazonica*, *L. bohlsi*, *L. gatu*, *L. paraense*, *L. peruana*, *L. pubiceps* complex, *L. punctaticeps*, *L. unistimulosa**.
***wheeleri* group:** *L. ixta*, *L. maya*, *L. quirozi*, *L. wheeleri**.
***Leptogenys incertae sedis*:** *L. australis*, *L. ciliata*, *L. cracens*, *L. foveonates*, *L. linearis*, *L. panops*, *L. tama*.

6.3. Key to the workers of the New World species of *Leptogenys*

1. Basal internal mandibular margin well separated from anterior clypeal margin with head in full-face view and mandibles closed, leaving distinct gap wider than mid-mandibular width (Figs. 8A, 65A, 71A) **2**
– Basal internal margin of each mandible shuts tightly against clypeus, if gap is present it is narrow and not wider than mid-mandibular width (Figs. 15A, 24A, 53A) **29**
2. With head in full-face view hypostomal teeth distinctly visible, either wholly or partially (Figs. 69A, 75A) **3**
– With head in full-face view hypostomal teeth not visible at all (Figs. 76A, 84A) **14**
3. Petiole with an apical tooth or crest that overhangs at least part of posterior margin of node in lateral view (Figs. 68B, 73B) **4**
– Posterior margin of node without overhanging tooth or crest (Figs. 14B, 22B) **9**

4. Petiolar node with acutely pointed apical tooth in lateral view (Fig. 75B) **5**
– Petiolar node with apical crest or blunt tooth (Fig. 74B) **7**
5. Head in full-face view broad (CI < 0.90) with lateral margins distinctly diverging anteriorly (Fig. 75A) **6**
– Head narrower (CI > 0.90) with lateral margins sub-parallel or slightly diverging anteriorly (Fig. 69A) ..... ***bohlsi***
6. Mandible gradually increasing in width towards apex ..... ***paraense***
– Mandible of equal width throughout length ..... ***unistimulosa***
7. Mandible with parallel basal and external margins, not expanding apicad ..... ***pubiceps*** (in part)
– Mandible distinctly expanding apicad **8**
8. With head in full-face view mandible mostly straight except for strong basal arch; hypostomal tooth large, frequently extending behind mandible (Fig. 70A); petiolar node in dorsal view subquadrate (Fig. 70B) ..... ***gatu***
– Mandible evenly arched, without strong basal arch; hypostomal tooth small, barely projecting anterad of clypeus (Fig. 74A); petiolar node in dorsal view elongate (Fig. 74B) ..... ***punctaticeps*** (in part)
9. Body and head without standing pilosity **10**
– Body and head with standing pilosity **11**
10 Mandible with parallel basal and external margins, not widening apicad (Fig. 42A); mandibular dorsum smooth and shining ..... ***maxillosa***
– Mandible gradually widening apicad (Fig. 77A); mandibular dorsum finely striolate ..... ***maya***
11. WL > 2.5 mm; HW > 1.3 mm; body covered with abundant decumbent golden pilosity that partially obscures the underlying integument **12**
– WL < 2.5 mm; HW < 1.3 mm; body with sparse erect pilosity never obscuring the underlying integument **13**
12. Head in full-face view with evenly arched mandible, with subparallel external and basal margins; body black ..... ***chamela***
– Mandible with an approximately straight external margin and convex basal margin, apically widening; body ferruginous ..... ***sonora***
13. Third antennal segment > 2 × as long as wide; clypeus in cephalic full-face view with a prominent median laminate lobe, anterolaterally bordered by narrow lamella (Fig. 8A) ..... ***montuosa***
– Third antennal segment < 2 × as long as wide; clypeus with modest median lobe of thick cuticle, not anterolaterally thin and lamellate (Fig. 6A) ..... ***arcuata*** (in part)
14. Petiole in lateral view without dorsoposterior tooth or point (Figs. 6B, 19B, 85B) **15**
– Petiole with a dorsoposterior tooth, blunt point or crest that usually overhangs the posterior petiolar margin (Figs. 30B, 73B) **25**
15. Petiolar node triangular in lateral view (Fig. 85B) .. ***panops***
– Petiolar node subquadrate in lateral view (Figs. 7B, 78B) **16**
16. Cephalic dorsum between and posterad of eyes mostly densely sculptured **17**
– Cephalic dorsum between and posterad of eyes mostly smooth and shining, at most with sparse piligerous punctulae **21**
17. Dorsum of head and mesosoma opaque; dorsum of mesosoma in lateral view with no standing hairs **18**
– Dorsum of head and mesosoma with shining cuticle; dorsum of mesosoma with abundant standing hairs **19**
18. Mandible with subparallel basal and external margins; head broad in full-face view; ocular diameter > 1/3 the length of lateral cephalic margin ..... ***wheeleri***
– Mandible widens apically; head elongate in full-face view; ocular diameter 1/4 of lateral cephalic margin ..... ***ixta***
19. Head in full-face view wider than long; mandible of even width from base to apex ..... ***donisthorpei***
– Head longer than wide, mandible wider apically than basally **20**
20. Median clypeal lobe with a single apical point ..... ***peninsularis***
– Median clypeal lobe bifurcate ..... ***bifida***
21. Head in full-face view with brief anteromedian clypeal lobe, not longer than basal width (Figs. 6A, 9A) **22**
– Head with clypeal lobe longer than basal width (Figs. 33A, 58A) **23**
22. Petiolar node in lateral view with continuously convex anterodorsal margin; node posterior margin weakly convex (Fig. 9B) ..... ***santacruzi***
– Petiolar node in lateral view with vertical anterior margin and convex dorsal margin; posterior margin vertical (Fig. 6B) ..... ***arcuata*** (in part)
23. Petiolar node wider than long in dorsal view with sub-parallel anterior and posterior margins; head, mesosoma and petiole with numerous punctae; clypeal lobe broadly triangular (Fig. 67A) ..... ***toxeres***
– Petiolar node longer than wide with a convex anterior margin and a transverse, straight posterior margin; body mostly smooth and shining with sparse minute punctulae; clypeal lobe slender (Fig. 59A) **24**
24. Width of third antennal segment < 1/2 its length; length of clypeal median lobe less than width of third antennal segment; WL > 1.3 mm (Fig. 59) ..... ***gagates***
– Width of third antennal segment > 1/2 its length; length of clypeal median lobe more than width of third antennal segment; WL < 1.3 mm (Fig. 33) ..... ***langi*** (in part)
25. Mandible parallel-sided in cephalic full-face view; cephalic dorsum usually smooth and shining with

scattered punctulae ..... ***pubiceps*** (in part)
– Mandible widening apicad; cephalic dorsum variable, usually punctate with striae at least on anterior region close to antennal insertions, or mostly smooth and shining **26**
26. Head longer than wide in full-face view; body lacking iridescence; petiolar node with crest or modest apical tooth (Figs. 29B, 74B) **27**
– Head wider than long; body with purple-blue iridescence; petiolar node with large apical tooth (Fig. 30B) ..... ***ingens***
27. In cephalic full-face view lateral clypeal lobe prominent, appearing as distinct lobe or blunt tooth next to median clypeal lobe (Fig. 29A) posterior margin of the petiolar node broadly concave in lateral view (Fig. 29B) ..... ***carbonaria*** (in part)
– Lateral clypeal lobe inconspicuous, not appearing as distinct lobe or blunt tooth next to median clypeal lobe (Figs. 68A, 74A); posterior margin of the petiolar node sinuate **28**
28. Cephalic dorsum mostly smooth and shining; apex of petiolar node with distinct short, slender tooth (Fig. 68B) ..... ***amazonica***
– Cephalic dorsum mostly punctate; apex of petiolar node with blunt crest, not shaped as a distinct tooth (Fig. 74B) ..... ***punctaticeps*** (in part)
29. Petiolar node mostly triangular and elongate in lateral view, with a sloping, and fairly straight, anterior margin and a vertical posterior margin; if distinct vertical anterior margin is present, it is < 1/4 the height of posterior margin (Figs. 32B, 38B) **30**
– Node not triangular, generally semi-quadrate with vertical, subparallel, anterior and posterior margins, and a more or less horizontal dorsal margin (rarely angular), the anterior margin is > 1/4 the length of the posterior margin (Fig. 29); less commonly the node may be dome-shaped or with a continuously convex anterodorsal margin and more or less vertical posterior margin. (Figs. 39B, 86B)..... **39**
30. Propodeal dorsum mostly sculpted, either striate or punctulate **31**
– Propodeal dorsum mostly smooth and shining ... **34**
31. Petiole in lateral view with a distinct dorso-apical tooth (Fig. 32B); anteromedian clypeal process flanked by lateral lobes near apex (Fig. 32A) ..... ***tiobil***
– Petiole never dentate, dorso-apically rounded or with a sharp angle at most (Figs. 24B, 31B, 38B); clypeal process regularly triangular at apex (Figs. 24A, 31A, 38A) **32**
32. Pronotal disc rugose; body black without blue opalescence ..... ***socorda***
– Pronotal disc punctulate, or smooth and shining; body frequently with blue opalescence **33**
33. Pronotal disc mostly smooth and shining with sparse punctulae; propodeal dorsum transversely striate; mandible widening apicad with low jagged denticles on chewing margin ..... ***famelica***
– Pronotal disc densely punctulate; propodeal dorsum densely punctulate, striae mostly limited to declivity; mandible of equal width apicad, chewing margin edentate ..... ***imperatrix***
34. Mesosoma in lateral view with dorsal margin mostly straight, metanotal groove shallow (Figs. 12B, 37B) **35**
– Mesosoma in lateral view with dorsal margin forming two distinct convexities separated by broad metanotal groove (Figs. 40B, 72B) **37**
35. Anterior margin of petiolar node in dorsal view < 1/2 the width of posterior margin, node elongate **36**
– Anterior margin of petiolar node ≥ 1/2 the width of posterior margin ..... ***pucuna***
36. Foretibial apex with transparent cuticular lobe next to strigil; head subrectangular in full-face view; eye flattened, barely convex; constriction between abdominal segments III and IV weak (Fig. 37) .... ***gaigei***
– Foretibial apex without transparent lobe next to strigil; head elongate in full-face view; eye broadly convex; constriction between abdominal segments III and IV strong (Fig. 12) ..... ***vogeli***
37. Propodeal declivity in lateral view ending in an abrupt overhang formed by propodeal lobes (Fig. 40B); mandible expanding apicad of mid-length .... ***luederwaldti***
– Propodeum in lateral view forming a continuous convexity (Fig. 72B); mandible not expanding apicad of mid-length **38**
38. Petiolar node shaped as elongate triangle with brief vertical anterior margin in lateral view; mandible of uniform width; mandibular masticatory margin meets basal angle at an abrupt, almost perpendicular angle; foretibial apex with a transparent cuticular lobe next to strigil ..... ***cuneata***
– Petiolar node not elongate in lateral view, anterior and dorsal margins form a continuous convexity; mandible widest at mid-length, then tapering apicad; masticatory and basal mandibular margins meet through convexity; foretibial apex without a transparent cuticular lobe next to strigil ... ***peruana***
39. Petiolar node in lateral view approximately dome-shaped, with the highest part close to the mid-distance of the node; anterior margin convex or with a blunt angle between the anterior and dorsal margins (Figs. 17B, 39B, 86B) **40**
– Petiolar node subquadrate, with vertical, subparallel, anterior and posterior margins, and horizontal or convex dorsal margin; or the anterodorsal margin is convex and posterior margin vertical (Figs. 16B, 57B, 60B) **43**
40. Mandible triangular; head, mesosoma, and petiole with extensive sculpturing ..... ***honduriana***
– Mandible slender and semi-falcate; head, mesosoma, and petiole mostly smooth and shining **41**
41. Small species: HW < 0.80 mm; WL < 1.76 mm .... ***reggae***

– Larger species: HW > 0.80 mm; WL > 1.76 mm ... **42**

42. Head in full-face view with eyes at mid-cephalic length; basal and masticatory mandibular margins separated by blunt angle (Fig. 39A) ..... ***linda***

– Eyes closer to mandibular insertion than to mid-cephalic length; basal and masticatory mandibular margins joined through broad curve (Fig. 86A) ..... ***tama***

43. Dorsum of head and mesosoma with extensive sculpturing **44**

– Dorsum of head and mesosoma mostly smooth and shining with sparse punctulae **52**

44. Petiolar node in lateral view with posterodorsal blunt point that overhangs posterior petiolar margin ..... ***carbonaria*** (in part)

– Petiolar node without posterodorsal point or denticle **45**

45. Postpetiolar tergite opaque and densely punctate, the space surrounding each puncture equal to or less than the diameter of each puncture **46**

– Postpetiolar tergite mostly smooth and shining with sparse punctulae, the space surrounding each puncture many times greater than the diameter of each puncture **48**

46. Mesosoma in lateral view with no standing hairs on dorsum ..... ***quirozi***

– Mesosoma with 10 or more standing hairs on dorsum **47**

47. Clypeal anterior margin in cephalic full-face view with strongly developed lateral clypeal lobes at each side of median lobe (Fig. 16A) ... ***foraminosa***

– Clypeus with anterior margin converging evenly to median lobe, lateral clypeal lobes indistinct (Fig. 21A) ..... ***sianka***

48. Mandible not widening apicad; basal and external margins mostly semi-parallel **49**

– Mandible usually widening apicad, becoming triangular, or unusually shaped **50**

49. Scape surpasses posterior cephalic margin by ≥ 1/3 its length; second funicular segment almost 2 × as long as third segment; mandibular dorsum mostly smooth, with weak striolae at most (Fig. 23) ..... ***volcanica***

– Scape surpasses posterior cephalic margin by ≤ 1/4 its length; second funicular segment slightly longer than third segment; mandibular dorsum mostly striate (Fig. 84) ..... ***linearis*** (in part)

50. Mandible triangular; median clypeal lobe ending in a blunt point **51**

– Mandible with large preapical rounded notch; median clypeal lobe apically truncate ..... ***oaxaca***

51. Mesosoma wider than long in dorsal view ..... ***elongata***

– Mesosoma longer than wide in dorsal view ... ***manni***

52. Apical half of mandible increasing in width giving mandible a triangular or semi-triangular aspect (Figs. 25A, 57A) **53**

– Apical half of mandibular dorsal surface of uniform width; masticatory margin not expanded into semi-triangular shape (Figs. 34A, 51A) **60**

53. Propodeum with lateral tooth or lobe; mandibular masticatory margin edentate **54**

– Propodeum without a trace of lobe or tooth, laterally rounded; mandible with preapical tooth or denticles along masticatory margin **57**

54. Mandible elongate, basal margin > 2 × longer than masticatory margin **55**

– Mandible triangular, lengths of basal and masticator margin approximately equal **56**

55. Large ant, WL > 2.3 mm; mandible does not shut tight against clypeus (Fig. 81A), meso- and metapleura with variable amounts of striae (Fig. 81B) ... ***ciliata***

– Small ant, WL < 2.3 mm; mandible shuts tight against clypeus (Fig. 56A); meso- and metapleura smooth and shining (Fig. 56B) ..... ***consanguinea***

56. Compound eye covers almost 1/3 the length of lateral cephalic margin; eye dorsolaterally placed on head (Fig. 61A) ..... ***nigricans***

– Compound eye covering ≤ 1/4 lateral cephalic margin; eye placed laterally on head (Fig. 57A) ..... ***deborae***

57. Length of second antennal segment 1/2 of segment III; petiolar node elongate in dorsal view, width < 85% of length **58**

– Length of second antennal segment > 1/2 of segment III; petiolar node subquadrate, width > 85% of length **59**

58. Mesonotum wider than long; mesopleural lobe shaped low and convex ..... ***phylloba***

– Mesonotum longer than wide; mesopleural lobe projects laterally as small fin or wing ..... ***pinna***

59. Eye length > oculomalar distance; masticatory margin of mandible denticulate to crenulate ..... ***serrata***

– Eye length < oculomalar distance; masticatory margin of mandible edentate except for single preapical tooth ..... ***pittieri***

60. Compound eyes situated dorsolaterally with head in full-face view; not only is whole dorsal ocular perimeter observable, but also part of ventral ocular perimeter, or only a small part or none of the dorsal ocular margin extends beyond the lateral cephalic margin (Figs. 10A, 84A) **61**

– Compound eyes extended more laterally in full-face view of head; the ventral ocular perimeter is not visible, and all or most of the dorsal ocular margin extends beyond the lateral cephalic margin (Figs. 11A, 52A) **65**

61. Dorsal mandibular surface mostly striate; dorsal mesosomal margin continuously curved in lateral view; clypeal apex with at least two stout setae ..... ***linearis*** (in part)

– Mandibles mostly smooth and shining with sparse punctures; dorsal mesosomal margin divided by deep or shallow metanotal groove into convex promesonotal margin, and convex or flat propodeal

margin; clypeal apex lacking stout setae **62**

62. Width of anterior petiolar margin ≤ 1/2 width of posterior margin in dorsal view **63**

– Anterior margin of petiole > 1/2 width of posterior margin in dorsal view **64**

63. Mesonotum 3 × wider than long in dorsal view; node with anterior margin 1/2 width of posterior margin in dorsal view ..... ***rasila***

– Width of mesonotum ≤ 2 × its length; anterior margin of node < 1/2 width of posterior margin .... ***iheringi*** (in part)

64. HL < 1.10 mm, WL < 1.70 mm; width of third antennal segment > 1/2 its length ..... ***amu***

– HL > 1.10 mm, WL > 1.70 mm; width of third antennal segment approximately 1/4 its length .... ***crudelis*** (in part)

65. With head in full-face view, the midpoint of compound eye closer to mandibular insertion than to mid-length of lateral cephalic margin (Fig. 52A) ... **66**

– With head in full-face view, the midpoint of compound eye exactly at, or closer to mid-length of lateral cephalic margin than to mandibular insertion (Fig. 34A) **68**

66. Head in full-face view with semiparallel lateral margins (Fig. 52A); abdominal tergites III and IV mostly smooth and shining with sparse punctulae **67**

– Head with anteriorly diverging lateral margins (Fig. 83A); abdominal tergites III and IV punctate to varying degree ..... ***foveonates***

67. Clypeal anterior margin in cephalic full-face view with gradually tapering median lobe; in lateral view propodeum edentate, with low triangular lobes at most (Fig. 52B) ..... ***ritae***

– Clypeal anterior margin with abruptly projecting slender median lobe; propodeum with 2 distinct teeth (Fig. 43B) ..... ***corniculans***

68. Median clypeal lobe elongate and slender in cephalic full-face view (Fig. 33A) **69**

– Median clypeal lobe broader, triangular with a pointed, blunt or truncate apex (Figs. 4A, 45A) **71**

69. Compound eye large (CI > 0.30), covering almost 1/3 length of lateral cephalic margin ..... ***mavaca***

– Compound eye smaller (CI < 0.30), covering ≤ 1/4 length of lateral cephalic margin **70**

70. Scape extending beyond the posterior cephalic margin by > 1/3 length; petiole with prominent anterior shelf in lateral view, almost 1/2 length of node .... ***cracens***

– Scape extending beyond the posterior cephalic margin by about 1/4 length; petiole without prominent anterior shelf, < 1/4 length of the node .... ***langi*** (in part)

71. Median clypeal lobe with subquadrate or bluntly angular apex, sometimes with apical lamellate denticle (Figs. 44A, 65A) **72**

– Clypeus in cephalic full-face view with median lobe evenly tapering anterad to pointed or rounded apex (Figs. 11A, 63A) **73**

72. Mesometapleural suture broad, scrobiculate, widening anterad; cross-section of petiolar node at mid-length convex; width of second funicular segment more than 1/2 its length ..... ***cordoba***

– Mesometapleural suture fine, smooth, not scrobiculate; cross-section of petiolar node at mid-length V-shaped; width of second funicular segment less than 1/3 its length ..... ***glabra***

73. Petiolar node elongate in dorsal view, anterior margin at most half as wide as posterior margin **74**

– Petiolar node subquadrate in dorsal view, anterior margin more than half as wide as posterior margin **78**

74. Propodeum with distinct lobes or denticles (Figs. 11B, 45B) **75**

– Propodeum without teeth or denticles, at the most a low lobe may be present posterad of each propodeal spiracle (Figs. 4B, 50B) **77**

75. Petiolar node with anterior and dorsal margins forming continuous convexity in lateral view; posterodorsal propodeal margin evenly convex until apex of propodeal lobe in lateral view; WL > 1.4 mm ... . ***iheringi***

– Node with distinctly vertical anterior margin and convex dorsal in lateral view; posterodorsal propodeal margin convex until base of propodeal tooth, tooth abruptly projecting; WL < 1.4 mm **76**

76. Scape surpasses posterior cephalic margin by one apical diameter; width of third antennal segment > 1/2 its length; body without iridescence ..... ***gorgona***

– Scape surpasses posterior cephalic margin by at least 3 apical widths; width of third antennal segment ≤ 1/2 its length; body usually with blue iridescence ..... ***melena***

77. Compound eye situated in the middle of the lateral cephalic margin with head in full-face view; width of petiolar posterior margin > 3/4 length of petiole ..... ***antillana***

– Compound eye situated anterad of midpoint of lateral cephalic margin; width of petiolar posterior margin < 3/4 length of petiole ..... ***quadrata***

78. Propodeum with distinct denticles or lobes (Figs. 46B, 62B) **79**

– Propodeum unarmed, without teeth or denticles, at most low swelling may be present next to each propodeal spiracle (Figs. 49B, 58B) **85**

79. Length of third antennal segment equal to or more than twice its apical width **80**

– Length of third antennal segment less than twice its apical width **82**

80. Compound eye large, occupying at least 1/3 lateral cephalic margin in cephalic full-face view (Fig. 35A) ..... ***minima***

– Compound eye smaller, occupying ≤ 1/4 lateral cephalic margin (Fig.62A) **81**

81. Mesonotum transverse in dorsal view, at least 3 × wider than long; metanotal groove smooth .... ***quiriguana***

– Mesonotum oval in dorsal view, 2 × as long as broad; metanotal groove scrobiculate ..... ***australis***

82. Compound eye small, approximately 4 ommatidia across, OI < 0.15 (Fig. 66A) ..... ***rufa***

– Compound eye larger, at least 8 ommatidia across, OI > 0.15 (Fig. 46A) **83**

83. Basal mandibular margin with 3–2 stiff setae basad; compound eye mostly flat (Fig. 46A) ..... ***guianensis***

– Basal mandibular margin with sparse pilosity, none standing out as setae or noticeably thick; compound eye weakly convex (Fig. 62A) **84**

84. Mandible with basal and masticatory margin joined by continuously curved flange in dorsal view; propodeal spiracle elongate ..... ***yocota***

– Mandible with basal and masticatory margin separated by blunt angle; propodeal spiracle broadly oval ..... ***orchidioides***

85. Mesonotum narrow and parallel sided, with straight anterior and posterior margins in dorsal view; mandible with a sinuate basal margin in cephalic full-face view, with a basal convexity and apical concavity **86**

– Mesonotum not parallel sided, with at least one curved margin; basal mandibular margin not sinuate, either mostly convex, or basally convex and apically straight **87**

86. Apical width of the third antennal segment ≥ 3/4 its length ..... ***pusilla***

– Apical width of third antennal segment ≤ 2/3 its length ..... ***josephi***

87. Length of third antennal segment ≥ 2 × its apical width; compound eye larger (OI: 0.23–0.27) ..... ***erugata***

– Length of third antennal segment < 2 × its apical width; compound eye smaller (OI: 0.18–0.20) ... ***kiche***

6.4. Definition of the genus

Leptogenys Roger, 1861

Leptogenys Roger, 1861: 41. Type species: *Leptogenys falcigera* Roger, 1861; by subsequent designation of BINGHAM 1903: 52.

Lobopelta Mayr, 1862: 733. Type species: *Ponera diminuta* F. Smith, 1857: 69; by subsequent designation of BINGHAM 1903: 54. Synonymy by BOLTON 1975: 240.

Prionogenys Emery, 1895: 348. Type species: *Prionogenys podenzanai*, by monotypy. Synonymy by TAYLOR 1988: 33.

Machaerogenys Emery, 1911: 100. Subgenus of *Leptogenys*. Type species: *Leptogenys truncatirostris* Forel, 1897: 195; by original designation. Synonymy by BOLTON 1975: 240.

Odontopelta Emery, 1911: 101. Subgenus of *Leptogenys*. Type species: *Leptogenys turneri*, by monotypy. Synonymy by BROWN 1973: 183.

Dorylozelus Forel, 1915: 24. Type species: *Dorylozelus mjobergi* Forel, 1915: 25; by monotypy (= *Leptogenys tricosa* Taylor, 1969: 132, substitute name for *D. mjobergi* due to secondary homonymy in *Leptogenys*). Synonymy by TAYLOR 1969: 132.

Microbolbos Donisthorpe, 1948: 170. Type species: *Microbolbos testaceus* Donisthorpe, 1948: 170; by original designation. Synonymy by WILSON 1955: 136.

New World worker description. Head shape ranges from elongate to wider than long in full-face view; vertexal carina present, usually visible from cephalic full-face view; compound eye usually situated anterad of mid-cephalic length, occasionally at mid-length, usually dorsolaterally situated on head; eye diameter may be very reduced, just a few ommatidia, to very large and prominent, its length covering more than one-third the lateral cephalic margin with the head in full-face view. Mandible variously shaped, either triangular or subtriangular, frequently elongate with subparallel internal and external margins, also falcate and incapable of closing against clypeus; masticatory margin usually shorter than basal margin, generally edentate or nearly so; rarely masticatory margin crenulate or with series of blunt denticles; apical tooth usually present, mandible usually with laterobasal sulcus. Clypeus relatively long with median portion of clypeus projecting anterad as distinct, variously shaped, usually triangular lobe, with a median longitudinal crest extending from apex to level of frontal lobes, clypeus extends briefly posterad between frontal carinae as narrow wedge; clypeus with narrow carinae or lobe bordering anterolateral cephalic margin; frontoclypeal suture straight and transverse, tentorial pit closer to compound eye than to antennal sclerite. Labrum frequently with tubercles on external face; palp formula 4,4 or 4,3. Frontal lobe covers less than half antennal insertion, frontal carinae very brief; antennae 12-segmented, usually weakly incrassate; scape usually surpasses posterior cephalic margin, rarely shorter; funicular segments subcylindrical or moniliform.

Propleural lateral and ventral face separated by curvature, not carinate; pronotum never with carinate sides; mesopleuron with anepisternum and katepisternum usually indistinctly separated; propodeal spiracle separated from declivitous margin in lateral view by at least 3 diameters; mesopleural carinae usually distinct, sometimes weakly developed, especially ventrad; pronotal suture mobile; mesonotum always distinct; metanotal groove distinctly impressed, from shallow and fine to deep and wide, smooth or scrobiculate; mesometapleural suture distinct, scrobiculate, posterodorsal edge of mesopleuron forming a distinct ledge; metapleural-propodeal suture varies from indistinct to well impressed. Propodeum with or without lateral teeth or lobes, declivitous face usually with broad transverse sulcus next to insertion of postpetiole.

Posterior face of anteroventral petiolar process medianly concave; prora well developed, usually shaped as transverse crest or lobe; gaster usually smooth and shining, sometimes abdominal segments III–IV punctate; pretergite of abdominal segment IV with stridulitrum; constriction between abdominal segments III and IV ranging from weakly developed to well developed; py-

gidium with or without longitudial crest; hypopygidium usually with a row of small setae. Tibiae without setae on lateral or dorsal surface; protibial apex usually without setae apicad of insertion of strigil (except *L. panops*); first protarsal segment without comb of stout setae opposite strigil; strigil without velum at base (except *L. gaigei* and *L. cuneata*); mesotibial apex usually with one small seta on external face, sometimes absent or several setae present; metatibial apex usually lacking apical setae; claws usually pectinate (this state is reduced in minute species such as *L. pusilla* or *L. gorgona* with few or no preapical teeth), arolium absent; meso- and metatibial apex each with 2 apical spurs. General body color ranges from black to ferruginous; mandibles, clypeus, antennae, legs, and gastral apex usually lighter colored than head, mesosoma, and gaster; blue or purple opalescence present in some species; sculpture varies from smooth and shining to striate, or punctate.

Comments. The genus *Leptogenys* as presently defined stems most recently from Bolton's (1975) revision of the fauna from the Ethiopian Region and Madagascar. The above generic diagnosis was taken using only New World species into account, and comparing with Bolton (1975). In a revisionary study of the ponerine genera based on molecular markers, Schmidt (2009, in thesis) found unequivocal molecular evidence for grouping *Leptogenys* along with with 17 other genera into a monophyletic entity called the *Odontomachus* group, mostly of Old World distribution but with many species of *Leptogenys*, *Anochetus* and *Odontomachus* present in the New World. Within this group, *Myopias* is considered sister to *Leptogenys*, with evidence for both genera constituting one part of the basalmost divergence in the group, and the remaining genera the other part. Schmidt (2009, in thesis) argues for an Old World diversification of the *Odontomachus* group with age estimates ranging from 22–40 my according to diverse constraints, with a preferred estimate of 30 (38–24) my. The major radiations in *Leptogenys* have occured with an estimated crown age of 32 my (Schmidt 2009, in thesis). Examination of a few random Paleotropical species show character states not seen in New World *Leptogenys* such as a heavily dentate mandible, scale-like petiole, frontal lobe covering almost all of the antennal condyle or a moderately convex anterior clypeal margin. At least some traits are arguably plesiomorphic, thus lending a bit of morphological support to Schmidt's conclusions based on molecular data.

The apparent monophyly of *Leptogenys* is nowadays not questioned, probably due to several outstanding characters that qualify as apomorphies when compared with other ponerines. Besides the traditional pectinate claws and carinate median clypeal lobe, additional characters useful for separating this genus from other Ponerini may be considered: the presence of a basal protarsal comb is common in the most Ponerini, but is lost in *Leptogenys*. In *Pachycondyla impressa* the anterior tentorial pit is located close to the antennal sclerite whilst in *Leptogenys* it is quite separated. The tentorial pit in *Myopias* has a similar location to *Leptogenys*, and the two also share the presence of a median clypeal lobe and basal mandibular sulcus. The clypeal lobe in *Myopias* is usually subquadrate to rectangular, thicker and opaque throughout when compared with *Leptogenys*. Additionally there are *Myopias* species lacking the lobe, all suggesting this lobe is not homologous for the two groups. Presence of the basal mandibular sulcus is considered a plesiomorphic character (Schmidt 2009, in thesis). The relative situation of the tentorial pit should studied in other ponerines.

6.5. Species accounts

The species are organised in alphabetical order within their respective species group and each group is presented also in alphabetical order. The final grouping of species, denominated *incertae sedis*, are those which could not convincingly be accommodated into any species group. Locality data for "specimens studied" have followed as closely as possible the original label data, and any changes, comments or supplemental information are contained within square brackets.

6.5.1. *antillana* species group

Worker diagnosis. Head subrectangular in full-face view; eye weakly convex, situated laterad at cephalic mid-length, eye longer than maximum scape width, circumocular sulcus well developed; scape surpasses posterior cephalic margin by not more than one-fourth its length, funicular segments with marked constrictions, third antennal segment longer than other basal funicular segments; suture between antennal sclerite and tentorial pit well impressed. Median clypeal lobe broadly triangular, with (*L. antillana*) or without (*L. reggae*) lamella, with or without apical setae; lateral lobe narrow; basal mandibular sulcus well impressed, basal and external mandibular margins subparallel. Mesosoma with promesonotum forming single broad convexity in lateral view; propleuron smooth and shining; mesonotum transverse; metanotal groove well impressed, smooth; metanotal-propodeal sulcus absent to weakly impressed propodeum unarmed; node longer than wide in dorsal view; cross-section of node at mid-length with convex sides; constriction between abdominal segments III and IV moderately to well developed; posterodorsal swelling of metacoxa well developed; pro- and metatibial apex without setae, mesotibial apex with single seta; body mostly smooth and shining, without appressed pubescence, scattered standing to decumbent hairs present on body.

Included species. *L. antillana*, *L. reggae*.

Comments. The two known species from this group are island endemics, one found in Jamaica, and another in Hispaniola. The queens are still unknown in this group. The lack of propodeal lobes or teeth shown by *L. antillana* and *L. reggae* is rare within the *pusilla* clade, in which the phylogenetic analysis places this group.

Possible apomorphies. The lateral position of the eye on the head at cephalic mid-length is not seen in other species. The few species with eyes at cephalic mid-length have the eyes dorsolaterally placed on the head.

6.5.1.1. *Leptogenys antillana* Wheeler & Mann (Fig. 4)

Leptogenys (*Lobopelta*) *antillana* Wheeler & Mann, 1914: 14–15, fig. 5. Syntype workers: Haiti, Petionville (W.M. Mann) (MCZC) [examined].

Diagnosis. Head subquadrate in full-face view, median clypeal lobe broadly triangular, apex bluntly pointed with median seta; compound eye weakly convex, its length close to one-fourth that of lateral cephalic margin, eye laterally placed in cephalic mid-distance; mesonotum arched, 5 × wider than long; petiole subquadrate in lateral view, anterior margin vertical, shorter than posterior margin.

Worker. Metrics (n = 3): HL 0.65–0.68; HW 0.67–0.70; ML 0.43–0.48; EL 0.17–0.18; SL 0.84–0.89; PW 0.57–0.60; WL 1.42–1.47; PH 0.52–0.57; PL 0.57–0.58; DPW 0.37–0.42 mm. CI 1.00–1.03; MI 0.64–0.71; OI 0.24–0.26; SI 1.25–1.29; LPI 0.91–0.97; DPI 0.65–0.71.

Head subquadrate in full-face view, slightly wider anterad than posterad, posterior and lateral margins weakly convex; median clypeal lobe broadly triangular, apex bluntly pointed, median seta present or absent; lateral clypeal lobe lamellate, little expanded, convex towards median lobe. Compound eye weakly convex, its length close to one-fourth that of lateral cephalic margin, eye laterally placed in cephalic mid-distance; mandible elongate, basal and external margins mostly parallel, weakly widening apicad, basal margin convex with 3–5 thickened hairs basad, basal tooth developed as distinct denticle, masticatory margin edentate, concave; dorsal surface mostly smooth and shining with sparse punctate; PF: 4,3. Cephalic dorsum mostly smooth and shining with scattered piligerous punctulae; clypeus with weak rugulae and oblique striae mostly mesad, smoother close to median lobe and laterad. Scape surpasses posterior cephalic border by under one-fourth its length; third antennal segment 2 × longer than apical width; antennal segments II and IV each longer than half length of segment III. Scape mostly smooth and shining with abundant piligerous punctulae.

Mesosoma with promesonotum forming single broad convexity in lateral view, metanotal groove modestly impressed, dorsal propodeal margin broadly convex, twice longer than declivitous margin; declivity broadly convex, unarmed, without lobe or denticle. Mesosoma mostly smooth and shining with sparse piligerous punctae; mesometapleural suture well impressed, rugulose; mesopleuron elongate, rectangular; metapleuron with sparse striae posteroventrad; propodeal spiracle oval, posterolaterally facing; propodeal declivity wider than long, convex and curving continuously onto lateral and dorsal propodeal faces; declivity weakly colliculate with few transverse striae posterad. Mesonotum arched, 5 × wider than long; metanotal groove smooth; metapleural-propodeal suture absent.

Petiole subquadrate in lateral view, anterior margin vertical, shorter than posterior margin, anterodorsal margin convex, node highest posterad, posterior margin broadly convex. Node elongate and triangular in dorsal view, lateral margin broadly concave, width of anterior margin less than half width of posterior margin, anterior margin convex, posterior margin weakly convex to straight. Subpetiolar process shaped as posteroventrally bent lobe. Node mostly smooth and shining with some rugulae between petiolar spiracle and ventral process. Anterior margin of third abdominal segment mostly straight and posteriorly inclined, dorsal margin mostly straight with posterior convexity; constriction between abdominal segments III and IV moderate; gaster smooth and shining with sparse piligerous punctulae. Coxae and rest of legs mostly smooth and shining; mesotibial apex with single external seta, pro- and metatibia without setae; body with sparse subdecumbent to erect hairs, no appressed pubescence. Mandible, antenna, apex of median clypeal lobe, legs, and gaster ferruginous brown; rest of body dark brown.

Queen, male. Unknown.

Comments. This species is endemic to Hispaniola, and probably restricted to the Dominican Republic as suitable forest on the Haitian side is quite diminished. The MCZC type series consists of 4 workers on a single pin with two cardboards, each with two workers glued to it. *L. antillana* is perhaps mostly closely related to *L. reggae*, another Caribbean endemic (Jamaica), on account of similarities in head shape, eye shape and its position on the head, and broad median clypeal lobe with a setae at the apex. The clypeal setae may be absent in some specimens.

Material studied. DOMINICAN REPUBLIC. Barahona: 2 km W of Polo, 1100 m, 9.ii.1975, W.L. Brown Jr., 3w MZSP, 4w MCZC, 2w MIZA.

6.5.1.2. *Leptogenys reggae* n.sp. (Fig. 5)

Diagnosis. Median clypeal lobe broad, apex bluntly rounded with 3 median setae, lateral margins lamellate; compound eye broadly convex, flattened, its length just under one-third that of lateral cephalic margin, eye laterally placed in cephalic mid-distance; mandible elongate, basal and external margins parallel; petiole subtriangular in lateral view, anterodorsal margin convex, node highest posterad with bluntly pointed apex.

Worker. Metrics, holotype: HL 1.18; HW 0.80; ML 0.60; EL 0.26; SL 1.14; PW 0.66; WL 1.76; PH 0.70; PL 0.56; DPW 0.38 mm. CI 0.68; MI 0.75; OI 0.33; SI 1.43; LPI 1.25; DPI 0.68.

Head subrectangular in full-face view, slightly wider anterad than posterad, posterior and lateral margins broadly convex; median clypeal lobe broad, apex bluntly rounded with 3 median setae, lateral margins lamellate; lateral clypeal lobe lamellate, little expanded. Compound eye broadly convex, flattened, its length just under one-third that of lateral cephalic margin, eye laterally placed in cephalic mid-distance; mandible elongate, basal and external margins parallel, basal margin convex, basal tooth developed as distinct denticle, masticatory margin edentate, concave; dorsal surface with fine parallel striae basad, sparse punctae throughout, apicad smoother. Cephalic dorsum mostly smooth and shining, with scattered piligerous punctulae which become more dispersed posterad; clypeus smooth with some longitudinal to oblique striae. Scape surpasses posterior cephalic border by one-fourth its length; third antennal segment just under 2 × longer than second segment, 3 × longer than apical width. Scape mostly smooth and shining, with piligerous punctulae which become dense apicad.

Mesosoma with promesonotum forming single broad convexity in lateral view, metanotal groove deeply impressed, dorsal propodeal margin broadly convex, twice longer than declivitous margin; propodeal margin straight, unarmed, without lobe or denticle. Pronotum mostly smooth and shining with sparse piligerous punctae; propleuron smooth and shining, mesopleuron with rugulae on anepisternum and posteroventrad, weakly colliculate medially; metapleuron with rugulae anterad, medially mostly smooth and shining with rugulae along metapleural-propodeal suture, and transversely striate posteroventrad. Mesonotum and propodeal dorsum smooth and shining, propodeal spiracle broadly oval, facing posterad; mesonotum oval shaped, slightly wider than long; metanotal groove smooth; propodeal declivity subtriangular, wider posterad than anterad with transverse striae. Mesometapleural suture well impressed; metapleural-propodeal suture partially impressed as series of rugulae that extend mid-distance between propodeal and mesothoracic spiracles.

Petiole subtriangular in lateral view, anterodorsal margin convex, node highest posterad with bluntly pointed apex, posterior margin inclined, with strong convexity basad; node triangular in dorsal view, lateral margin concave, width of anterior margin less than half width of posterior margin, anterior margin convex, posterior margin weakly convex. Subpetiolar process shaped as posteroventrally bent rectangle, with ventral denticle. Node mostly smooth and shining with some rugulae anteroventrad, cross-section of node at mid-length V-shaped. Anterior margin of third abdominal segment mostly straight and posteriorly inclined, dorsal margin mostly straight with posterior convexity; constriction between abdominal segments III and IV well developed; gaster smooth and shining with sparse piligerous punctulae. Coxae and rest of legs mostly smooth and shining, protibia sparsely punctulate, meso- and metatibia with abundant punctulae, especially apicad; mesotibial apex with single external seta, pro- and metatibia without setae; body with sparse subdecumbent to erect hairs, no appressed pubescence. Mandible, antenna, apex of median clypeal lobe, legs, and gastral ferruginous brown; rest of body dark brown.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the musical genre associated with Jamaica, and Saint Ann Parish in particular, the birth place of famous reggae musicians such as Bob Marley and Burning Spear.

Comments. Known from only a single specimen, this species may be another Caribbean endemic, or even exclusive to Jamaica. Time, and more collecting, will tell.

Type material. Holotype worker. **Jamaica**, Saint Ann, 2.5 mi S. Moneague, 700 m, 3.iii.1968, S. Peck & A. Fiske. Deposited in MCZC.

6.5.2. *arcuata* species group

Worker diagnosis. Compound eyes dorsolaterally situated on head, diameter greater than one-fourth lateral cephalic margin; clypeal apex with setae, median clypeal lobe small, shorter than maximum scape width, with lamella; mandibles arched, narrow, and parallel-sided; suture between antennal sclerite and tentorial pit well impressed; labrum with scattered pointed tubercles on anterior face; well-developed hypostomal lobes usually present (except *L. arcuata*); PF: 4,4. Antenna with each funicular segment gradually expanding apicad, third antennal segment not noticeably elongate; mesonotum subquadrate to wider than long, never narrow and transverse; propleuron mosly transversely striate (smooth in *L. arcuata*), metanotal groove well impressed, scrobiculate; metapleural-propodeal suture present, propodeum unarmed; node with posterior margin vertical in lateral view, without an apical crest or point, posterior face of node flat, smooth and shining, posterior and lateral margins separated by sharp angle (except *L. santacruzi*); meso-, metapleuron, and most of lateral face of petiole rugulose; anterior face of abdominal segment III flat, subpetiolar process with sloping posterior margin in lateral view; constriction between abdominal segments III and IV weak; body without pubescence; head, mesosoma, petiole and gaster with scattered standing pilosity, no appressed pubescence. Metacoxal dorsum without swelling at base; apex of protibia lacking setae; apex of mesotibia with 1 external seta; apex of metatibia without setae.

Included species. *L. arcuata*, *L. donisthorpei*, *L. montuosa*, *L. santacruzi*.

Comments. These ants are found from southern Mexico into northern South America, including an island endemic on Santa Cruz, Galapagos Islands. One species,

L. arcuata, may actually represent a complex with representatives in the Amazon watershed and the Lesser Antilles. No queens are yet known for this species group, even in species that have been relatively well sampled, such as *L. arcuata* or *L. donisthorpei*, leading to the inference that egg laying workers fulfill this reproductive role in the group.

Possible apomorphies. The reduced clypeal lobe, presence of clypeal setae, slender, arched mandibles, and large hypostomal lobes are synapomorphic with the *unistimulosa* group, the apparent sister group to the *arcuata* group. The *arcuata* group claims as apomorphic the flattened posterior face of the node that is separated from the rest of the node by a sharp edge, lacking the curvature usually associated with this margin. The disc of the anterior face of abdominal segment III is also flattened. There is a lack of pubescence on the head and mesosoma dorsum which could be considered apomorphic as the loss of pubescence is common for the *pusilla* clade, but not for taxa outside of it. The *unistimulosa* group retains pubescence on the cephalic dorsum, and occasionally presents sparse pubescence on the mesosoma.

6.5.2.1. *Leptogenys arcuata* Roger (Fig. 6)

Leptogenys arcuata Roger, 1861: 44. Syntype workers: Surinam (Deulschbein[?]) (ZMHB) [examined].

Leptogenys arcuata st. *deletangi* Santschi, 1921: 87. Syntype workers: Bolivia, Camino de Aroyo Negro a Trinidad (Lizer, Deletang) (NHMB) [examined] **n.syn.**

Diagnosis. Scape with abundant suberect hairs; hypostomal teeth not visible with head in full-face view; cephalic dorsum mostly smooth and shining with scattered piligerous punctulae; pronotum mostly smooth and shining, with few transverse rugulae on collar; propleuron mostly smooth and shining; metanotal groove scrobiculate.

Worker. Metrics (n = 7) HL 0.88–1.00; HW 0.70–0.78; ML 0.52–0.58; EL 0.20–0.28; SL 0.82–0.92; PW 0.57–0.66; WL 1.40–1.60; PH 0.58–0.68; PL 0.38–0.44; DPW 0.40–0.48 mm. CI 0.77–0.80; MI 0.70–0.77; OI 0.26–0.36; SI 1.16–1.21; LPI 1.43–1.70; DPI 0.95–1.11.

Head semi-quadrate in full-face view, slightly longer than wide; lateral margins broadly curved and diverging anterad; posterior margin convex, slightly flattened medially. Eye convex and large, spanning more than one-fourth of lateral cephalic margin. Cephalic dorsum mostly smooth and shining with sparse, piligerous punctulae. Scape mostly smooth basad, becoming punctate apicad, surpasses posterior cephalic margin by one-fourth its length; length of antennal segment III usually less than double its width. Anterior clypeal margin laterally sinusoid, medially straight to slightly convex, medially overhung by triangular process about as long as wide, margins translucent, apex with 4–3 setae. Mandible slightly arched, parallel-sided with brief and weakly concave edentate masticatory margin, single apical tooth present; mandible leaves gap between clypeus when closed, at widest more than twice the mandibular width. PF: 4,4. Scape has abundant inclined hairs. Hypostomal tooth not visible in cephalic full-face view.

Mesosoma with prominent metanotal groove dividing dorsal margin in two large convexities in lateral view: promesonotum, and metanotum-propodeum. Pronotum mostly smooth and shining, with few transverse rugulae on collar; propleuron mostly smooth and shining. Mesopleuron varies from mostly smooth and shining with transverse striae along ventral area to mostly striate with smoother dorsomedian area; well-defined crest separates mesopleuron from mesosternum; metapleural-propodeal suture well impressed. Mesonotum with curved anterior margin in dorsal view, posterior margin mostly straight, dorsum smooth and shining. Metanotal groove more or less scrobiculate. Metapleuron and propodeum with transverse striae, propodeal dorsum mostly smooth, declivity transversely striate; spiracle opening oval, directed posterolaterally.

Node with semi-parallel anterior and posterior margins in lateral view; anterior margin shorter than posterior margin, anterior and posterior margins convex, anterior margin meets dorsal margin in sharp curve, dorsal margin meets posterior margin in abrupt angle. Node with longitudinal to oblique striae on sides; posterior face flattened, smooth and shining, distinctly separated from rest of node. Node as wide as long in dorsal view. Gaster smooth and shining with sparse punctulae. Anterior margin of abdominal segment III mostly vertical in lateral view. Head, mesosoma and abdomen black; clypeus, mandibles, antennae, and legs various shades of brown, usually ferruginous.

Queen. Unknown.

Male. Not examined.

Comments. This species can be confused with members of the more commonly encountered *L. pubiceps* complex, and the reader should consult the discussion for this complex for advice on how to separate the two. The examined type material consists of two point-mounted workers from Surinam, with the label bearing an additional, but partially illegible name "Deulschbein". Perhaps it is a locality or the collector's last name. Both specimens are in good condition but one lacks both antennae; and the other lacks only half of the funiculus. SANTSCHI (1921) described *L. deletangi* because of its relatively shorter mandibles, broader head, and metatarsi longer than the tibia, though it is not clear if he meant the metatibia. Comparing the types of *L. deletangi* with the rest of *L. arcuata* specimens it was not possible to use Santschi's diagnostic characters, nor any other characters, for considering such variation as anything more than intraspecific.

L. arcuata is the smallest species of its group. The Carajás series is on average smaller than the other specimens and very polished. *L. arcuata* usually shows no trace of the hypostomal teeth when the head is in full-

face view, and only occasionally will a tooth apex manage to project beyond the clypeal margin. Nevertheless it is possible that the hypostomal tooth can be more prominent in some populations and this possibility was accounted for in the key. The anteroventral spot of node is flattened and smooth as in *L. montuosa*, but differs on account of larger hypostomal teeth than in *L. montuosa*, the larger size of *L. montuosa*, the striate propleuron of *L. montuosa* and the presence of punctae on the cephalic dorsum. Specimens of this species have been taken from under stones, and nests found in rotten logs (Forel 1893).

The specimen from French Guiana was identified as *L.* cf. *arcuata* as it differs from typical *L. acuata* in its slightly broader head, eyes more dorsolaterally placed on the head, noticeable hypostomal teeth in cephalic full-face view, smaller propodeal spiracle, elongate node with rougher lateral sculpturing, and a relatively longer subpetiolar process which lacks the ventral flat area. The dorsal propodeum margin in lateral view has its highest point anterad, implying a sharper curvature anterad, but this margin in *L. arcuata* is evenly convex. The traits of this single specimen were not taken into account for the description of *L. arcuata* as it could represent a different species, but a description should await the availability of additional material given its similarity with *L. arcuata*. *L. arcuata* is mostly South American, but has been taken on some Caribbean islands, indicating the possibility of tramp species capabilities. Forel (1893) describes the male from a nest series collected on the island of St Vincent.

Material studied. **Brazil**. **Amazonas**: Coary, vii.1929, Vival de Araujo, 1w MZSP. **Bahia**: CEPEC, near Itabuna, 14°45′S 39°13′W, 20.viii.1996, 50 m, P.S. Ward 13147-1, 1w PSWC; CEPEC, Area Zoolog, km22, Ilhéus-Itab, x.1986, J. Delabie, 2w MZSP; Ilhéus, 16.ix.1993, R.M.F. Cordeieo, 1w LACM. **Pará**: Carajás, mata km 9 prox. lgar Azul., vii–viii.1985, Brandão, Benson, 29w MZSP. **Rio de Janeiro**: Jardim Botanico, H.S. Lopes, ex Borgmeier coll 5760, 8w MZSP. – **Bolivia**. **El Beni**: Camino de Aroyo Negro a Trinidad, Lizer & Deletang, 2w ZMHB. – **French Guiana**. Maripasoula, [3°38′N 54°02′W], 18.vii.1999, A. Dejean, 1w CEPEC. – **Guadeloupe**. IV.1987, K. Jaffé, PO-4, 6w CUSB. – **Guiana**. **Cuyuni-Mazaruni**: Oko River, tributary Cuyuni River, 23.vi.1936, N. Weber 496, 1w MCZC; Kamakusa, [5°57′N 59°02′W], 7.xi.1922, O. Lang, 3w MCZC, 3w MZSP; Kartabo, vii–viii.1920, [W.M. Wheeler?], 1w MZCZ; Dunoon, 18.vii.1914, F.M. Gaige, 1w MCZC; Gr. Batauia Is, W.M. Wheeler, 3w MCZC. – **Saint Vincent**. No locality, H. Smith, 1w MZCZ. – **Surinam**. No locality, 1w MCSN; Paramaribo, 7w 1m MZSP.

6.5.2.2. *Leptogenys donisthorpei* Mann (Fig. 7)

Leptogenys (*Leptogenys*) *donisthorpei* Mann, 1922: 11, fig. 6. Syntype workers: Honduras, Lombardia, Cecilia, ii.–iii. 1920, Cat. No. 24440 (W.M. Mann) (MCZC) [examined].

Diagnosis. Cephalic dorsum mostly punctate, scape with abundant decumbent hairs, hypostomal teeth not visible in full-face view; mesometapleuron and propodeal sides with continuous oblique striae; lateroventral area of node with weak rugulae, not smooth and polished.

Worker. Metrics (n = 6) HL 1.31–1.38; HW 1.18–1.25; ML 0.91–0.98; EL 0.30–0.34; SL 1.35–1.52; PW 0.81–0.91; WL 2.22–2.29; PH 0.78–0.88; PL 0.64–0.67; DPW 0.57–0.64 mm. CI 0.88–0.93; MI 0.75–0.83; OI 0.24–0.27; SI 1.11–1.29; LPI 1.15–1.37; DPI 0.85–1.00.

Head subrectangular in full-face view, slightly wider anterad than posterad, lateral and posterior margins weakly convex, almost straight; diameter of compound eye more than one-fourth of lateral cephalic margin; lateral clypeal margin broadly convex, lateral lobe indistinct; median lobe not longer than greatest scape width, convex, with 3–5 setae. Scape surpasses posterior cephalic border by less than one-fourth its length; length of fourth antennal segment more than half length of third segment. Mandible with fine striae on dorsum. PF: 4,4. Cephalic frons to vertex mostly punctate, area between eye and antenna, gena striate; rugulose punctate along internal ocular margin and beyond; head posterad of eye and ventral surface mostly smooth and shining with sparse punctae.

Mesosoma divided by deep metanotal groove in lateral view into promesonotal convexity and metanotal convexity; lateral pronotum with parallel oblique striae and sparse punctae, sculpture weakens close to procoxal insertion; propleuron transversely striae; mesometanotum and lateral propodeal face with continuous parallel oblique striae which become rugulose ventrad. Direction of pronotal striae forms approximate right angle with that of mesometanotum. Pronotum in dorsal view with arching striae along anterior and lateral areas, sculpture weakens posteromedially, becoming smoother. Mesonotum oval in dorsal view, surface undulated and punctate. Propodeal dorsum transversely striate punctae, sculpture shallow compared with propodeal side, declivitous face transversely porcate. Propodeal spiracle oval, facing posterolaterally.

Petiole subquadrate in lateral view, slightly higher posterad than anterad; anterodorsal margin forms continuous convexity, posterior margin mostly straight, weakly sloped; lateral face mostly obliquely striate, ventrad with smooth flattened area. Node subrectangular in dorsal view, wider posterad than anterad, mostly punctate-striate excepting median, longitudinal smooth strip. Anterior and posterior margins broadly convex; lateral margin mostly broadly convex, except for stronger posterior curvature. Gaster smooth and shining, with scattered piligerous punctulae. Procoxa laterally smooth and shining. Mandibles, clypeus, scapes, coxae, trocanters, and femora brown; funiculus, tibiae, tarsi, and gastral apex ferruginous brown; rest of body black, gaster may be dark brown. Antennae with decumbent hairs, no erect pilosity; mesosoma with suberect and subdecumbent hairs.

Queen. Unknown.

Male. Not examined.

Comments. The specimens from Reserva Sian Ka'an have labels associating them with the bromeliad *Aechmea bracteata* (Swartz, 1864) Grisebach. They were found nesting in the dry remains of this bromeliad by

DEJEAN (1995, 1997). The only other *arcuata* group species which might be sympatric with *L. donisthorpei* is *L. montuosa*. *L. donisthorpei* has the most robust mandibles of the *arcuata* group, and the lateroventral node area is not smooth and flattened but has weak rugosities. The hypostomal teeth are not visible in full-face view, and the scape has decumbent hairs. *L. montuosa* has suberect hairs on the scapes, large hypostomal teeth, and a more prominent median clypeal lobe than *L. donisthorpei*. The propleuron in *L. montuosa* is smooth and shining in contrast with the striate propleuron of *L. donisthorpei*.

Material studied. HONDURAS. **Lombardia**: Cecilia, W. Mann, 6w MCZC (type series); La Ceiba, 14 km S, 23.iii.1979, Gary V. Manley, No. 6, 4w MCZC, 1w LACM. – **MEXICO**. **Quintana Roo**: Reserva Sian Ka'an, 20.v.1986, A. Dejean, 15w LACM, 2w 1m MCZC; loc. cit., 15.ix.1986, A. Dejean, B3, 6w LACM; loc. cit., 3.–4.vi.1986, A. Dejean A1, sabana, km11, 7w 2m LACM.

6.5.2.3. *Leptogenys montuosa* n.sp. (Fig. 8)

Diagnosis. Eye convex and large, spanning almost one-third lateral cephalic margin, dorso-laterally situated. Cephalic dorsum punctate, hypostomal tooth visible in cephalic full-face view, scape with suberect hairs, propleuron striate; propodeal dorsum punctate, declivity transversely striate.

Worker. Metrics, holotype (paratypes, n = 4): HL 1.24 (1.11–1.27); HW 1.04 (0.99–1.09); ML 0.89 (0.76–0.91); EL 0.28 (0.25–0.30); SL 1.29 (1.16–1.34); PW 0.81 (0.71–0.83); WL 2.15 (1.80–2.13); PH 0.81 (0.71–0.81); PL 0.61 (0.53–0.66); DPW 0.56 (0.48–0.58) mm. CI 0.84 (0.86–0.89); MI 0.85 (0.77–0.84); OI 0.27 (0.26–0.28); SI 1.24 (1.17–1.23); LPI 1.33 (1.23–1.33); DPI 0.92 (0.88–0.92).

Head sub-rectangular in full-face view, longer than wide; lateral margins broadly curved and diverging anterad; posterior margin convex, slightly flattened medially. Eye convex and large, spanning almost one-third lateral cephalic margin. Cephalic dorsum ranging from densely punctate to sparsely punctate posterad with punctae limited to between and anterad compound eyes; fine longitudinal striae present between eye and clypeus. Scape with abundant piligerous punctae, surpassing posterior cephalic margin by more than one-fourth its length; length of antennal segments III and IV more than 2 × their respective widths. Anterior clypeal margin laterally sinusoid, medially straight to slightly convex, median process about as long as wide, margins opaque to weakly translucent, apex with 4–3 setae. Mandible slightly arched, parallel-sided with brief and weakly concave edentate masticatory margin, basal angle usually with denticle; mandible leaves gap between clypeus when closed, at widest more than twice the mandibular width. Scape has abundant subdecumbent hairs and decumbent pilosity. Hypostomal tooth visible in cephalic full-face view.

Mesosoma with prominent metanotal groove dividing dorsal margin in two large convexities in lateral view: promesonotum, and metanotum - propodeum. Pronotum mostly smooth and shining with some transverse rugulae on pronotal collar, and scattered punctae; propleuron striate. Mesometapleural suture well impressed. Mesopleuron varies from mostly smooth and shining with transverse striae along ventral area to mostly striate with smoother dorsomedian area; metapleural-propodeal suture well impressed. Mesonotum oval in dorsal view, smooth and shining; metanotal groove scrobiculate. Metapleuron and propodeal side rugulose, propodeal dorsum with scattered shallow punctae, declivity transversely striate; spiracle opening directed posterolaterally.

Node with anterior and posterior margins joined by convexity in lateral view; anterior margin shorter than posterior margin, dorsal margin meets posterior margin in abrupt angle; posterior margin weakly convex. Node laterally rugose; posterior face flattened, smooth and shining, distinctly separated from rest of node. Node as wide as long in dorsal view, widest posterad. Gaster smooth and shining with sparse punctulae. Head, mesosoma and abdomen black; clypeus, mandibles, antennae, and legs dark brown.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the name of Cerro Montuoso in Panama, a locality from which *L. montuosa* has been recorded.

Comments. The head sculpture in *L. montuosa* varies from densely punctate (specimens from Central and NW Costa Rica) to sparsely punctate, and almost smooth posterad, with punctae limited mostly between and anterad of the compound eyes (specimens from Panama and NE Costa Rica). The Guanacaste specimens have more regular striae on the pleura and lateral propodeum than the other specimens. The single La Selva specimen is the largest of all, with rougher sculpturing and a broader head anterad than the other specimens. It was not taken into account for the above description and was labeled as *Leptogenys* cf. *montuosa*. The only other *arcuata* group species possibly sympatric with *L. montuosa* is *L. donisthorpei* and for differences between them the reader should refer to the Comments for *L. donisthorpei*. *L. arcuata* is smaller than *L. montuosa* with a mostly smooth cephalic dorsum, except for sparse piligerous punctulae; the propodeal dorsum in *L. arcuata* is mostly smooth, whilst in *L. montuosa* it has shallow but quite distinct punctures. *L. arcuata* lacks the presence of appressed pubescence on the cephalic dorsum as in *L. montuosa*. This species was recognised as JTL-004 (cf. *donisthorpei*) by LATTKE & LONGINO (2009) in the Ants of Costa Rica website. Longino reports collecting a nest from beach strand vegetation at Tortuguero in a rotten branch attached to a tree close to ground level. Isopod remains were found within the nest.

Type material. Holotype worker. **COSTA RICA**, Limón, Tortuguero, < 100 m, 10°35′N 83°31′W, 1.–5.vii.1985, J. Longino 386. Deposited in the LACM. The same pin bears two point-mounted

workers, with the top worker designated as holotype. – Paratypes. Three workers with the same locality data as the holotype. One worker is on the same pin as the holotype and the two are on a single pin. All deposited in the LACM.

Other material studied. Costa Rica. **Cartago**: Cartago, 4.xii. 1911, W.M. Wheeler, 6w MCZC. **Guanacaste**: Isla Pelada, 18.vi. 2002, 3w JTLC. **San José**: San José, H. Schmidt, 1940, 7w 8m MZSP. **No locality**: Nevermann, 9m 11w MZSP. – **Panama**. **Los Santos**: E slope Cerro Montuoso, 500 m, 21.i.1987, E. Ross, 2w CASC. **Canal Zone**: Barro Colorado, [no date], P. Rau, 2w MCZC.

6.5.2.4. *Leptogenys santacruzi* n.sp. (Fig. 9)

Diagnosis. Pronotum with fine longitudinal striae in lateral view; propleuron striate; node rectangular and higher than long in lateral view, mostly smooth with scattered piligerous punctae, wider than long in dorsal view; body color brown.

Worker. Metrics, holotype (paratypes, n = 3): HL 1.29 (1.21–1.29); HW 1.06 (0.99–1.09); ML 0.86 (0.76–0.91); EL 0.30 (0.25–0.28); SL 1.34 (1.24–1.37); PW 0.81 (0.76–0.83); WL 2.02 (1.87–2.07); PH 0.81 (0.78–0.86); PL 0.56 (0.56–0.58); DPW 0.56 (0.53–0.61) mm. CI 0.82 (0.81–0.84); MI 0.81 (0.77–0.84); OI 0.29 (0.26–0.27); SI 1.26 (1.26–1.27); LPI 1.45 (1.41–1.55); DPI 1.00 (0.95–1.05).

Head subquadrate in full-face view; lateral margins broadly curved and weakly diverging anterad; posterior margin convex. Eye convex and large, spanning more than one-fourth of lateral cephalic margin, slightly dorso-laterally situated. Cephalic dorsum mostly smooth and shining with sparse piligerous punctae, striate-punctae between eye and antennal sclerite, and anterad of eye. Scape mostly smooth and shining, surpassing posterior cephalic margin by close to one-third its length; length of antennal segment III more than 2 × its width. Anterior clypeal margin laterally converging to median lobe, process about as long as wide, margins translucent, apex with 4–3 setae. Mandible slightly arched, parallel-sided with brief and weakly concave edentate masticatory margin, basal angle with short denticle; mandible leaves gap between clypeus when closed, at widest more than twice the mandibular width. Scape with abundant decumbent hairs. Apex of hypostomal tooth just visible in cephalic full-face view.

Mesosoma with prominent metanotal groove in lateral view: pronotal margin convex, mesonotum forms weak convexity, dorsal propodeal margin forms broad convexity, declivitous margin weakly convex to straight, unarmed. Lateral pronotal face with longitudinal striae, except for smooth strip along ventral margin; propleuron striate. Mesometapleural suture well impressed. Mesopleuron with variably sculptured or flat smooth areas; sculpture striate to rugulose, longitudinal or transverse; mesopleural carina developed along anterior half; metapleural-propodeal suture ill-defined. Mesonotum of similar length and width in dorsal view, anterior margin convex, posterior margin straight; metanotal groove scrobiculate. Metapleuron and propodeal lateral face with transverse to oblique striae, and irregular smooth areas, mesosomal dorsum mostly smooth and shining with broad, shallow piligerous punctae; spiracle opening elongate, directed posterolaterally. Tubercle of metathoracic spiracle rugulose.

Petiolar node with strongly convex anterior margin that overhangs anteroventral margin in lateral view, convexity continues to dorsal margin, posterior margin broadly convex; node higher than long. Node with weak longitudinal to oblique striae on side; posterior face mostly smooth and shining, separated from rest of node by strong curvature. Node as wide as long in dorsal view, anterior margin convex, almost as wide as posterior margin, posterior margin weakly convex. Gaster smooth and shining with sparse punctulae. Head, mesosoma and abdomen dark brown; clypeus, mandibles, antennae, and legs ferruginous brown; gastral apex ferruginous brown. Body without appressed pilosity, with numerous decumbent to subdecumbent hairs.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the name of Santa Cruz Island of the Galapagos Archipelago, the locality from which this species has been recorded.

Comments. This is an arid zone specialist as conditions on Santa Cruz Island are very dry during most of the year, except for a brief rainy season. The vegetation is deciduous and typically xeric, with the frequent presence of *Opuntia*, *Jasminocereus* cacti, and *Bursera graveolens* Kunth (Triana & Planch.), the incense tree (McCullen 1999). The shape of the node is quite distinctive amongst the *arcuata* species group with the posterior face not as sharply separated from the lateral node face and distinctly higher than long in lateral view, as well as wider than long in dorsal view. In all other *arcuata* group species the node is mostly striate laterally, but not in *L. santacruzi*, which is mostly smooth, and consequently the lateroventral flat smooth area is not as apparent as in the other species. The brown body color is also distinctive in the *arcuata* group.

Type material. Holotype worker. **Ecuador**, Islas Galapagos, Isla Santa Cruz, 2.5 km from SPNG limit, Pto. Ayora-Baltra Road, 29.iii.1982, Y.D. Lubin 123. Deposited in MCZC. – Paratypes. 9 workers with the same data as the holotype. MCZC.

Other material studied. Ecuador. Galapagos, Isla Santa Cruz, Las Grietas, 23.x.1992–19.i.1993, MT Lasso, K. Pazmiño, 2w CDRS.

6.5.3. *crudelis* species group

Worker diagnosis. Head longer than wide; eye diameter not more than one-third the length of lateral cephalic margin, eye weakly convex, dorsolaterally placed on head, circumocular sulcus absent; median clypeal lobe with lateral lamella, clypeal apex without setae, lateral clypeal lobe poorly developed; mandible shuts tight

against clypeus, basal mandibular sulcus well developed, mandible subtriangular; sulcus between tentorial pit and antennal sclerite shallow, scape surpasses posterior cephalic margin by at least one-fourth its length; third antennal segment longer than neighboring basal funicular segments. Mesonotum wider than long, not narrow; metanotal groove smooth, not scrobiculate; metapleural-propodeal suture absent; declivitous propodeal margin shorter than dorsal margin in mesosomal lateral view, propodeum with lobe or tooth; node subtriangular (*L. iheringi*, *L. vogeli*) to subquadrate (*L. crudelis*) in lateral view, petiolar node longer than wide in dorsal view; anterodorsal margin of third abdominal segment convex in lateral view, constriction between abdominal segments III and IV well developed; metacoxa with low posterodorsal swelling; protibial apex lacking seta, mesotibial apex with single seta, metatibial apex with (*L. crudelis*) or without (*L. iheringi*) apical seta; body mostly with smooth and shining sculpture; appressed pubescence lacking, scattered standing hairs present on dorsum of body

Included species. *L. crudelis*, *L. iheringi*, *L. vogeli*.

Comments. This group has three member species, all of similar size and general appearance, in southeastern Brazil. Ergatoid queens are known for *L. crudelis*, and *L. iheringi*.

Possible apomorphies. This group needs more scrutiny to extract decent support. The absence of a circumocular sulcus is uncommon amongst New World *Leptogenys*, yet ascertaining the extent of presence or absence of this sulcus is not without difficulties. A smooth and polished cuticle will hinder clear observation, especially in smaller sized species even if a strip of mylar is used to diffuse the light source. The sulcus between the tentorial pit and antennal sclerite is quite shallow, and this is usually well impressed in most species.

6.5.3.1. *Leptogenys crudelis* (F. Smith) (Fig. 10)

Ponera crudelis F. Smith, 1858: 97, pl. VI figs. 23, 24. Syntype workers: Brazil, Constancia, i.1857 (H. Clark) (OXUM, BMNH) [examined].

Lobopelta crudelis (F. Smith). Combination by MAYR 1886a: 358.

Leptogenys (*Lobopelta*) *crudelis* (F. Smith). Combination by EMERY 1911: 105.

Leptogenys (*Lobopelta*) *rubicunda* Borgmeier, 1930: 28, pl. IV figs. 13, 14, 17, 21, 25, 26. Syntype workers: Brazil, Rio de Janeiro, Petropolis, ix.1928 (A. Wiltuschnig) (MZSP) [examined]. Synonymy by BORGMEIER 1932: 485.

Diagnosis. Eye flat, its length almost one-fourth length of lateral cephalic margin; scape surpasses posterior margin by more than one-third its length. Anterior margin of node in dorsal view less than one-fourth width of posterior margin; constriction between third and fourth abdominal segments well marked.

Worker. Metrics (n = 5) HL 1.21–1.34; HW 0.76–0.81; ML 0.63–0.73; EL 0.18–0.25; SL 1.19–1.39; PW 0.68–0.71; WL 1.85–2.02; PH 0.68–0.73; PL 0.68–0.73; DPW 0.43–0.48 mm. CI 0.60–0.64; MI 0.83–0.97; OI 0.23–0.31; SI 1.56–1.72; LPI 0.93–1.00; DPI 0.59–0.68.

Head elongate, rectangular in full-face view, widest anterad than posterad, lateral margin broadly curved, curvature sharpest posterad; posterior cephalic margin straight with well-defined vertexal carina. Anterior clypeal process triangular, gradually tapering to blunt point; eye length almost one-fourth of lateral cephalic margin; eye flat, ocular mid-point closer to mid-length of cephalic lateral margin than to mandibular insertion. Mandibular dorsal surface smooth and shining, basal and external margins subparallel, masticatory margin edentate; basal angle blunt; PF: 4,3. Cephalic dorsum mostly smooth and shining; scape smooth and shining with abundant inclined pilosity; scape surpasses cephalic posterior margin by more than one-third its length; third antennal segment longer than either second or fourth segment, fourth antennal segment more than half as long as third segment; funicular segments subcylindrical, without sharp constriction between each.

Promesonotal dorsal margin forms more or less single convexity in lateral view, metanotal groove deep and broad, propodeal dorsal margin broadly convex, declivity sharply convex, propodeal lobes at spiracle height, bluntly triangular; mesosoma mostly smooth and shining; mesopleuron with carina along anterior margin and sparse low rugulae posteriorly; metapleural rugulose towards bulla; mesopleural suture impressed at level of metathoracic spiracle; mesometapleural suture well impressed, scrobiculate. Mesonotum wider than long in dorsal view, anterior margin convex, posterior margin straight to weakly concave. Propodeal spiracle elongate and oval, vertical; declivity with parallel transverse striae. Body smooth and shining with no appressed pubescence, with scattered subdecumbent to suberect fine golden hairs, scape with abundant decumbent pilosity.

Petiole roughly subquadrate in lateral view, with semi-vertical anterior and posterior margins, both tending to converge dorsad; dorsal margin convex, higher posterad than anterad, anteroventral process quadrate, with anterior and posterior angles. Posterior face of node smooth and shining, sides curving on to posterior face. Node in dorsal view triangular, slightly longer than wide; anterior margin convex, less than half as wide as posterior margin; lateral and posterior margins straight, joined by curves; node smooth and shining. Gaster with anterior margin almost vertical in lateral view, very broadly convex, curving strongly at a level 3/4 height of node, smooth and shining throughout; constriction between third and fourth abdominal segments well marked. Body dark brown; legs, mandible, and clypeus slightly lighter colored.

Queen. Metrics: HL 1.47; HW 0.96; ML 0.78; EL 0.35; SL 1.47; PW 0.83; WL 2.07; PH 0.91; PL 0.71; DPW 0.68 mm. CI 0.66; MI 0.82; OI 0.37; SI 1.53; LPI 1.29; DPI 0.96. Queen with usual differences from workers; three well-developed ocelli present.

Male. Unknown.

Comments. The worker syntype in the Hope Museum is on a card mount, along with a cocoon. The scape is partially glued to the card, thus the distance it surpasses the posterior cephalic border can not be totally gauged. The data label states: Constancia, Jan 1857, H. Clark. Type Hym 933. *Ponera crudelis*. The two syntype workers in BMNH bear the same locality and collector data as the OXUM worker but carry a data disk that is absent from the Oxford specimen, "57/43". The BMNH Accessions Register for 1857, no. 43 states, "May 16. Brazil. Presented by the Rev. Hamlet Clark. Collected at Constancia, Petropolis and other localities in the province of Rio. The localities are attached to each specimen". A worker in the MZSP is glued to a similar card as the type, and is also similar in the way the legs and antennae are spread. It bears a label stating Brazil, Col Smith, plus an additional label stating "compared with *Leptogenys crudelis* type, H. Donisthorpe det. 25.vii.1932". It also has another determination label by Borgmeier. Examination of the *L. rubicunda* types revealed no significant differences from *L. crudelis*, as Borgmeier (1932) realised when he studied the *L. crudelis* type, confirming what he suspected upon describing *L. rubicunda*.

This species is sympatric with *L. iheringi* in Bahia, and can be easily confused with it. *L. crudelis* has a thicker node along the anterior part, with a convex cross-section, in contrast with the thin node of *L. iheringi* in dorsal view, with vertical lateral sides, and more flattened top. The anterior margin in dorsal view is less than one-fourth the width of the posterior margin. The node of *L. iheringi* in lateral view has a continuously curved anterodorsal margin, and the eye in *L. iheringi* is weakly convex, whilst it is totally flat in *L. crudelis*. The scape surpasses the posterior cephalic margin by less than one-third its length in *L. iheringi* and the internal and masticatory mandibular margins meet through a rounded angle. The Paraná specimens have very parallel mandibles and a more pronounced mandibular angle, plus darker coloration.

Material studied. Brazil. **Bahia**: CEPEC, área Zoológica, km22 Ilhéus Itabuna, x.1986, J. Delabie 1w MZSP. **Paraná**: Bocaiuva, xii.1963, F. Plaumann, 7w MZSP. **Rio de Janeiro**: Petrópolis, 13.ix.1928, Wilt. coll. No. 744, 2w MZSP (*L. rubicunda* types). **São Paulo**: Ilha da Vitória, 16–27.iii.1964, Exp. Dept Zool 2590, 60w MZSP; Salesópolis, Estação Biológica de Boracéia, 31.i.1961, K. Lenko 1591, 3w MCZC, 32w 1q MZSP; Juquitiba, BR2, km76, 1.x.1961, W. Kempf 3419, 1w MZSP; Penha, viii.1931, Schwarztenmaier, 3w MZSP (5436).

6.5.3.2. *Leptogenys iheringi* Forel (Fig. 11)

Leptogenys (*Lobopelta*) *iheringi* Forel, 1911: 286. Syntype workers: Brazil, São Paulo, Raiz da Serra, 25.xi.1907 (v. Ihering) (MHNG, MZSP) [examined].

Diagnosis. Eye slightly convex, closer to cephalic capsule mid-length than to mandibles, diameter more than one-fourth length of lateral cephalic margin. Scape surpasses posterior cephalic border by more than twice its apical width. Petiole with highest point posterad in lateral view; anterior margin inclined and broadly curved, about half of height, then bends at obtuse angle and forms single curved anterodorsal margin more convex towards apex.

Worker. Metrics (n = 2) HL 1.14–1.27; HW 0.71–0.76; ML 0.53–0.56; EL 0.20–0.28; SL 1.14–1.32; PW 0.63–0.71; WL 1.75–1.92; PH 0.61–0.73; PL 0.71–0.78; DPW 0.38–0.43 mm. CI 0.60–0.62; MI 0.73–0.75; OI 0.29–0.37; SI 1.61–1.73; LPI 0.86–0.94; DPI 0.54–0.55.

Head in full-face view elongate, sides sub-parallel, lateral margin broadly convex; slightly diverging anterad; posterior margin convex, slightly flattened medially; median clypeal lobe triangular relatively narrow with acute apex, uniformly tapering; cephalic dorsum mostly smooth and shining with scattered punctulae; eye slightly convex, closer to cephalic capsule mid-length than to mandible, laterally situated on head, diameter more than one-fourth lateral cephalic margin. Mandible shuts tight against clypeus; masticatory border edentate, sometimes with small denticle at basal angle; mandible mostly of uniform width, ending in apical tooth; dorsal surface smooth and shining. Scape smooth, with abundant inclined pilosity; surpassing posterior cephalic border by more than twice its apical width; frontal lobe covers only half condyle; third funicular segment at least twice as long as first; third segment about two-thirds as long as third; funicular segments cylindrical, separated by weak constriction.

Mesosoma with deep and broad metanotal groove in lateral view, separating convexities formed by promesonotum and propodeum. Curvature of propodeum stronger towards declivity, interrupted by blunt triangular tooth, tooth appears jagged because of transverse striae, mesosomal sides mostly smooth and shining; mesometapleural suture broad, well impressed, scrobiculate; surrounding metanotal spiracle. Dorsum of mesonotum smooth and shining, wider than long, anterior margin convex, posterior margin transverse; declivity with transverse strigulae. Mesonotum broader than long (L/W = 0.60), anterior margin convex, posterior margin straight in dorsal view. Anteroventral carina of mesopleuron mostly effaced to weakly developed, projecting slightly anterodorsad as blunt tooth. Mesopleuron with few rugulae ventrally and rugulae around bulla; propodeal spiracle elongate.

Petiole with highest point posterad in lateral view; anterior margin inclined and broadly convex to mid-height, then bending at obtuse angle and forming single curved anterodorsal margin more convex towards apex; posterior margin broadly convex. Subpetiolar process brief, with anterior and posterior angles, posterior corner more ventrally projecting. Node, gaster smooth and shining; constriction between abdominal segments III and IV well marked. Node in dorsal view longer than wide; anterior face of node less than half the width of the posterior face; sides slightly concave; lateral faces

more or less flat; procoxa in lateral view smooth and shining. Body color dark brown; legs, mandibles, and antenna slightly clearer.

Queen. Metrics: HL 1.39; HW 0.85; ML 0.61; SL 1.24; ED 0.25 WL 1.98. CI 0.61; MI 0.72; SI 1.46; OI 0.29. Mesosoma with more convex propodeum in lateral view; propodeal tooth not projecting, appearing as continuation of declivity with posterior overhang. Mesopleuron with anepisternum differentiated, more convex than rest of sclerite; propodeal spiracle round. Node in dorsal view about as long as wide; triangular shaped with round anterior apex, posterior margin broadly convex. Node with length more or less equal to height in lateral view; anterior and posterior margins vertical, dorsal margin convex.

Male. Unknown.

Comments. Workers from the type series in Geneva are two on the same pin with a fully pigmented adult on top and a teneral below. A queen is mounted on a separate pin with the same data as the workers. There are 3 specimens in MZSP that also belong to the type series, with one bearing a cotypus label. FOREL (1911) claims that *L. iheringi* can be separated from *L. crudelis* by its unarmed propodeum, but the propodeum of all *L. iheringi* specimens examined have well-defined lobes, including the type specimens. This species can be confused with *L. crudelis* but the petiole in *L. iheringi* has a continuously curved anterodorsal margin in lateral view as compared with the vertical anterior margin and convex dorsal margin of the node in *L. crudelis*. Additional characters for separating these two species can be consulted in the comments for *L. crudelis*. The eyes are dorsolaterally situated on the head but with a lateral trend. A series of workers in the MZSP from Ipiranga in São Paulo key to *L. iheringi* and are quite similar in most aspects except for a more robust petiolar node and a weakly convex propodeal margin in lateral view.

Material studied. BRAZIL. Bahia: CEPEC, Area Zoológica, km22 Ilhéus Itabuna, x.1986, J. Delabie, 1w MZSP. **Rio de Janeiro**: Petrópolis, i.1956, 1w MZSP. **São Paulo**: Caraguatatuba, Reserva Florestal, 40 m, 23.v.–1.vi.1962, Exp. Dept. Zool, 2021, 9w MZSP; Serra Cubatão, V. Estr. Santos, 21.xi.1956, W. Kempf 1653, 1w MZSP; Est. Raiz de Serra, 25.xi.1907, H. Luederwalt, 3w MZSP; São Paulo, Ipiranga, J. Diniz, 8w MZSP; Boracéia Biol. Sta., 850 m, ii.1967, W.L. Brown, 2w 1m MCZC.

6.5.3.3. *Leptogenys vogeli* Borgmeier (Fig. 12)

Leptogenys (*Lobopelta*) *vogeli* Borgmeier, 1933: 226. Syntype workers: Brazil, Rio de Janeiro, Petropolis, i.1930 (M. Vogel) (MZSP) [examined].

Diagnosis. Head subrectangular in full-face view, slightly wider anterad than posterad; eye weakly convex, placed slightly dorsad from lateral margin, ocular mid-distance just anterad of mid-length of lateral cephalic margin, eye occupies one-third of lateral cephalic margin; second antennal segment one-half the length of third segment; node elongate and cuneiform in dorsal view.

Worker. Metrics (n = 2) HL 1.29–1.32; HW 0.78–0.83; ML 0.58–0.61; EL 0.28–0.30; SL 0.96–0.96; PW 0.73–0.76; WL 2.07–2.23; PH 0.61–0.68; PL 0.78–0.81; DPW 0.43–0.46 mm. CI 0.61–0.63; MI 0.73–0.74; OI 0.35–0.36; SI 1.15–1.23; LPI 0.75–0.87; DPI 0.53–0.58.

Head subrectangular in full-face view, slightly wider anterad than posterad; posterior margin straight to weakly concave; lateral margin broadly convex; median lobe with blunt apex; lateral lobe not projecting anterad. Eye weakly convex, placed slightly dorsad from lateral margin, ocular mid-distance just anterad of mid-length of lateral cephalic margin, eye occupies one-third of lateral cephalic margin. Scape surpasses posterior cephalic margin by distance more than one-third its length, scape thickest at basal third, thinner apically; mostly smooth and shining with piligerous punctulae. Second antennal segment one-half the length of third segment, length of fourth segment over half that of third; funicular segments subcylindrical. Cephalic dorsum mostly smooth and shining with sparse to dense piligerous punctulae; clypeus with low striae. Cephalic ventral surface mostly smooth and shining. Mandible shuts tight against clypeus, mandible of uniform width, basal margin sinuate, masticatory border edentate, separated from basal margin by blunt angle, dorsum mostly smooth and shining, basal groove strongly impressed.

Mesosoma with promesonotum forming broad convexity in lateral view, slightly higher than broadly convex dorsal propodeal margin; metanotal groove distinctly impressed, propodeal declivity with triangular lobe at spiracular height, lobe usually jagged on dorsal margin due to transverse striae. Pronotum smooth and shining with sparse piligerous punctae; ventral sulcus weakly impressed; mesosomal sides mostly smooth and shining, some transverse striae present along ventral margin of mesometapleura. Mesopleuron rectangular; mesometapleural suture broad, weakly scrobiculate; metapleural-propodeal suture absent, propodeal spiracle oval and facing laterad; metathoracic spiracle crescent shaped, spiracular prominence flattened to slightly convex, oval to elliptical. Mesonotum wider than long in dorsal view, posterior margin anteriorly convex; propodeal declivity with transverse strigae, median area with broad transverse concavity. Posterior mesosoma widest just anterad of propodeal spiracle in oblique dorsal view, becoming narrower towards metathoracic spiracles.

Petiole in lateral view triangular with convex anterodorsal margin and a vertical to weakly convex posterior margin, smooth and shining; node elongate and cuneiform in dorsal view with anterior margin less than half as wide as posterior margin, lateral margin broadly concave. Third abdominal segment with convex anterodorsal margin in lateral view; constriction between abdominal segments III and IV well developed; gaster smooth and shining with sparse piligerous punctulae; pygidial

dorsal margin broadly convex in lateral view. Procoxa mostly smooth and shining in lateral view, with sparse punctulae. Scape, mandible, legs, and gastral apex dark brown; funiculus ferruginous brown.

Queen, male. Unknown.

Comments. Borgmeier (1933: 226) compares *L. vogeli* with *L. anacleti*, a junior synonym of *L. luederwaldti*, but *L. vogeli* is very similar to *L. gaigei*. *L. vogeli* principally differs from *L. gagei* in the more elongate head, and lack of the transparent cuticular lobe next to the strigil on the protibial apex. Additionally, the compound eye in *L. vogeli* is broadly convex, not as flattened as in *L. gaigei*. The metanotal groove as well as the constriction between abdominal segments III and IV is more impressed than in *L. gaigei*. It usually has a more convex promesonotal margin when viewed laterally but this can vary as well as the degree of development of the propodeal lobes. Two type specimens were examined in São Paulo, one lacks both foretibia, but the other is complete, save one antenna, and the gaster is separated from the rest of the body but firmly glued to the mounting cardstock. The two specimens (MZSP) used for the present description were unfortunately somewhat caked with dirt, partially obscuring at least some fine details such as setae, pilosity, and iridescence.

Material studied. Brazil. Rio de Janeiro: Petrópolis, 31.viii. 1934, W. Kempf, 1w MZSP; Petrópolis, T. Borgmeier, 2w MZSP; Petrópolis, i.1930, M. Vogel, 2w MZSP.

6.5.4. *elongata* species group

Worker diagnosis. Head not subrectangular, lateral margins convex, posterolateral margins convergent. Mandible variable in shape, ranging from triangular to elongate and falcate, mandibular masticatory margin edentate, basal sulcus variably developed from shallow to deep; median clypeal lobe prominent, longer than ocular malar distance (except *L. oaxaca*, *L. chamela*); no setae on clypeal apex (except *L. foraminosa*); PF: 4,3. Eyes dorsolaterally situated on head; eye diameter usually between one-fourth and one-third the length of lateral cephalic margin in full-face view, rarely more; scape surpasses posterior cephalic margin by over one-fourth its length, third antennal segment elongate compared with neighboring funicular segments; funicular segments subcylindrical (except *L. chamela*, *L. bifida*); median clypeal lobe with lateral lamella; mesosoma with abundant sculpturing, not smooth and shining; propleuron transversely striate to rugulose; metanotal groove deeply impressed (variable in *L. sianka*), smooth or scrobiculate; mesonotum longer than wide to wider than long, never narrow and transverse; anteroventral carina weak to absent especially ventrad (distinct in *L. volcanica*, *L. elongata*); metapleural-propodeal suture weakly developed to absent; propodeum unarmed or with low lobes or teeth; propodeal spiracle mostly elongate to almost slit-shaped, sometimes oval, facing posterad (posterolaterally in *L. bifida*), followed posterad by sulcus; dorsal and declivitous propodeal margins form single convexity in lateral view; node subquadrate in lateral view; anterior margin of abdominal segment III mostly vertical and weakly convex; constriction between abdominal segments III & IV usually weak, moderate at best; dorsum of head, mesosoma, petiole, and at least gastral segments I–II with appressed pubescence and standing hairs; protibial apex lacking setae; apex of mesotibia usually with single seta (none in *L. peninsularis*, *L. sonora*); metatibial apex with 0 or 1 seta; metacoxa lacking basal swelling.

Included species. *L. bifida*, *L. chamela*, *L. elongata*, *L. foraminosa*, *L. honduriana*, *L. manni*, *L. oaxaca*, *L. peninsularis*, *L. sianka*, *L. sonora*, *L. volcanica*.

Comments. These are the New World *Leptogenys* with the northernmost distribution, including *L. elongata* found from northern Mexico to Texas and Louisiana (U.S.A.), and *L. manni*, found in Florida, U.S.A. Most species are found in Mexico and Central America with a few reaching northwestern Colombia. All are of moderate to large size. Besides species found in temperate climates, the group also has species endemic to arid localities such as *L. sonora* in the Sonoran Desert and *L. peninsularis* in the Baja Peninsula of Mexico, and in lowland and montane humid forests also. The extent of development of the propodeal armature can vary from distinct teeth to low lobes or entirely edentate (*L. sonora*, *L. chamela*, *L. peninsularis*, and *L. manni*). Within *L. elongata*, the lobes may vary in development. The propleuron is usually mostly smooth and shining in this genus with sculpturing limited to the periphery, but the *elongata* species bear rough sculpturing throughout this sclerite and on most of the head and mesosoma as well. This is also accompanied by the presence of pubescence on the head and mesosoma. The trend in many groups seems to be towards smooth and shining sculpturing, and loss of pubescence. Ergatoid queens are known for several species in this group.

Possible apomorphies. A good number of plesiomorphies provide uniting criteria for this collection of species, where the only possible apomorphy detected so far seems to be the weakening and effacement of the anteroventral mesopleural carina, especially ventrad. This carina is normally well-defined in this genus. Noise is produced by two exceptions to this within the group and by the lack of this carina in *L. panops*, an *incertae sedis* species with enough characters to place it closer to the *arcuata-unistimulosa* lineage, safely away from the *elongata* species.

6.5.4.1. *Leptogenys bifida* n.sp. (Fig. 13)

Diagnosis. Eye prominent and bulging, placed close to cephalic mid-length; apex of median clypeal lobe bidentate; mandible widest apicad; mesonotum and propodeal dorsum transversely strigulose.

Worker. Metrics, holotype (paratypes, n = 2): HL 2.20 (2.20–2.35); HW 1.90 (1.85–1.95); ML 1.45 (1.45–1.50); EL 0.45 (0.45–0.45); SL 2.80 (2.75–2.90); PW 1.50 (1.50–1.55); WL 4.05 (4.00–4.20); PH 1.10 (1.05–1.40); PL 1.25 (1.20–1.30); DPW 0.95 (0.90–1.00) mm. CI 0.86 (0.83–0.84); MI 0.76 (0.77–0.78); OI 0.24 (0.23–0.24); SI 1.47 (1.49–1.49); LPI 0.88 (0.88–1.08); DPI 0.76 (0.75–0.77).

Head in full-face view wider anterad than posterad, posterior margin convex, occipital carina visible; lateral margin broadly convex, almost straight; median clypeal lobe ending in two blunt diverging teeth, lateral clypeal lobe modest, slightly sinuate. Transverse sulcus present from tentorial pit to antennal sclerite. Clypeus strigulose; head mostly longitudinally rugulose posterad of antennal insertions, becoming rugulose-punctate on frons, rugulae finer and more transverse towards vertex. Eye semispherical, dorsolaterally placed on head close to mid distance of lateral cephalic margin. Cephalic ventrum has anteriorly converging carinae. Scape surpasses posterior cephalic border by almost one-half its length; third antennal segment almost twice the length of second and longer than combined lengths of fourth and fifth. Mandible separates from clypeus at insertion, gap progressively wider towards mandibular apex, mandible widest apicad; masticatory margin edentate except for apical tooth; dorsal surface mostly smooth with sparse piligerous punctae and faint longitudinal strigulae.

Mesosoma with dorsal pronotal margin forming single convexity in lateral view; mesonotum distinct and broadly convex, metanotal groove deep; propodeal dorsum forms convexity more than twice the length of declivity; low triangular tooth present just above bulla. Pronotum with longitudinal strigulae in lateral view; strigulae curving around anterior pronotal face, pronotal disc with longitudinal strigulae; pronotum distinct, wider than long; propodeal declivitous face transversely strigulose, lateral margins rounded. Mesopleuron rugulose, with anteroventral laterally projecting lobe; meso-metapleural groove distinct, metapleural propodeal suture indistinct; propodeal spiracle elongate, surrounded by sulcus.

Petiole subquadrate in lateral view; anterior margin mostly straight to convex with brief basal convexity, dorsal margin convex to straight, posterior margin broadly convex, almost straight. Laterally rugulose on dorsal half, ventral half of lateral face tending to smooth with longitudinal strigulae. Node sub-rectangular in dorsal view, anterior margin almost as wide as posterior margin. Gaster shining, with abundant piligerous punctulae each separated from each other by a distance similar to their diameter. Head, mesosoma, and node black; gaster dark brown; mandible, antennae, and legs dark brown; body with standing pilosity, scape with abundant decumbent pilosity and scattered decumbent hairs, none standing.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the bidentate apex of the median clypeal lobe. It is derived from the Latin for bifurcate, *bifidus*.

Comments. The bidentate apex of the median clypeal lobe is unique amongst New World *Leptogenys*, making this large species easy to determine. The specimens were taken from forest litter.

Type material. Holotype worker. **HONDURAS**, 14 km S La Ceiba, forest litter, G.V. Manley, 1979. Deposited in MCZC. – Paratypes. Two point-mounted workers with the same data as the holotype, one worker has a pupal cocoon glued on the same point. Deposited in MCZC.

6.5.4.2. *Leptogenys chamela* n.sp. (Fig. 14)

Diagnosis. Head noticeably wider anterad than posterad; compound eye diameter covers approximately one-third of lateral cephalic margin; scape surpasses posterior cephalic border by close to one-half its length. Mandible arched, elongate and slender, basal and external margins parallel, dorsum smooth and shining. Hypostomal tooth triangular, apex just visible in full-face view of head. Node longer than wide in dorsal view. Body color mostly black, with antennae, mandibles, legs, and gastral apex dark brown.

Worker. Metrics, holotype (paratype): HL 2.35 (2.35); HW 2.20 (2.10); ML 1.85 (1.70); EL 0.40 (0.45); SL 2.90 (2.80); PW 1.60 (1.50); WL 4.10 (4.00); PH 1.55 (1.55); PL 1.40 (1.45); DPW 1.05 (1.00) mm. CI 0.94 (0.89); MI 0.84 (0.81); OI 0.18 (0.21); SI 1.32 (1.33); LPI 1.11 (1.07); DPI 0.75 (0.69).

Head approximately as wide as long in full-face view, noticeably wider anterad than posterad, posterior margin convex, lateral margin broadly convex; vertexal carinae distinctly visible along most of posterior margin. Median clypeal lobe bluntly-pointed, opaque; lateral lobe narrow, weakly sinuate. Compound eye prominent, convex, diameter covers approximately one-third of lateral cephalic margin, situated close to cephalic midlength; ocular perimeter abruptly separated from circumocular sulcus. Cephalic dorsum posteriorly densely punctate, punctae forming imbricate pattern, head between eye and antenna striate to rugulose; head posterad of eye obliquely striate, ventral cephalic surface striate punctate with smoothened anterior area; clypeus with oblique striae. Scape surpasses posterior cephalic border by close to one-half its length; punctulate, with decumbent pubescence and scattered decumbent hairs. Funicular segments elongate, subcylindrical, slightly wider apicad than basad; third antennal segment 4 × longer than maximum width; second antennal segment half the length of third; fourth antenna segment slightly more than half the length of third segment. Mandibles arched, elongate and slender, basal and external margins parallel, dorsum smooth and shining. Hypostomal tooth triangular, apex just visible in full-face view of head.

Mesosoma with deep metanotal groove in lateral view, dividing broadly convex promesonotal margin and broadly convex propodeal margin. Pronotum laterally with longitudinal to oblique strigae, small mostly

smooth strip present just dorsad of procoxae, dorsum medially mostly punctate with scattered transverse striae, anterior margin transversely striate; prosternum transversely striate. Mesonotum broader than long in dorsal view, transversely striate-punctate. Mesopleuron transversely strigate, anteroventrally without low blunt lobe, anteroventral carinae lacking; mesosternum with transverse striae; metapleuron-lateral propodeum mostly with transverse striae; metapleural-propodeal suture weakly developed. Bulla of metathoracic spiracle convex, prominent, finely sculptured; anteroventral metapleural corner with triangular lobe. Dorsum and declivity of propodeum transversely strigate; propodeal spiracle elongate, almost slit-shaped.

Petiole subrectangular in lateral view with anterior margin shorter than posterior margin, dorsal margin longer than posterior or anterior margins, anterior margin strongly convex, dorsal margin broadly convex, highest point close to mid-length of node, posterior face slightly inclined anterad, broadly convex. Node laterally longitudinally strigate to striate, tending to smooth ventrad, posterior face transversely strigate. Petiolar sternum with posterior weak convexity in lateral view, anterior process shaped as curved lobe. Node longer than broad in dorsal view, sides subparallel, anterior margin convex, posterior margin concave. Anterior margin of abdominal segment III inclined posterad in lateral view, anterodorsal margin convex. Gaster mostly smooth and shining with scattered fine punctulae, punctulae diminishing in density posterad. Pygidial margin broadly convex in lateral view, with blunt median crest. Procoxa transversely striate in lateral view. Body with abundant appressed pilosity that interferes with observing underlying sculpture, and erect to semi-erect hairs. Body color mostly black, with antennae, mandibles, legs, and gastral apex dark brown. Meso and metatibia external apex each with single seta.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the name of the "Chamela" biological station of the Universidad Nacional Autónoma de México.

Comments. This is a large species approaching *L. ingens* in length and body mass.

Type material. Holotype worker. **Mexico**, Jalisco, Estación Biológica Chamela, 19°30′N 105°02′W, 60 m, 5.vi.1994, D. Olson. One worker deposited in MCZC. – Paratype. **Mexico**, Jalisco, Estación Biológica UNAM "Chamela", 7.vi.1984, D. Feener 0677. One worker deposited in BMNH.

6.5.4.3. *Leptogenys elongata* (Buckley) (Fig. 15)

Ponera elongata Buckley, 1866: 172. Holotype worker: United States, Texas [not examined].

Leptogenys elongata (Buckley). Combination by Emery 1895: 338.

Ponera texana Buckley, 1866: 170. Holotype worker: United States, Texas [not examined]. Synonymy by Wheeler 1902: 25.

Lobopelta septentrionalis Mayr, 1886b: 438. Syntype workers: United States, Districte Columbia (Pergande) (NHMW) [examined]. Synonymy by Wheeler 1902: 25.

Lobopelta mexicana Mayr, 1870: 966. Holotype worker: Mexico (Bilimek) (NHMW) [examined] **n.syn.**

Diagnosis. Head sub-quadrate to sub-rectangular in full-face view, wider anterad than posterad; anterior clypeal margin tapers evenly to median process, lateral lobes weakly developed; mesosternum sharply separated from mesopleuron by carina that expands anterad into modest lobe; surface of head and mesosoma dull, with coarse punctuations; color deep yellow-red to black.

Worker. Metrics (n = 8): HL 1.35–1.55; HW 1.01–1.11; ML 0.81–0.88; EL 0.24–0.34; SL 1.42–1.69; PW 0.84–0.91; WL 2.22–2.56; PH 0.88–0.91; PL 0.71–0.84; DPW 0.51–0.57 mm. CI 0.71–0.80; MI 0.75–0.84; OI 0.23–0.32; SI 1.27–1.61; LPI 1.13–1.23; DPI 0.65–0.81.

Head sub-quadrate to sub-rectangular in full-face view, wider anterad than posterad; lateral margin anterad of eye straight, and posterad of eye broadly convex; posterior cephalic margin straight to broadly convex; median clypeal process tapers to rounded, lamellate apex, apex with two long hairs, no setae; lateral process narrow, its outline smoothly joining with outline of median process. Eye broadly convex, occupies under one-third of lateral cephalic margin, situated at mid-length, slightly dorsad. Cephalic dorsum densely punctate, distance between each depression less than their respective diameter, longitudinal to oblique striae present between eye and antennal insertion; longitudinal sulcus stretches from between frontal carinae to mid-eye height. Scape mostly smooth and shining with fine punctulae and abundant decumbent pilosity and occasional hairs, scape extends beyond posterior cephalic margin by one-fourth its length; third funicular segment 3 × longer than apical width, about two-thirds length of second segment; each funicular segment wider apicad than basad. Mandible triangular, shuts tight against clypeus, with fine weak longitudinal striae and sparse punctae; chewing border edentate, basal angle blunt; PF: 4,3.

Mesosoma with broad and deep metanotal groove in lateral view that separates promesonotal margin and dorsal propodeal margin, both broadly convex; lateral pronotal sculpture mostly longitudinally rugulose, obliquely transverse on mesometapleural and lateral propodeal faces. Mesometapleural suture well impressed; metapleural-propodeal suture not impressed or appearing as brief narrow ledge just anterad of propodeal spiracle; propodeal spiracle elongate, slit-shaped, oriented posteriorly; dorsum of pronotum with arching rugulae; rugulae on propodeal dorsum mostly transverse with striae close to petiolar insertion; declivitous face transversely striate, rounding to lateral propodeal face, not separated by sharp ridge; propodeum with low triangular lobe at spiracle height; prosternum transversely striate to rugulose. Mesosternum sharply separated from mesopleuron by carina that expands anterad into modest lobe, lobe with crest that extends mesad on mesosternum delimiting narrow transverse area on anterior mesosternal mar-

gin; mesonotum slightly elongate in dorsal view, anterior margin convex; metanotal groove straight to convex, smooth.

Petiole sub-quadrate to elongate in lateral view, higher posterad than anterad; anterior margin more than one-half height of posterior margin, anterior margin straight, dorsal margin convex, posterior margin weakly convex to straight. Subpetiolar process rectangular to lobe like in lateral view with concave posterior margin. Node subquadrate to elongate in dorsal view; anterior margin convex, more than half width of posterior face; posterior face straight; sides straight to very broadly convex. Posterior face rounds to lateral face, sometimes separated ventrad by low ridge; lateral node face with longitudinal striae dorsad, ventrad tending to smooth with weak undulations and rugosities; dorsum with transverse to oblique low striae. Anterior postpetiolar margin broadly convex in lateral view, curving onto dorsal margin; gaster smooth and shining, constriction between abdominal segments III and IV well marked; procoxae with sparse low rugulosities, mostly smooth. Body with abundant decumbent pilosity and scattered standing-suberect hairs. Head, mesosoma node and most of gaster black to ferruginous brown or ferruginous; antenna, mandibles, legs and apex of gaster brown to ferruginous. Meso and metatibial apex each with single external seta.

Queen. Metrics (n = 2): HL 1.38–1.42; HW 1.08–1.15; ML 0.81–0.88; EL 0.27–0.30; SL 1.45–1.55; PW 0.88–0.91; WL 2.26–2.29; PH 0.78–0.81; PL 0.67–0.71; DPW 0.67–0.67 mm. CI 0.76–0.83; MI 0.75–0.76; OI 0.25–0.26; SI 1.34–1.35; LPI 1.10–1.20; DPI 0.95–1.00. Similar to worker except for: head more oval shaped in full-face view, propodeal dorsum more convex in lateral view; petiolar node wider than long in dorsal view, and gaster relatively larger in size.

Male. Not measured. Head mostly smooth and shining with some transverse striae anterad of antennal fossae. Pronotum mostly punctate, punctae denser medially than laterally; anterior mesonotum separated by gap from posterior pronotum. In dorsal view scutum with shallow impressed medial line extending anterad from anterior base of scutellum, bifurcating and joining notauli between tegulae; parapsidal line impressed from anterior base of axilla until almost touching notaulus; impressed lines with same color as surrounding cuticle. Mesonotum and mesopleuron mostly smooth and shining with punctulae; metapleuron and propodeum mostly with low rugulosities.

Comments. It was not possible to locate the types of *Leptogenys* described by Buckley nor ascertain if they exist. S.B. Buckley described many species of plants and animals during his lifetime and left a legacy of poor descriptions and apparent absence of type specimens which have since vexed myrmecologists and other taxonomists (MAYR 1886b; WHEELER 1902). At least some ant types existed during the late 1870's in the collections of the Academy of Natural Sciences of Philadelphia, but regrettably vanished later on (SNELLING 1995). The descriptions of both *L. elongata* and *L. texana* seemingly agree with the present concept of *L. elongata*, but the possibility exists they could be something else. If more investigations into the whereabouts of the Buckley types can soundly conclude they do not exist or met a unfortunate end, neotype designation should be considered. As aptly put by SNELLING (1995), "The identity of Buckley's species must, of necessity, rely on speculation".

The examination of both syntypes of *L. septentrionalis* revealed nothing that could render it different from *L. elongata*, thus supporting Wheeler's synonymy. The description of this species cites "Districte Columbia" as the type locality, an obvious error as the District of Columbia lies far beyond the range of *L. elongata*. MAYR (1870) described *L. mexicana* from a specimen apparently collected by D. Bilimek, though Emery's last name figures alongside that of Bilimek perhaps hinting the Bilimek collected ant came to him by way of Emery. Emery did not venture far from Italy, but Bilimek did collect in Mexico. The NHMW type of *L. mexicana* was the only type specimen of the species to be found, at least in the major European and US museums, implying the species was described from a single specimen. Mayr gave importance to the heavily punctate sculpturing which he asserted to distinguish the new species from all other congeners. Such sculpturing is now known to exist in several other *Leptogenys*, including the form *L. elongata*. Even though Mexican specimens tend to have heavier punctation than those from Texas, heavily punctate specimens can also be found north of the Río Grande whilst sparsely punctate specimens can also be found south of said river. The northern populations are lighter colored than the southern populations, but the two shades are not contrastingly different when compared throughout the distribution range. Specimens from Texas and Louisiana are yellow-red to brown-red, with Mexican specimens ranging from black to very dark brown. On average the shape of the petiole seen dorsally is relatively slender in Texas material whilst it is commonly more subquadrate in Mexican specimens, but Mexican specimens with slender petioles exist, as well as specimens from Texas or Louisiana with a more robust petiole. The shape of the parameres and aedeagus in Mexican males is similar to those of males from northern localities, further undermining the species status of *L. mexicana*.

L. elongata can be easily confused with *L. manni*, the putative sister species, originally described as a subspecies of *L. elongata* by WHEELER (1923) and elevated to species rank by TRAGER & JOHNSON (1988). The diagnosis should suffice to separate the two, but additional characters are given in the discussion for *L. manni*. Judging from the amount of specimens deposited in various collections, Mesa de Chipinque near Monterrey, and central Texas constitute reliable localities for collecting this species. TRAGER & JOHNSON (1988) point out the months of March to May as optimal for finding

these ants beneath rocks and logs. Disturbed habitats, such as highway rights of way, are also favored by these ants, perhaps due to the availability of the tramp isopod *Armadillidium* sp. Wheeler (1900, 1904) studied the biology of this species and additional information is available in Trager & Johnson (1988). This species is cited (Dejean et al. 1995; Dejean & Olmsted 1997) as nesting in rotting ramets of the bromeliad *Aechmea bracteata* in the Reserva Sian Ka'an in Quintana Roo, Mexico, but an examination of voucher specimens in the LACM revealed that it is actually another *elongata* group species, *L. sianka*, described in this revision. Quiroz-Robledo & Valenzuela-González (2007) record the species from the state of Morelos inhabiting tropical deciduous forest and thorn forest between the altitudes of 990–1190 m.

Material studied. Mexico. **Hidalgo**: Highway 85, La Placita, 8 mi SW Jacala, 1646 m, 13.vii.1973, R. Snelling, 6w LACM, 2w MCZC; Highway 85, km225, Pelillos Pine Forest, 25.vii.1965, 1m 2w MCZC. **Jalisco**: Atenquiqui, 9 mi W, 2011 m, 17.vii.1966, J. Dixon, 8w LACM; 5 mi S Mazamitla, 6200 ft, 4.viii.1971, R. Hamton, 2w LACM; Puerto Los Mazos, 10 mi SW Autlan, 4400 ft, 25.ix.1973, A. Newton, 1w MCZC. **Michoacan**: 16 mi N Uruapan, 7500 ft, 1.viii.1952, F. Werner, 4w MCZC. **Nuevo León**: Monterrey – Chipinque, 18.iii.1986, W. MacKay 7657, 2w WPMC; Monterrey – Chipinque Park, 29.iii.1990, J. García Pérez 65, 6w 1m WPMC; Monterrey, Mesa de Chipinque, 1365 m, 17.vii.1973, W.L. Brown, 1w MIZA; Iturbide, 1800 m, 16.vii.1979, P. Ward 3709, 1w PSWC. **Tamaulipas**: ca. Guatemala, Rancho del Cielo, 23.vii.1965, 1070 m, Cornell Univ. Mexico Field Party, 5w 1m MZSP, 5w 1q MCZC, 3w LACM; Rancho del Cielo, 17 km NW Rancho Farias, 1160 m, 21.–22.vii.1979, P.S. Ward 3749, 3w PSWC; Rancho del Cielo, 8 mi NW Gomez Farias, 1.vi.1964, J. Reddell, 1w LACM. **Vera Cruz**: Tlapacoyan, 480 m, 7.vi.1988, W. MacKay, 1w WPMC; 9 mi S Tlapacoyan, 945 m, 9.–14. vii.1971, A. Newton, 1w MCZC; Jalapa, 3.vii.1941, C. Seevers, 2w MCZC. – **United States**. **Louisiana**: Sam Houston State Pk, 13.vii.1965, 1m MCZC; Marksville, 25.vi.1908, 5w USNM; Sam Houston State Park, 17.viii.1987, W. MacKay, 3m 3w WPMC; 10 km N Kurten, 10.iv.1987, W. MacKay, 17w 1q WPMC; Shreveport, 6.viii.1948, 2m USNM; DeRidder, 27.v.1942, W. Burton, 3m USNM, 9w LACM. **Texas**: Hidalgo, 24.vi.1948, 6m MZSP; Sam Houston Nat. For., 11.3 mi SW Junction Route 30 on Farm Road 1791, 2.v.1993, S. Cover 3512, 4w MCZC; Austin, Brackenridge Field Lab, 140 m, 4.xii.1983, J. Longino 1, 2w LACM; Austin, US 183, 7.5 mi W I-35, Cox Farm, 13.viii.1965, 2m MCZC; Austin, 21.iii.1933, 1w LACM; Austin, 14.ix.1942, F. Buren, 6w 3m LACM; Mission, 30 m, 15.xii.1984, J. Longino 89, 1w LACM; Peach Creek, 22.vii.1987, 14m WPMC; La Grange, 19.iii.1989, W. MacKay, 8w WPMC; 9.3 km N Leakey, 15.iii.1990, W. MacKay, 2w 1q WPMC; Zilker Park, Barton Creek, 6.v.1993, S. Cover, 2w MCZC; Brownsville, 7.xii.1910, M. Tanquary, 1w MCZC; Kerr Wildlife Management Area, 610 m, 7.–8.xi.1983, 1w LACM; Tiger Mill, F. Fuchs, 1w USNM; Victoria, 1.v.1915, J. Mitchell, 6w 2m USNM; Victoria, 19.v.1917, J. Mitchell, 3w LACM; Brokeback Cave, 16.viii.1964, J. Reddell, 1w LACM; Buescher St. Pk, 3.v.1988, R. Anderson, 3w WPMC; Blanco State Park, 16.vi.1972, Phelps, 1m WPMC; College Station, 8.–9.vi.1977, J. Jackman, 5m WPMC; Houston, Berckman, [no date] 3w USNM; Sequin, 26.vi.1938, 3m USNM; Abilene, 9.xi.1904, A. Morrill, 1w USNM; Kingsville, 27.vii.1976, G. Gillaspy, 3w USNM; Richmond, Brazos River, 22.vi.1917, 2m USNM; Richmond, 22.vi.1917, 2m LACM; Tooth Cave, 15 mi NW Austin, 2.iii.1963, J. Reddell, 1w LACM; Bexar County, Skull Cave, 25.ix.1984, G. Veni, 1w LACM; Edinburg, 25.x.1942, F. Buren, 3m LACM; Tonkawa Park, 30.vii.1964, A. Cole, 3w WPMC; Kleburg Airport, 20.vii.1987, 3m WPMC; Deer Lick Creek, 15.vii.1987, 4m WPMC; Cyprus Mills, 2m USNM; Wharton, 24.vi.1917, 3m USNM; Hightower, 24.vi.1933, E. Kalmbach, 2w USNM; Garner State Pk, 1300 ft, 7.iii.1952, W. Creighton, 3w LACM.

6.5.4.4. *Leptogenys foraminosa* n.sp. (Fig. 16)

Diagnosis. Cephalic dorsum with fine striae anterad, densely areolate posterad; eye laterally placed on head; Median clypeal process broadly triangular, apically with 2–3 setae; prothorax smaller in size than rest of mesosoma; procoxa smooth in lateral view with series of punctae along longitudinal axis of coxa; propodeal dorsum areolate-rugulose anterad, posterad densely punctate to imbricate, laterally ruglose-punctuate to striate-punctuate.
Worker. Metrics, holotype (non-type specimens, n=3): HL 1.65 (1.45–1.55); HW 1.15 (1.01–1.08); ML 0.91 (0.78–0.84); EL 0.34 (0.27–0.30); SL 1.85 (1.79–1.79); PW 0.94 (0.84–0.91); WL 2.63 (2.39–2.46); PH 1.11 (0.91–0.98); PL 0.98 (0.78–0.91); DPW 0.74 (0.67–0.67) mm. CI 0.69 (0.68–0.70); MI 0.79 (0.75–0.83); OI 0.29 (0.27–0.28); SI 1.62 (0.00–1.77); LPI 1.14 (1.07–1.17); DPI 0.76 (0.74–0.87).

Head in full-face view elongate, slightly wider anterad than posterad, posterolateral margins form inverted "U", posterior margin convex, lateral margin broadly convex. Median clypeal process broadly triangular, apically with 2–3 setae, lateral lobe with sinuate lateral margin, wider anterad than posterad, forming obtuse angle with lateral margin of median lobe; anterior clypeal margin without translucent lamella. Eye laterally placed, slightly closer to median cephalic length than to mandibular insertion, eye length just under one-third that of lateral cephalic margin. Scape densely punctuate, surpassing posterior cephalic border by over one-third its length; second antennal segment more than half the length of third, length of third segment at least 3 × apical width, funicular segments subcylindrical, weakly narrower basad than apicad. Cephalic dorsum with fine oblique striae between eye and clypeus, posteromedially becoming areolate-rugulose and areolate towards vertex, shallow piligerous punctae sparsely impressed; clypeus mostly striate. Head ventrad of eye shallowly punctuate with space between depressions slightly wider than on frons, ventral cephalic surface with fine arching parallel striae and sparse punctae, devoid of areolae; stipes longitudinally striolate, labium smooth. Mandible elongate, basal and external margins subparallel, weakly widening apicad; basal margin broadly convex, basal angle well developed, masticatory margin broadly concave; dorsal surface with sparse punctae and weak longitudinal strigulae.

Mesosoma with dorsal margin divided by deeply impressed metanotal groove in lateral view, prothorax dwarfed in size by rest of mesosoma; pronotal dorsal margin convex, mesonotal margin broadly convex to straight, propodeal dorsal margin broadly convex, rounding smoothly to declivitous margin, propodeum unarmed. Meso-metapleural suture distinctly impressed, scrobiculate; metapleural-propodeal suture well impressed. Most of pronotum areolate-rugulose to areolate-striate, becoming smooth lateroventrad, anteriorly transversely striae; most of mesometapleuron with fine

striae, striae arching and oblique on anterior mesopleuron. Propodeal spiracle elongate to oval, facing posterad laterad; declivitous face flat, with fine transverse parallel striae. Mesonotum wider than long, anteriorly convex, posteriorly concave, areolate-rugulose; propodeal dorsum areolate-rugulose anterad, posterad densely punctate to imbricate, laterally rugulose-punctuate to striate-punctuate. Propleuron with oblique, parallel strigae; weak carina separates mesopleuron from mesosternum.

Petiolar node subquadrate in lateral view, anterior margin weakly convex, dorsal margin straight, posterior margin straight, slightly inclined anterad. Dorsum of node coarsely imbricate with sparse punctae, sculpturing smoothens laterad, lateral margins of node in cross-section at mid-length convex. Node subrectangular in dorsal view, slightly widest posterad. Postpetiolar anterior margin mostly vertical, weakly convex in lateral view; gaster shining with abundant piligerous punctulae, constriction between abdominal segments III & IV weak, stridulitrum visible on pretergite of abdominal segment IV. Body with abundant appressed pilosity and standing hairs; scape with appressed pilosity and few standing hairs. Head, mesosoma, and most of gaster black; mandible, scape, legs, and gastral apex dark brown; funiculus mostly ferruginous. Apex of meso- and metatibia each with single external seta, procoxa smooth in lateral view with series of punctae along longitudinal axis of coxa.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the abundant depressions formed by punctae and areolae on the body of this ant, and is derived from the Latin adjective *foraminosus*, which means full of holes.

Comments. The Colombian specimens have a slightly smaller HL, though with such few specimens at hand this could not be called a trend. The ant from Chocó lacks antennae and has a more subquadrate head, with the posterior cephalic margin well differentiated from the lateral margin, inconspicuous lateral clypeal lobe, and weak posterior propodeal lobe. The Bolívar specimen has punctae on the node dorsum forming deep irregular sulci. The Panama ant was taken from litter berlesate, and the Chocó ant was taken in mangrove and secondary forest, in a malaise trap.

Type material. Holotype worker. **COSTA RICA**, Puntarenas, Monteverde, 1350 m, 10°18′N 84°49′W, 18.v.1988, J. Longino, No. 2095 collector. One worker deposited in the LACM. – Paratype. **PANAMA**, Barro Colorado, 3.xi.1976, S. Levings. One worker deposited in the MCZC.

Other material studied. COLOMBIA. **Chocó**: P.N.N. Utria, 06°01′01″N 77°20′55″W, 29.iii.1998, C. Londoño, 1w IAvH. **Bolívar**: Zambrano, Hacienda Monterrey, 9°45′N 74°49′W, 27.v. 1993, F. Fernández & G. Ulloa, 1w IAvH.

6.5.4.5. *Leptogenys honduriana* Mann (Fig. 17)

Leptogenys (*Lobopelta*) *hoduriana* Mann, 1922: 13, fig. 7. Syntype workers: Honduras, Lombardia ii.–iii.1922, Cat. No. 24441 (W.M. Mann) (USNM) [examined].

Diagnosis. Head, mesosoma and petiole finely rugulose-punctate, opaque; node in lateral view with the anterior and dorsal margins forming a continuous convexity; third antennal segment almost as long as the combined lengths of segments four and five; mandible triangular, masticatory border sinuate and long, about as long as internal border, with weak concavity after basal angle followed by weak convexity, and then weak pre-apical concavity before apical tooth; median clypeal lobe broad, ending in blunt angle.

Worker. Metrics, syntypes (n = 5): HL 1.90–2.05; HW 1.50–1.65; ML 1.1–1.35; EL 0.35–0.45; SL 2.15–2.4; PW 1.05–1.2; WL 3.1–3.3; PH 1.05–1.15; PL 0.9–1.15; DPW 0.65–0.8 mm. CI 0.78–0.83; MI 0.73–0.82; OI 0.23–0.28; SI 1.41–1.55; LPI 1.00–1.17; DPI 0.65–0.89.

Head with subparallel lateral margins in full-face view; posterior margin convex, lateral margin weakly convex, both margins joined by continuous curve without sharp curvatures or angles. Median clypeal process triangular, broad, apex bluntly pointed; lateral lobe narrow, extends half-way from mandibular insertion to apex of median lobe; median clypeal lobe with lateral translucent lamella. Eye dorso-laterally placed, not touching lateral cephalic margin in cephalic full-face view, slightly closer to median cephalic length than to mandibular insertion, diameter close to one-third length of lateral cephalic margin. Scape surpasses posterior cephalic border by more than one-third its length; third antennal segment almost 2 × length of second, approximately as long as combined lengths of segments four and five. Head finely rugulose-punctate; clypeus with longitudinal striae; basal margin of mandible shuts tight against clypeus, mandible triangular with sinuate and long masticatory border, about as long as basal border, with weak concavity after basal angle followed by weak convexity, and then weak pre-apical concavity before apical tooth; anterior margin of mandibular masticatory margin convex in lateral view; mandibular dorsum with scattered piligerous punctae and fine, longitudinal strigulae. Posterior labium smooth and shining, maxilla with curved carinae; sculpture on ventral cephalic surface weaker than dorsal surface, fine rugulae with smooth-bottomed piligerous punctae.

Mesosoma with dorsal margin divided by deeply impressed metanotal groove in lateral view, promesonotal dorsal margin convex; propodeal dorsal margin broadly convex, more than twice as long as declivity; short triangular propodeal denticle projects posterad at spiracular height, spiracle spherical to oval, followed posterad by short sulcus to bulla. Meso-metapleural suture distinctly cleft, lateral propodeal and metapleural surfaces forming convexity; metapleural-propodeal suture obliterated, ill-defined at best; propodeal declivity with transverse strigae dorsal, posterad smooth and shining. Mesonotum about as long as wide in dorsal view, anterior margin convex, posterior margin transverse, metanotal groove smooth. Mesosomal dorsum finely rugulose-punctate.

Propleuron with oblique, parallel strigae; mesopleuron transversely rugulose, sculpture denser anterad than posterad; mesosternum flat, with weak transverse strigulae, mesopleural carina fine. Anterior mesosternal lobe low, height less than one-fourth mesocoxal height; metasternal carina narrow, weakly convex internally.

Anterior and dorsal petiolar margins form continuous convexity in lateral view; posterior margin straight, inclined; node mostly rugulose-punctulae, sculpturing weaker ventrad; ventral process subquadrate in lateral view. Node in dorsal view longer than wide, anterior margin convex and less than half the posterior width; posterior node face flat, with low transverse strigulae. Gaster smooth and shining with abundant piligerous punctulae. Stridulitrum visible on pretergite of abdominal segment IV. Body with abundant appressed pilosity and standing hairs; scape with appressed pilosity, and sparse decumbent hairs. Head, mesosoma, and node dark brown to black, gaster black to dark brown, apex ferruginous brown; mandible, clypeus, antennae, and legs dark brown. Some parts of coxae and gaster may have discrete blue iridescence.

Queen, male. Unknown.

Comments. The only other *Leptogenys* species that resembles *L. honduriana* is *L. oaxaca*, but the extraordinary mandibular shape of *L. oaxaca* is more than enough to distinguish between the two species.

Material studied. Honduras. Lombardia, ii.–iii.1922, W.M. Mann (USNM syntypes (= cotypes) 24441), 6w USNM.

6.5.4.6. *Leptogenys manni* Wheeler (Fig. 18)

Leptogenys (*Lobopelta*) *elongata manni* Wheeler, 1923: 14. Syntype workers: United States, Florida, Dunedin (McGregor) (MCZC) [examined].

Leptogenys manni Wheeler. Elevated to species, Trager & Johnson (1988).

Diagnosis. Head sub-rectangular in full-face view, lateral cephalic margin broadly convex; posterior cephalic margin convex; lateral clypeal process narrow, its outline forming obtuse angle with outline of median process; mesosternum and mesopleuron joined by smooth curve, feeble carinae present anterad with weak anterior angle; posterolateral area of propodeal declivity rounded, without angle or lobe.

Worker. Metrics (n = 6) HL 1.44–1.52; HW 0.91–0.99; ML 0.68–0.76; EL 0.30–0.33; SL 1.47–1.62; PW 0.78–0.86; WL 2.18–2.35; PH 0.76–0.86; PL 0.68–0.73; DPW 0.46–0.53 mm. CI 0.60–0.65; MI 0.69–0.81; OI 0.32–0.36; SI 1.61–1.69; LPI 1.10–1.21; DPI 0.67–0.75.

Head subrectangular in full-face view, lateral cephalic margin broadly convex; posterior cephalic margin convex; median clypeal process tapers to rounded, lamellate apex, apex with two long hairs, no setae; lateral process narrow, its outline forming obtuse angle with outline of median process. Eye broadly convex, situated slightly dorsad at mid-length, occupies under one-third of lateral cephalic margin. Cephalic dorsum densely punctate, distance between each depression less than or equal to their respective diameter, punctae not sharply defined but gradually depressed, usually more on one side, shining; longitudinal to oblique striae present between eye and antennal insertion; longitudinal sulcus stretches from between frontal carinae to mid-eye height. Scape mostly smooth and shining with fine punctulae, abundant appressed pilosity and occasional decumbent to subdecumbent hairs, scape extends beyond posterior cephalic margin by one-third length its length; third antennal segment slightly 3 × longer than apical width, third antennal segment more than half length of second; each funicular segment wider apicad than basad. Mandible triangular, shutting tight against clypeus, mostly smooth and shining with sparse punctae; chewing border edentate, corner with blunt angle.

Mesosoma with broad and deep metanotal groove in lateral view that separates broadly convex promesonotal margin and straight to weakly convex dorsal propodeal margin; lateral pronotal sculpture mostly smooth and shining with minute punctulae, posteriorly longitudinally striate; abundant parallel transverse striae on mesopleuron; metapleuron with transverse to longitudinal parallel striae; lateral propodeal face punctate to striate, striae stronger towards declivity. Mesometapleural suture well impressed; metapleural-propodeal suture not impressed or appearing as brief narrow ledge just anterad of propodeal spiracle; propodeal spiracle elongate, opening directed posteriorly; disc of pronotum mostly smooth and shining with sparse punctulae, punctulae denser anterolaterally, striae present along anterior margin; mesonotum transversely striate punctate, longer than wide; propodeal dorsum rugulose to transversely striate; declivitous face transversely striate, rounding to lateral propodeal face, not separated by sharp ridge; prosternum transversely striate; mesosternum and mesopleuron joined by smooth curve, feeble carinae present anterad with weak anterior angle; metanotal groove straight to convex, smooth.

Petiole subquadrate in lateral view, higher posterad than anterad; anterior margin more than one-half height of posterior margin, anterior margin straight, dorsal margin convex, posterior margin weakly convex to straight. Subpetiolar process sub-rectangular to rounded in lateral view, with concave posterior margin. Node elongate in dorsal view; anterior margin convex, more than half width of posterior margin. Posterior face rounds to lateral face, sometimes separated ventrad by low ridge; lateral node face with longitudinal striae dorsad, ventrad tending to smooth with weak undulations and rugosities; dorsum with transverse to oblique low striae. Anterior postpetiolar margin broadly convex in lateral view, curving onto dorsal margin; gaster smooth and shining, constriction between abdominal segments III and IV well marked; procoxae with some low rugosities,

mostly smooth. Body with abundant decumbent pilosity and scattered standing-suberect hairs. Head, mesosoma node and most of gaster ferruginous or orange, some specimens with traces of blue or purple opalescence; antenna, mandibles, legs and apex of gaster light ferruginous. Meso and metatibial apex each with single external seta.

Queen. None examined. TRAGER & JOHNSON (1988) report the queen as the usual ergatoid with a larger gaster and lower, subtriangular petiole profile compared with the worker.

Male. Not measured. Head mostly shining with shallow punctures, transverse striae present anterad of antennal fossae; clypeus punctate. Pronotum mostly punctate, punctae denser medially than laterally; anterior mesonotum separated by gap from posterior pronotum. Scutum with well-impressed medial line, in dorsal view extending anterad from anterior base of scutellum, between tegulae bifurcating into notauli; medial line and notauli scrobiculate; parapsidal line impressed from anterior base of axilla until almost touching notaulus; impressed lines with ferruginous staining along crests of scrobiculae. Mesonotum and mesopleuron mostly smooth and shining with punctulae; metapeluron, propodeum mostly with low rugulae.

Comments. WHEELER (1923) recognized *L. manni* as a subspecies of *L. elongata* on account of a more slender head, the anterior petiolar margin meeting more evenly the dorsal margin in lateral view (not as truncate as in *L. elongata*), and the presence of cuticular opalescence. TRAGER & JOHNSON (1988) recognize *L. manni* as a distinct species from *L. elongata* due to differences in the texture of cuticular sculpture, color, male genitalia, distribution, and natural history. During the course of this study the aforementioned characters were corroborated and additional traits found to support specie's rank for *L. manni*. The median clypeal lobe is relatively more slender in *L. manni*, with the angle of contact between median lobe and lateral clypeal lobe more noticeable than in *L. elongata*. *L. manni* has the mandibular dorsal surface more smooth and shining, and the anteroventral mesopleural carina very weak to non-existent compared with *L. elongata*. This carina is well developed in *L. elongata*, and sharply defines the limit between the mesosternum and mesopleuron, forming an anterior lobe that extends mesad as a crest which delimits a narrow, transverse area along the anterior mesosternum. In *L. manni* the modest anterior angle of the carina does not extend elsewhere. *L. elongata* has a low angular projection on the propodeal declivity next to the bulla, whilst such a projection is lacking in *L. manni*, sometimes present as a weak convexity. TRAGER & JOHNSON (1988: 34) found significant differences between the two species in the male genitalia: the paramere in *L. manni* has the apex ending in an acute, blunt angle but in *L. elongata* it is a rounded lobe; the aedeagus in *L. elongata* ends in a rounded lobe, but in *L. manni* it forms a narrow process which ends in a small bifurcation. *L. manni* males have an apparently thicker cuticle, with impressed lines on the mesoscutum deeper and wider than in *L. elongata*, besides ferruginous colors that make them very apparent. The posterolateral lobes of the pronotum curve away from the mesosoma, whilst they tend to be closely adhered to the mesosoma in most *L. elongata* males examined, with some Mexican specimens presenting slight separation. The ocelli in *L. elongata* males are relatively larger than in *L. manni*, with the diameter of the median ocellus approximately half the distance between the lateral ocellus and the compound eye, this distance being greater or equal to the diameter of the median ocellus in *L. manni*.

This species is mostly known from throughout Florida, and is probably endemic to the State. The specimens labeled as from Georgia constitute a single series and lack a date, though the state of the label suggests the early 1900's. *L. manni* is now known to range into northern Florida, but over 300 kilometers separate Decatur from the nearest *L. manni* collection sites in Florida. The Georgia locality is a possibility but needs corroboration. Similarly, CREIGHTON (1950: 50) called into question reports of *L. manni* north of Florida. Prey records for *L. manni* are mostly of the isopod *Porcellionides virgatus* (Budde-Lund), with occasional *Armadillidium*. Males are taken mostly from the months of May to October, and workers are mostly found during the spring months beneath stones and logs (TRAGER & JOHNSON 1988).

Material studied. UNITED STATES. **Florida**: Paradise Key, 23.ii.1919, A. Wetmore, 5w USNM; Paradise Key, 4.iv.1925, 1w MCZC; Wakulla, v.1974, R. Metcalf, E.O. Wilson, 3w MCZC; 0.3 miles E Hart Springs, Rt. 344, 19.i.1992, L.R. Davies Jr., 3w MCZC; Gainesville, Univ Florida Campus, [no date], M. Naves, 5w LACM; Gainesville, 19.iv.1947, Van Pelt, 3w LACM; 0.5 miles E Gainesville, 5.iv.1980, J. Trager, 2w 1m LACM; Archbold State Lake, Bear Hollow, 25.v.1944, T. Schneirla, 3w USNM; Odessa, 24.ii.1927, J. Bradley, 1w USNM. **Georgia**: Stone Mountain, Decatur, [no date], M. Auten, 3w MZSP, 1w USNM [questionable locality].

6.5.4.7. *Leptogenys oaxaca* n.sp. (Fig. 19)

Diagnosis. Head, mesosoma and petiole finely striate to rugulose, opaque; node in lateral view with anterior and dorsal margins forming continuous convexity; third antennal segment almost as long as combined lengths of segments four and five; basal margin of mandible shuts tight against clypeus, basal part of masticatory margin with prominent concavity, and brief pre-apical margin; median clypeal lobe broad.

Worker. Metrics, holotype (paratype): HL 1.95 (2.15); HW 1.95 (1.85); ML 1.50 (1.55); EL 0.40 (0.40); SL 2.45 (2.25); PW 1.35 (1.25); WL 3.60 (3.50); PH 1.30 (1.25); PL 1.20 (1.15); DPW 0.85 (0.85) mm. CI 1.00 (0.86); MI 0.77 (0.84); OI 0.21 (0.22); SI 1.26 (1.22); LPI 1.08 (1.09); DPI 0.71 (0.74).

Head in full-face view slightly wider anterad than posterad, posterior margin convex, lateral margin broad-

ly convex, both margins forming continuous curve without sharp curvatures or angles. Median clypeal process apically truncate, lateral lobes present; anterior clypeal margin without translucent lamella. Eye dorso-laterally placed, not touching lateral cephalic margin in cephalic full-face view, slightly closer to median cephalic length than to mandibular insertion, length close to one-fourth that of lateral cephalic margin. Scape surpasses posterior cephalic border by approximately one-third its length; third antennal more than 2 × length of second, almost as long as combined lengths of fourth and fifth segments. Head finely striate to rugulose, opaque; clypeus shining; basal margin of mandible shuts tight against clypeus, basal angle blunt, followed by abrupt but even, long concavity, more or less parallel to cephalic dorsum; concavity followed by pre-apical angle and brief pre-apical margin that follows a ventrally directed angle; mandibular dorsum with scattered piligerous punctae and fine, longitudinal parallel strigulae. Closed mandibles form rounded aperture resembling a wire-stripper. Basal third of external mandibular margin straight, the rest sharply convex. Posterior labium smooth and shining, maxilla with curved carinae; ventral cephalic surface shining and smoother than dorsal surface; palpal formula 4,3.

Mesosoma with dorsal margin divided by deeply impressed metanotal groove in lateral view, posterior mesonotal margin forming sharp angle; pronotal dorsal margin convex, mesonotal margin broadly convex to straight; propodeal dorsal margin convex, more than twice as long as declivity; short propodeal denticle projects posterad at spiracular height, spiracle round to oval. Meso-metapleural suture distinctly cleft, lateral propodeal and metapleural surface forming convexity; metapleural-propodeal suture ill-defined, propodeal declivity with transverse strigae. Mesonotum longer than wide, transversely strigulose. Pronotal disc mostly with slightly diverging rugulae, rugulae becoming transverse along posterior margin. Propleuron with oblique parallel, strigae; mesopleuron transversely strigulate, strigulae extending to mesosternum, no carina separates mesopleuron from mesosternum. Anterior mesosternal lobe low, height less than one-fourth mesocoxal height; metasternal lobe apically truncate, height more than one-fourth metacoxal height.

Anterior and dorsal petiolar margins in lateral view form continuous convexity; posterior margin slightly sinuate; sculpture fine strigulae, opaque. Node in dorsal view longer than wide, anterior margin straight and wider than half the posterior margin; posterior node face relatively smooth with faint transverse strigulae, shining. Gaster shining with abundant piligerous punctulae. Stridulitrum visible on pretergite of abdominal segment IV. Body with abundant appressed pilosity and standing hairs; scape with appressed pilosity and no standing hairs. Head, mesosoma, and node dark brown to black, gaster brown to dark brown; mandible, scape, metacoxa dark brown; funiculus, and rest of legs ferruginous. Protarsal claws as densely pectinate as meso and metatarsal claws. Some parts of mesosoma, cephalic ventrum and coxa may have discrete blue iridescence. Protarsal segments ending with two pairs of fine setae.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the Mexican State of Oaxaca, in which the type locality is found.

Comments. The specimens were collected alongside a stream. This species is apparently close to *L. honduriana* because of similarities in size, sculpturing, head shape, eye position, and the broad median clypeal lobe, besides the presence of cuticular iridescence in both. The mandible in *L. honduriana* is recognizably triangular but has a sinuate and long masticatory border, about as long as the basal border, with a weak concavity after the basal angle followed by a weak convexity, and then a weak pre-apical concavity before the apical tooth. Because of the mandibular shape in *L. honduriana*, the unique concavity of *L. oaxaca* was interpreted as forming part of the masticatory margin and not part of the basal margin. *L. honduriana* has a fine, ventral mesopleural carina, which is lacking or barely discernible in *L. oaxaca*, and the median clypeal lobe in *L. honduriana* ends in a blunt obtuse angle. Valle Nacional is located at 17°46′N 96°18′W, and on a map cursory exploration of points roughly 6 miles (9.7 km) south of Valle Nacional show a range of altitudes from 160 to 500 meters.

Type material. Holotype worker. **Mexico**, Oaxaca, 6 miles S Valle Nacional, 20.vii.–01.viii.1971, A. Newton collector. One worker deposited in the MCZC. – Paratype. One worker with same data as the holotype, deposited in the MCZC.

6.5.4.8. *Leptogenys peninsularis* Mann (Fig. 20)

Leptogenys (*Lobopelta*) *peninsularis* Mann, 1926: 102. Syntype workers: Mexico, Baja California Sur, Comondu, beneath stones (W.M. Mann) (LACM) [examined]

Diagnosis. Lateral clypeal lobe narrow, weakly concave; perimeter of compound eye abruptly separated from circumocular sulcus; head posteriorly punctate to striate; scape surpasses posterior cephalic border by approximately one-fourth its length; third antennal segment slightly 3 × longer than maximum width; hypostomal tooth not visible in full-face view of head.

Worker. Metrics (n = 6) HL 1.21–1.39; HW 0.86–1.01; ML 0.61–0.81; EL 0.23–0.30; SL 1.32–1.59; PW 0.76–0.83; WL 1.90–2.23; PH 0.73–0.89; PL 0.63–0.76; DPW 0.56–0.63 mm. CI 0.69–0.79; MI 0.71–0.82; OI 0.24–0.30; SI 1.37–1.62; LPI 0.00–1.25; DPI 0.82–0.92.

Head elongate in full-face view, wider anterad than posterad, posterior and lateral margins broadly convex, vertexal carinae distinctly visible along most posterior margin. Median clypeal lobe bluntly-pointed, triangular, lateral margins lamellate; lateral lobe narrow, weakly concave. Compound eye prominent, convex, diameter covers approximately one-third of lateral cephalic

margin, situated close to cephalic mid-length; ocular perimeter abruptly separated from circumocular sulcus. Head posteriorly densely punctate, punctate-striate mesad, striae becoming stronger anteriorly; clypeus with oblique striae, strongest laterad. Scape surpasses posterior cephalic border by approximately one-fourth its length; punctulate, with decumbent pubescence and scattered decumbent hairs. Funicular segments elongate, subcylindrical, slightly wider apicad than basad; third antennal segment slightly 3 × longer than maximum width; second antennal segment more than half the length of third; fourth antennal segment more than half the length of third segment. Mandibles elongate, subtriangular, gradually widening apicad, basal margin weakly convex, external margin weakly sinuate, masticatory margin broadly concave, dorsum mostly smooth and shining with scattered punctae, some patches of weak striae present, especially basad; PF: 4,3. Hypostomal tooth not visible in full-face view of head.

Mesosoma with deep metanotal groove in lateral view, dividing broadly convex promesonotal margin and broadly convex propodeal margin. Pronotum laterally and dorsally rugulose to scabriculous. Prosternum transversely striate. Mesopleuron transversely striate, anteroventrally with low blunt lobe, anteroventral carinae lacking; mesosternum with weak transverse striae; metapleuron mostly with transverse striae, anteriorly rugulose, and close to propodeum obliquely striate; lateral propodeum rugulose; metapleural-propodeal suture shallow but distinct. Bulla of metathoracic spiracle convex, prominent, finely sculptured. Mesonotum broader than long in dorsal view, transversely striate, anterior margin convex, posterior margin concave. Metanotal groove smooth and shining. Dorsum of propodeum mostly rugulose to striate, sometimes with smoothened areas, declivity transversely striate. Propodeal spiracle elongate. Petiole subquadrate in lateral view with vertical anterior margin as long as or shorter than posterior margin, dorsal margin convex, highest point close to mid-length of node, posterior margin slightly inclined anterad, broadly convex. Node laterally mostly striate to rugulose, tending to smooth ventrad, posterior face mostly smooth and shining, slightly concave. Petiolar sternum weakly convex in lateral view, anterior process shaped as hooked lobe. Node approximately as long as broad in dorsal view, anterior margin more than half the width of posterior margin, anterior margin convex, posterior margin concave. Anterior margin of abdominal segment III vertical in lateral view, anterodorsal margin convex. Gaster mostly smooth and shining with scattered fine punctulae, punctulae diminishing in density posterad. Pygidial margin broadly convex in lateral view. Procoxa mostly smooth and shining with scattered shallow punctae and some weak striae basad in lateral view. Body with abundant decumbent pilosity, and erect to semi-erect hairs. Body color mostly ferruginous, with antennae, clypeus, mandibles, legs, and gastral apex slightly lighter colored than rest of body. Tibial apices lacking setae.

Queen. Unknown.

Male (not previously described)**.** A single male specimen apparently belonging to this species was examined. It lacks the head. Pronotum mostly smooth with scattered shallow punctae, anepisternum mostly smooth and shining, katepisternum punctate, propodeum mostly smooth and shining with scattered punctae; mesonotum separated from posterior pronotal margin by gap. Mesosoma mostly brown, pronotum, legs, node light brown, gaster yellow.

Comments. This species is endemic to the Baja Peninsula (JOHNSON & WARD 2002). One series was found under a rock on hillside with vegetation such as *Fouquieria diguetti* (Tiegh.) I.M. Johnst., *Jatropha cinerea* (Ortega) Müll. Arg., and *Lysiloma candida* Brandegee (R. Johnson, label data). *L. peninsularis* shares with *L. sonora* the lack of setae on the tibial apices and the preference for desert habitats. The syntypes examined are 3 point-mounted workers on a single pin.

Material studied. MEXICO. **Baja California**: Hwy 1, 25.7 mi E Rosario, 30°5′30″N 115°20′W, 1450 ft, 21.ii.1994, 4w LACM, 1w RAJC, 1w MIZA, 1w MZSP, 1w MCZC. **Baja California Sur**: Hwy 1, 43.6 mi NW Villa Insurgentes, 25°39′N 111°15.9′W, 14.iii.2002, 1430 ft, RA Johnson, 2673, 2w LACM, 2w MCZC, 2w MIZA, 2w MZSP, 2w RAJC; Isla Magdalena, Santa Maria Lagoon, NE Mt. Lazaro, 9.vii.1983, D.K. Faulkner, 1w LACM; Comondu, i.1923, W.M., 3w MZSP; Baja California, Comondu, x.1923, W. Mann, 3w 1m LACM.

6.5.4.9. *Leptogenys sianka* n.sp. (Fig. 21)

Diagnosis. Cephalic dorsum mostly areolate, areolae turning to longitudinal to oblique striae-rugulae anterad of eye; mandible elongate, external and basal margins subparallel; metanotal groove shallow but distinct; smooth sulcus extends posterad from spiracle dorsad of bulla into propodeum.

Worker. Metrics, holotype (paratypes, n = 4): HL 2.00 (1.70–2.00); HW 1.45 (1.25–1.45); ML 1.15 (1.00–1.10); EL 0.45 (0.40–0.45); SL 2.20 (1.75–2.15); PW 1.25 (1.05–1.25); WL 3.25 (2.65–3.25); PH 1.15 (1.00–1.15); PL 1.00 (0.90–1.00); DPW 0.70 (0.60– 0.70) mm. CI 0.73 (0.71–0.74); MI 0.79 (0.76–0.80); OI 0.31 (0.31–0.32); SI 1.52 (1.40–1.48); LPI 1.15 (1.11–1.15); DPI 0.70 (0.63–0.70).

Head sub-quadrate in full-face view, slightly wider anterad than posterad; lateral margin anterad of eye straight, posterad broadly convex; posterior cephalic margin straight to broadly convex; median clypeal process tapers to lamellate bluntly pointed apex; lateral clypeal process narrow, its outline smoothly joining with outline of median process. Eye broadly convex, situated slightly dorsad at mid-length, occupies over one-third of lateral cephalic margin. Cephalic dorsum mostly areolate, areolae anterad of eye becoming longitudinal to oblique striae-rugulae, small smooth patch present lateroposterad of frontal carina, clypeus with oblique striae, smoother medially; longitudinal sulcus extends posterad

from between frontal carinae to one-third eye height. Scape densely punctulae, with dense decumbent pilosity and scattered subdecumbent hairs, scape extends beyond posterior cephalic margin by one-third its length; third antennal segment over 3 × longer than apical width, second antennal segment more than half length of third segment; fourth antennal segment almost half length of third segment, each funicular segment slightly wider apicad than basad. Mandible elongate, external and basal margins subparallel, weakly expanding apicad, with fine weak longitudinal strigulae and sparse punctae; chewing border edentate, corner with blunt angle; PF: 4,3.

Mesosoma with shallow, but distinct metanotal groove in lateral view that separates promesonotal margin and dorsal propodeal margin, both broadly convex; pronotal sculpture mostly areolate, posterolaterally with small rugulose patch; propleuron with longitudinal to oblique mostly parallel striae; mesonotum wider than long. Mesometapleural suture well impressed; metapleural-propodeal suture obliterated; propodeal spiracle elongate, opening directed posteriorly, smooth sulcus extends posterad from spiracle dorsad of bulla into propodeum; bulla of metathoracic spiracle round, prominent; mesopleuron mostly transversely strigulate anterad with rugulae posteroventrad and oblique to longitudinal strigulae anterad, low anteroventral carina developed anterad, absent posterad; rugulae on propodeal dorsum mostly transverse with striae close to petiolar insertion; metapleuron punctulate-strigulate, declivitous face transversely strigulate, rounding to lateral propodeal face, not separated by sharp ridge; propodeum with low irregular lobe at spiracle height; propodeal dorsum with shallow longitudinal sulcus; mesonotum broader than long in dorsal view, anterior margin convex; metanotal groove straight to convex, smooth; anterodorsal margin of mesopleuron with triangular smooth and shining patch. Propodeal spiracle elongate, almost slit-shaped.

Petiole sub-quadrate in lateral view, higher posterad than anterad; anterior margin more than one-half height of posterior margin, anterior margin straight, anterodorsal margin convex, posterior margin weakly convex to straight. Subpetiolar process shaped as curved lobe in lateral view, posterior margin concave. Node elongate in dorsal view; anterior margin convex, more than half width of posterior margin; posterior margin straight; lateral margin straight to weakly concave. Posterior face rounds to lateral face; lateral node face densely punculate dorsad, ventrad tending to smooth. Anterior postpetiolar margin broadly convex in lateral view, curving onto dorsal margin; gaster mostly finely punctulate, constriction between abdominal segments III and IV shallow; pygidium with more or less well-developed longitudinal crest; procoxae mostly smooth and shining, with anterior longitudinal band of striae. Body with abundant decumbent pilosity and scattered standing-suberect hairs. Head, mesosoma, node and most of gaster black to dark brown; antenna, mandibles, clypeus, and legs brown, apex of gaster brown. Mesotibial apex with single external seta; protibial and metatibial apex without setae.

Queen. Similar to worker except for head more oval shaped in full-face view, small round depression present medially posterad of eyes; propodeal dorsum more convex in lateral view; petiolar node wider than long in dorsal view, and gaster relatively larger in size.

Male. Unknown.

Derivatio nominis. The species name is derived from that of the Sian Ka'a Reserve in Mexico, one of the localities from which it has been collected.

Comments. Associated with *Aechmea bracteata*. This species can be confused with *L. elongata* on first sight but the mandibles permit easy separation as they are distinctly triangular in *L. elongata*. This species has been found nesting in the epiphyte bromeliad *Aechmea bracteata* in Yucatan and was misidentified as *L. mexicana* in Dejean et al. (1995) and Dejean & Olmsted (1997). This same species was also the subject of studies on its predatory behavior by Dejean (1997), where he detected the attraction of bathytropid isopods directly into the ant nest.

Type material. Holotype worker. **Mexico**, Veracruz, Estación Los Tuxtlas, Sub1, 7.vii.2001, J. Valenzuela, deposited in IEXA. – Paratypes. (1) **Mexico**, Veracruz, Estación Los Tuxtlas, Sub1, 7.vii.2001, J. Valenzuela, 1w IEXA, 1w MCZC, 1w MZSP (same series as holotype). (2) Same locality but PP3, 7.vii.2001, J. Valenzuela, 1w IEXA, 1w MIZA.

Other material studied. Mexico. **Chiapas**: San Carlos, 19.ii.1945, T.C. Schneirla, 1w LACM. **Quitana Roo**: Reserva Sian Ka'a, 20.v.1986, A. Dejean, 2w 1q LACM; loc. cit., 15.iv.1986, A. Dejean A9, 3w LACM; loc. cit., 9.vi.1984, A. Dejean A5, 2w LACM; Majahual, 23.iv.1986, A. Dejean, 4w LACM.

6.5.4.10. *Leptogenys sonora* n.sp. (Fig. 22)

Diagnosis. Head with vertexal carinae distinctly visible along most of posterior margin in full-face view; median clypeal lobe bluntly pointed, broadly triangular, lateral margin lamellate; lateral lobe sinuate, anteriorly convex. Compound eye diameter covers approximately one-fourth of lateral cephalic margin, head densely areolate-punctulate. Mandible elongate, subtriangular, gradually widening apicad, basal margin broadly convex, external margin sinuate, masticatory margin broadly concave, dorsum with fine parallel striae. Hypostomal tooth visible between internal mandibular base and clypeus. Tibial apices lacking setae.

Worker. Metrics, holotype (paratype): HL 18.50 (18.50); HW 14.00 (14.50); ML 11.50 (12.00); EL 3.00 (3.00); SL 23.50 (23.50); PW 11.00 (11.00); WL 32.00 (32.50); PH 11.50 (11.00); PL 9.50 (10.50); DPW 8.00 (8.00) mm. CI 0.76 (0.78); MI 0.82 (0.83); OI 0.21 (0.21); SI 1.68 (1.62); LPI 1.21 (1.05); DPI 0.84 (0.76).

Head elongate in full-face view, wider anterad than posterad, posterior and lateral margins weakly convex, vertexal carinae distinctly visible along most of posteri-

or margin; median clypeal lobe bluntly pointed, broadly triangular, lateral margin lamellate; lateral lobe sinuate, anteriorly convex, forming obtuse angle with median lobe. Compound eye prominent, semispherical, diameter covers approximately one-fourth of lateral cephalic margin, situated just anterad of cephalic mid-length; circumocular sulcus ample. Head densely areolate-punctulate, clypeus with oblique striae, strongest laterad. Scape surpasses posterior cephalic border by over one-third its length; punctulate with dense decumbent pubescence and scattered decumbent hairs, only slightly longer than pubescence. Funicular segments elongate, subcylindrical, slightly wider apicad than basad; third antennal segment almost 4 × longer than maximum width; third antennal segment approximately 2 × length of second; fourth antenna segment more than half the length of third segment. Mandibles elongate, subtriangular, gradually widening apicad, basal margin broadly convex, external margin sinuate, masticatory margin broadly concave, dorsum with fine parallel striae. Hypostomal tooth visible between internal mandibular base and clypeus.

Mesosoma with deep metanotal groove in lateral view, dividing convex promesonotal margin and broadly convex to medially straight dorsal propodeal margin. Mesonotum convex with dorsal margin not totally continuous with pronotum. Pronotum laterally longitudinally striate-rugulose, narrow smooth area present laterally dorsad of prosternum. Prosternum transversely striate. Mesopleuron-lateral propodeum transversely to obliquely striate, anteroventrally with low blunt denticle, anteroventral carinae lacking, suture weakly developed; mesosternum transversely striate; metapleuron–lateral propodeum longitudinally striate. Dorsum of pronotum with arching striae, posterior disc tending to smooth. Propodeal declivity transversely striate, striae extending dorsad, becoming striate punctate; bulla of metathoracic spiracle convex, prominent, finely sculptured. Mesonotum longer than broad in dorsal view with transverse striae, anterior margin convex, posterior margin with bluntly angular apex pointing anterad. Metanotal groove smooth and shining. Propodeal spiracle elongate.

Petiole subquadrate in lateral view with convex anterodorsal margin, highest point posterad, posterior margin slightly inclined anterad. Node laterally mostly imbricate, tending to smooth ventrad and with transverse striae posterad. Petiolar sternum with ventroposterior swelling. Posterior node face mostly punctulae medially and dorsally, mostly smooth and shining ventrad. Node longer than broad in dorsal view, anterior margin more than half the width of posterior margin, anterior margin convex, posterior margin transverse. Anterior margin of abdominal segment III vertical in lateral view, anterodorsally convex until fourth abdominal tergite. Gaster mostly smooth and shining with fine punctulae that diminish in density posterad. Pygidial margin broadly convex in lateral view, median crest present. Procoxa transversely striate to rugulose in lateral view, rest of legs mostly finely punctate to weakly imbricate. Body with abundant decumbent pilosity, and sparse relatively short erect to semi-erect hairs. Body color mostly ferruginous, with legs slightly lighter colored than rest of body. Tibial apices lacking setae.

Queen, male. Unknown.

Derivatio nominis. The species name alludes both to the Sonoran desert, and the State of Sonora, from which the type specimens were obtained.

Comments. The collecting locality is described by C. Schmidt as Sonoran desert scrub on the periphery of a canyon, with a subtropical *Ficus*-palm forest along the canyon bottom. The ants were foraging on the ground, on and among rocks and on a large rock face on the canyon side.

Type material. Holotype worker. **MEXICO**, Sonora, Nacapule Canyon, Sierra Aguajes, nr. San Carlos, 28°0.92′N 111°4.07′W, 78 m, 17.iii.2005, C. Schmidt, M.R. Tarre, CSC590. Deposited in MCZC. – Paratype. One worker with same collection data. Deposited in CASC.

6.5.4.11. *Leptogenys volcanica* n.sp. (Fig. 23)

Diagnosis. Cephalic dorsum mostly densely punctate; lateral clypeal process forms almost perpendicular angle with base of median process; eye occupies approximately one-third of lateral cephalic margin, situated laterally; metapleural-propodeal suture distinct; anteroventral mesopleural carina well developed, forming cupped rounded lobe anterad.

Worker. Metrics, holotype (paratypes, n = 5): HL 1.04 (0.94–1.08); HW 0.71 (0.64–0.74); ML 0.61 (0.51–0.57); EL 0.20 (0.20–0.20); SL 1.21 (1.08–1.25); PW 0.64 (0.54–0.64); WL 1.65 (1.52–1.75); PH 0.67 (0.61–0.67); PL 0.57 (0.57–0.61); DPW 0.44 (0.40–0.47) mm. CI 0.68 (0.66–0.69); MI 0.86 (0.77–0.81); OI 0.29 (0.27–0.32); SI 1.71 (1.64–1.76); LPI 1.18 (0.00–1.18); DPI 0.76 (0.71–0.78).

Head sub-rectangular in full-face view, wider anterad than posterad; lateral cephalic margin broadly convex; posterior cephalic margin convex; median clypeal process triangular, apex bluntly pointed; lateral clypeal process widens mesad, median apex shaped as bluntly angular lobe that forms almost perpendicular angle with base of median process. Eye broadly convex, occupies approximately one-third of lateral cephalic margin, situated more laterad than dorsolaterad, anterad of mid-length of lateral cephalic margin. Cephalic dorsum mostly densely punctate posterad of eyes, striate-punctate to smooth with sparse punctae between eyes, longitudinally striate anterad of eye; clypeus with oblique to longitudinal striae, smoother medially; longitudinal sulcus extends posterad from between frontal carinae to one-half eye height; head posterad of eye punctate, ventral surface finely transversely striate. Scape densely punctulae, with dense decumbent pilosity and scattered subdecumbent hairs, scape extends beyond posterior ce-

phalic margin by over one-third its length; third antennal segment over 3 × longer than apical width, second antennal segment more than half length of third segment; fourth antennal segment half length of third segment, each funicular segment slightly wider apicad than basad. Mandible elongate, external and basal margins subparallel, basal margin straight along basal one-third, convex along apical two-thirds, dorsal surface with fine weak longitudinal strigulae and sparse punctae; chewing border edentate, corner with blunt angle; PF: 4,3.

Mesosoma with metanotal groove separating convex promesonotal margin in lateral view from broadly convex dorsal propodeal margin; pronotal sculpture mostly transversely striate-punctate, posterolaterally mostly smooth with shallow punctae; propleuron mostly smooth with transverse striae anterad. Mesometapleural suture well impressed, scrobiculate; metapleural-propodeal suture distinct, metapleural margin forms narrow ledge; propodeal spiracle elongate, oriented posteriorly; bulla of metathoracic spiracle convex; mesopleuron mostly transversely finely striate posterad, with smaller areas of curved striae or rugulae, shallow broad depression present anterad, just ventrad of mesopleural spiracle; anteroventral mesopleural carina developed, forming cupped rounded lobe anterad; mesosternum transversely striate, striae parallel and more regularly impressed than striae of mesopleuron; lateral propodeal face rugulose to rugulose-punctate, or punctate, dorsum punctate to transversely striate punctate, declivitous face transversely striate, striae becoming progressively coarser posterad; declivitous face relatively flat; low triangular lobe present at spiracle height; mesonotum punctate, broader than long in dorsal view, anterior margin convex; metanotal groove convex, smooth. Propodeal spiracle elongate to slit-shaped.

Petiole sub-quadrate in lateral view, anterior margin convex, dorsal margin mostly straight to weakly convex, posterior margin inclined anterad mostly straight to weakly convex. Subpetiolar process shaped as triangular lobe in lateral view. Node subquadrate in dorsal view, slightly wider posterad than anterad, anterior margin broadly convex; posterior margin shaped as low, blunt triangle; lateral margin broadly concave. Lateral node face with longitudinal to oblique rugulae and scattered coarse punctae, ventrad tending to smooth. Anterior postpetiolar margin weakly convex in lateral view, curving onto dorsal margin; gaster mostly punctulate, constriction between abdominal segments III and IV weak; pygidium with longitudinal median crest; procoxae mostly smooth and shining in lateral view. Body with abundant decumbent pilosity and scattered standing to suberect hairs. Head, mesosoma, node and most of gaster black; antenna, mandibles, clypeus, and legs dark brown, apex of gaster brown to dark brown. Protibial apex without setae; mesotibial apex with single external seta; metatibial apex usually without external seta, occasionally present.

Queen, Male. Unknown.

Derivatio nominis. The species name is derived from that of the type locality in Costa Rica, Volcán Rincón de la Vieja.

Comments. The shallow depression that suggests a separation between the anepisternum and katepisternum is unusual in the genus as the mesopleuron usually appears as a single unit in workers, bearing no trace of this separation. The Panama specimens have the metapleural propodeal sutures more developed and consequently the metapleuron stands out quite distinctly, and the mesopleuron has a more irregular surface with broad swellings and depressions. The Colombian specimens have mostly smooth sculpturing with scattered punctae between and anterad of the eyes, the head has shallower and finer punctae, the mesosomal sides have more punctate areas, and the extremities are lighter colored. The type series comes from a column of workers that were captured as they worked together to transport an isopod, the crustacean is point-mounted along with an ant on a single pin (MIZA). Lattke & Longino (2009) call this species JTL-001 (cf. *mexicana*) in the Ants of Costa Rica website. Longino records a worker taken on a road through a pasture from Puntarenas, 1 km SW Monteverde, at 1350 m.

Type material. Holotype worker. **Costa Rica**, Guanacaste, Volcán Rincón de la Vieja, Las Pailas, 27 km NE Ciudad Liberia, 700 m, 18.viii.2004, D. Kronauer, E. Rodríguez leg., deposited in INBIO. – Paratypes. Five workers from same series as holotype: 2w MIZA; 1w MCZC, 1w BMNH, 1w MZSP.

Other material studied. Colombia. **Valle**: P.N.N. Farallones de Cali, Anchicayá, 3°26′N 76°48′W, 730 m, 17.–20.vi.2001, S. Sarría, 2w IAvH. – **Costa Rica**. **Guanacaste**: Pro[?] Marizta Field Station, 88-010, 13.ii.1996, 950 m, R. Anderson 47667, 1w WPMC. – **Panama**: **Barro Colorado**: i.1960, W.L. Brown, E. McCluskey, M67, 3w MCZC.

6.5.5. *famelica* species group

Worker diagnosis. Head elongate; mandible triangular, masticatory and basal margins approximately of same length, shuts tight against clypeus, masticatory margin concave, totally to partially serrate, with pre-apical tooth at mid-length; basal mandibular sulcus weakly impressed; median clypeal lobe mostly laminate and translucent against background lighting, lobe shorter than ocular malar distance, lacking setae on apex; PF: 4,3. Suture between antennal sclerite and tentorial pit well impressed; eyes dorsolaterally to laterally placed on cephalic dorsum; eye diameter ranging from over one-third to under one-fourth length of lateral cephalic margin in full-face view; scape long, surpassing posterior cephalic margin by over one-third its length, third antennal segment much longer than other basal funicular segments, funicular segments subcylindrical; clypeal-antennal base protrudes prominently dorsad in lateral view (except *L. famelica*); propleuron smooth and shining (except some *L. famelica*); mesonotum wider than long to longer than wide, never narrow and transverse,

metanotal groove deeply impressed, usually smooth, sometimes with transverse striae or weakly scrobiculate; mesosoma mostly smooth (except *L. famelica*); mesopleuron abruptly elevated along mesometapleural suture, anteroventral carina well developed, anteriorly elevated in shape of lobe or fin; metapleural-propodeal suture absent; propodeum without low lobes or teeth, rounded (in *L. famelica* a low overhang may be present); propodeal spiracle facing laterally to posterolaterally, propodeal spiracle on same level as surrounding cuticle; scattered hairs present on dorsum of head, mesosoma, petiole and gaster; cephalic dorsum with scattered pubescence, none on mesosomal dorsum; dorsal and declivitous propodeal margins form continuous convexity in lateral view; petiolar node triangular to subquadrate; anterior margin of third abdominal segment in lateral view convex; postpetiolar constriction weak; protibial apex without setae; mesotibial apex with single seta; metatibial apex with single seta (*L. famelica*, *L. pinna*) or no seta (*L. phylloba*, *L. pittieri*, *L. serrata*); posterobasal metacoxal dorsum with weak swelling.

Included species. *L. famelica*, *L. pinna*, *L. phylloba*, *L. pittieri*, *L. serrata*.

Comments. The five members of this group are found from Costa Rica southward to the Amazon watershed. *L. famelica* has the largest range of all, with records from Costa Rica to the Amazon watershed, whilst the other species apparently have much smaller distribution ranges. The size range of these ants is from quite large to median sized, there are no small species. Whilst the general trend in the genus has been towards more slender mandibles and an edentate masticatory margin, this group retains the generalized triangular shape with a serrated masticatory margin. With the exception of the large and conspicuous *L. famelica*, there is scarce museum material belonging to this group, hinting to the relative rarity of these species. An example is *L. pittieri*, a species known only from the type material and even though the type locality has been the object of many ant collecting activities, no other specimens have been found. Worker reproduction seems to be the situation for *L. famelica*, whilst ergatoid queens are known for *L. pinna* and *L. pittieri*. Several specimens clearly belonging to this group where studied but none could be satisfactorily assigned to the recognized species, and given that all were uniques, it was decided to determine each as *famelica* group members. The species in this group seem to form a compact set with *L. famelica* as the odd-man out. Besides the conspicuously larger size of *L. famelica*, it lacks the dorsally elevated frontal lobes when seen laterally, a feature seen in the other members of the group. During preliminary runs of diverse versions of the character matrix, *L. famelica*, and two other species in the group were considered as terminal taxa. Good support for the monophyly of the 3 species was recovered with *L. famelica* as sister to the other two species.

Possible apomorphies. The mostly translucent median clypeal lobe and the well-developed anterior lobe of the mesopleural carina are the proposed autopomorphies for the group. This anterior lobe projects perpendicularly from the lateral mesopleural surface, like a small fin, in all species save *L. famelica*. The antennae have an elongate third segment and the funicular segments are subcylindrical, but these same character states can be found in other New World *Leptogenys*.

6.5.5.1. *Leptogenys famelica* Emery (Fig. 24)

Leptogenys famelica Emery, 1896a: 91, pl. 1 fig. 6. Holotype worker: Costa Rica, [Limón], Jiménez, Suerre (A. Alfaro) (MCSN) [examined]

Diagnosis. Eye prominent, subglobulose, its diameter one-third of lateral cephalic margin; scape extends beyond posterior cephalic margin by over half its length; mesosoma with prominent median constriction; pronotum smooth and shining, propleuron smooth laterally, transversely striate ventrally; rest of mesosoma mostly with fine transverse, parallel striae; petiole elongate, pedunculate and triangular in lateral view.

Worker. Metrics (n = 6): HL 2.02–2.42; HW 1.31–1.62; ML 1.01–1.41; EL 0.40–0.51; SL 3.33–4.65; PW 1.21–1.41; WL 4.34–5.15; PH 1.31–1.52; PL 1.72–2.12; DPW 0.71–0.91 mm. CI 0.62–0.67; MI 0.77–0.88; OI 0.27–0.38; SI 2.54–2.93; LPI 0.70–0.76; DPI 0.39–0.47.

Head elongate in full-face view, wider anterad than posterad; lateral cephalic margin broadly convex; posterior cephalic margin convex, vertexal carina prominent; median clypeal process broadly triangular, laminate, apex pointed; lateral clypeal process narrow, joining smoothly with base of median process. Eye prominent, subglobulose, its diameter one-third of lateral cephalic margin, situated dorsolaterally at mid-length of lateral cephalic margin. Cephalic dorsum ranging from mostly smooth and shining with abundant punctulae, and scattered piligerous punctae to densely punctate, striae present between eye and antennal insertion; abundant fine, parallel striae present between eye and clypeus, striae on clypeus oblique to longitudinal, extending onto median lobe; longitudinal sulcus extends posterad from between frontal carinae to one-half eye height; clypeus and frontal carina do not protrude dorsally in lateral view, clypeal margin broadly convex, continuous with rest of cephalic margin; head ventral surface smooth and shining with scattered punctae. Scape densely punctulae, with abundant decumbent pilosity and sparse subdecumbent hairs, scape extends beyond posterior cephalic margin by over half its length; third antennal segment over 6 × longer than apical width, second antennal segment less than half length of third segment; fourth antennal segment over half length of third segment, funicular segments subcylindrical. Mandible triangular, masticatory margin concave, irregularly serrate, occasionally with denticle or two, dorsal mandibular surface striolate with scattered punctae; PF: 4,3.

Mesosoma with prominent median constriction; broad metanotal groove in lateral view separates convex pronotal margin from broadly convex dorsal propodeal margin, mesonotum forms anterior margin of metanotal concavity; pronotum smooth and shining, propleuron smooth laterally, smooth to transversely striate ventrally; rest of mesosoma mostly with fine transverse, parallel striae. Mesometapleural suture scrobiculate, well impressed along mesopleuron; metapleural-propodeal suture lacking; bulla of metathoracic spiracle convex; anteroventral mesopleural carina fine but distinct, forming small angular or rounded lobe anterad; propodeum rounded, without lateral lobe or tooth; spiracle slit-shaped, facing posterolaterally, slightly elevated above surrounding cuticular surface; propodeal dorsum sometimes with variable amounts of smooth to weakly striate areas; mesonotum either indistinct or elongate, smooth and shining, metanotal suture ranging from indistinct to distinctly impressed.

Petiole elongate and triangular in lateral view, sometimes pedunculate. Subpetiolar process shaped as triangular lobe in lateral view. Node shaped as elongate drop in dorsal view, anterior carina prominent; node smooth and shining, posterior face not sharply separated from lateral face. Anterodorsal postpetiolar margin convex in lateral view; gaster with scattered punctulae, constriction between abdominal segments III and IV weak; procoxa mostly smooth and shining in lateral view. Mesosoma with no pubescence, only scattered standing to suberect hairs; decumbent to appressed pubescence present on cephalic dorsum and legs. Head, mesosoma, node and most of gaster black, sometimes with blue iridescence; antennae, mandibles, clypeus, legs, and apex of gaster dark brown. Apex of protibia without setae; apex of meso- and metatibial apex with single external seta.

Queen, male. Unknown.

Comments. This is one of the largest species in the genus, perhaps the longest of the New World species, though *L. ingens* is more robust. The largest specimens examined are from southwestern Colombia. Costa Rican material have a densely punctate cephalic dorsum and occasionally scattered shallow punctae on the cephalic ventral face. Most of the propleuron is smooth and shining in material from Central America and northern South America, whilst Brazilian specimens tend to have the propleuron with fine transverse striae. While most nests are recorded as coming from rotten logs on the ground of moist forested areas, an underground nest was found in Costa Rica, and one locality in Brazil is in Cerrado, a more xeric life zone. Even though this species can not be considered uncommon and numerous nests have been excavated, morphologically distinct queens have yet to be found. This species is another candidate within the genus for worker reproduction. In Lattke & Longino (2009) Longino reports a worker carrying a phalangid harvestman as prey.

Material studied. Bolivia. **Santa Cruz**: Las Guamas, P.N. Noel Kempff Mercado, 14°48′S 60°23′W, 700 m, 4.xii.1993, P.S. Ward 12284, 4w PSWC, 3w MCZC. – **Brazil**. **Amazonas**: Humaitá, 23.iv.1975, V.P. da Silva 80, 1w MZSP; High Falls, Rio Taruma, 30.viii.1962, W.L. Brown, 1w MZSP, 1w MCZC; Ig. Marianil, Rio Branco Rd., 24 km NE Manaus, 24.viii.1962, W.L. Brown, 1w MCZC. **Goias**: Campinaçu, Serra da Mesa, 13°52′S 48°23′W, 18.ii.–2.iii.1996, Silvestre, Brandão, y Yamamoto, 1w MZSP. **Pará**: Utinga Tract, near Belém, B-135, 12.viii.1962, W.L. Brown; Melgaço, Caxiuanã, 1°46′53″S 51°35′31″W, 30.vii.–1.viii.2003, 1w MPEG; Melgaço, Caxiuanã, 1°44′09″S 51°29′15″W, 29.–30.vii.2003, 1w MPEG. **Roraima**: Monte Negro – Cacaulândia, Rio Jamari, vii.2001, S. Favorito, 3w MZSP; Fazenda Rancho Grande, 62 km S Ariquemes, 5.–6.xii.1991, S. Heydon, 1w UCDC. – **Colombia**. **Nariño**: Barbacoas, RN Río Ñambí; 1°17′00″S 78°15′00″W, 1300 m, 1.v.1994, F. Escobar, 2w IAvH; La Espriella, vía Tumaco, km45, 15.vii.1994, F. Escobar, 1w IAVH; Orito, Territorio Kofan; 0°30′00″N 77°13′00″W, 1430 m, 24.ix.1988, E. González, 1w IAvH. **Valle**: Medio Calima, Río Bravo, 6.viii.1989, F. Castaño, 2w IAvH; P.N.N. Farallones de Cali, Anchicayá, 3°26′00″N 76°48′00″W, 730 m, 27.ii.2001, S. Sarria, 1w IAvH. – **Costa Rica**. **Alajuela**: Río Peñas Blancas, 10°19′N 84°43′W, 800 m, 23.vi.1991, J. Longino 2916, 1w INBIO. **Cartago**: Turrialba, CATIE, 14.–17.xi.1980, A. Young, 1w LACM. **Heredia**: La Selva, 9.vii.1974, Talbot & Vandevender, 1w LACM; Est. Biol. La Selva, 10°26′N 84°01′W, 50–150 m, 2.–12.viii.2004, J. Lattke 2927, 2w MIZA; Est. Biol. La Selva, 10°26′N 84°00′W, 50 m, 2.vii.1991, J. Longino 2954, 1w INBIO; [Est. Biol. La Selva], 10°20′N 84°04′W, 500 m, 5.–18.iii.1985, J. Longino 253-S, 1w INBIO. – **Ecuador**. **Pichincha**: Los Ríos, Centro Científico Río Palenque, 01°25′56″S 79°45′10″W, 2.iii.1979, S. Sandoval, 1w QCAZ; loc. cit., 1.i.1981, S. Sandoval, 3w MZSP. – **French Guiana**. Petit Saut, 8.vii.1998, A. Dejean, 11w MNHN, 1w MIZA. – **Panama**. Barro Colorado, vi.1939, J. Zetek, 1w LACM. – **Peru**. **Madre de Dios**: Cusco Amazónico, 15 km NE Puerto Maldonado, vi.1989, S. Cover, J. Tobin, 1w MCZC.

6.5.5.2. *Leptogenys phylloba* n.sp. (Fig. 25)

Diagnosis. Head elongate in full-face view; median clypeal process triangular, mostly laminate; eye greatly convex; mandible subtriangular, masticatory margin concave, mostly crenulate, occasionally with denticle or two; body mostly smooth and shining with sparse piligerous punctae; propodeal spiracle not elevated, oval, oriented laterally; petiole elongate, subtriangular in lateral view.

Worker. Metrics, holotype (paratypes, n = 2): HL 1.69 (1.69–1.69); HW 1.08 (1.15–1.15); ML 0.94 (0.91–0.98); EL 0.40 (0.37–0.40); SL 2.36 (2.36–2.39); PW 1.01 (1.04–1.08); WL 3.24 (3.10–3.24); PH 1.18 (1.15–1.15); PL 1.18 (1.18–1.25); DPW 0.81 (0.78–0.84) mm. CI 0.64 (0.68–0.68); MI 0.88 (0.79–0.85); OI 0.38 (0.32–0.35); SI 2.19 (2.06–2.09); LPI 1.00 (0.92–0.97); DPI 0.69 (0.66–0.68).

Head elongate in full-face view, wider anterad than posterad; lateral cephalic margin weakly convex; posterior cephalic margin convex; median clypeal process triangular, mostly laminate, apex pointed; lateral clypeal process narrow, joining smoothly with base of median process. Eye greatly convex, occupies approximately one-third of lateral cephalic margin, situated dorsolaterally and anterad of mid-length of lateral cephalic margin. Cephalic dorsum mostly smooth and shining with abundant punctulae, and scattered piligerous punctae; clypeus mostly smooth with oblique to longitudinal stri-

ae laterad, narrow smooth strip present along anterolateral margin posterad of mandibular insertion extending mesad, disappearing behind median clypeal lobe; longitudinal sulcus extends posterad from between frontal carina to one-half eye height; clypeus and frontal carina protrude dorsally in lateral cephalic view, clypeal margin divided by blunt angle into anterior third part and long, sloping posterior two-thirds part that peaks at antennal insertion; head ventral surface smooth and shining with scattered punctae. Scape densely punctulae with abundant pilosity and scattered subdecumbent to suberect hairs, scape extends beyond posterior cephalic margin by almost half its length; third antennal segment over 4 × longer than apical width, second antennal segment half length of third segment; fourth antennal segment over half length of third segment, funicular segments subcylindrical. Mandible elongate, triangular, masticatory margin concave, mostly crenulate, occasionally with denticle or two, length of masticatory margin almost same as basal margin; dorsal mandibular surface smooth with scattered punctae.

Mesosoma with deep metanotal groove separating convex promesonotal margin in lateral view from broadly convex dorsal propodeal margin; mesosomal sculpture mostly smooth and shining with scattered piligerous punctae. Mesometapleural suture scrobiculate well impressed along mesopleuron; metapleural-propodeal suture lacking; propodeal spiracle not elevated, oval, oriented laterally; bulla of metathoracic spiracle convex; mesopleuron smooth with weak fine transverse striae in some areas, some striae present posteroventrad, anteroventral carina well developed, forming angular lobe anterad; mesosternum with transverse striae anterad; metapleuron with transverse striae posteroventrad; declivitous propodeal face with transverse striae posterad; propodeum rounded, without lateral lobe or tooth; mesonotum broader than long in dorsal view, anterior margin convex; metanotal groove straight, scrobiculate.

Petiole elongate, subtriangular in lateral view, anterior margin brief and convex; anterodorsal margin convex, longer than posterior margin; node highest posterad; posterior margin inclined anterad mostly straight to weakly convex. Subpetiolar process angular anterad, lobe-like posterad in lateral view. Node longer than wide in dorsal view, anterior margin convex; lateral margin broadly convex, posterior margin straight. Node smooth and shining, posterior face not sharply separated from lateral face. Anterodorsal postpetiolar margin convex in lateral view; gaster with scattered punctulae, constriction between abdominal segments III and IV weak; procoxae smooth and shining in lateral view. Mesosoma with no pilosity, only scattered standing to suberect hairs; decumbent to appressed pilosity present on cephalic dorsum, anterior coxal faces, meso- and metafemora, tibiae, and tarsi. Head, mesosoma, node and most of gaster black; antenna, mandibles, clypeus, legs, and apex of gaster brown. Apex of pro- and metatibia without setae; mesotibial apex with single external seta.

Queen, Male. Unknown.

Derivatio nominis. The species name alludes to the lamellate, leaf-like median clypeal lobe. It is derived from the Greek for leaf, *phyllon*.

Comments. This is the second largest species in the group, and it could overlap in size with small specimens of *L. famelica*, but *L. phylloba* does not have the slender, triangular node of *L. famelica*, which is cuneiform in dorsal view. This species is sympatric with *L. pinna* but differs from it on account of its larger size, clypeal sculpture, and orientation of the propodeal spiracle opening, which is slightly posterior in *L. pinna*.

Type material. Holotype worker. **COLOMBIA**, Caquetá, Puerto Solano, P.N.N. La Serranía de Chiribiquete, Río Cuñaré – [Río] Amu, 0°12′48″N 72°25′25″W, 250 m, 1.–3.iii.2001, M. Ospina, E. González, deposited in IAvH (No.35089). – Paratypes. (1) **COLOMBIA**, Caquetá, Puerto Solano, P.N.N. La Serranía de Chiribiquete, Río Cuñaré–[Río] Amu, 0°12′35″N 72°24′55″W, 250 m, 15.–17.ii.2001, M. Ospina, E. González, 1w deposited in IAvH (No. 35078). (2) **COLOMBIA**, Amazonas, Río Ayo, 1°35′11″S 69° 31′39″W, vi.2002, F. Quevedo, 1w deposited in IAvH.

Other material studied. ECUADOR. **Napo**: Limoncocha, 00°26′S 76°36′W, 280 m, 18.vii.1973, L. Morales (colony F445) 1w MZSP.

6.5.5.3. *Leptogenys pinna* n.sp. (Fig. 26)

Diagnosis. Eye broadly convex, occupies approximately one-fourth of lateral cephalic margin; mesosoma slender with strong constriction at metanotal groove; mesonotum longer than wide; anterior carina of mesopleuron projects laterally as small hooked fin; petiolar node elongate with long anterodorsal margin in lateral view.

Worker. Metrics, holotype (paratypes, n = 2): HL 1.42 (1.31–1.38); HW 0.91 (0.88–0.88); ML 0.81 (0.78–0.81); EL 0.30 (0.27–0.30); SL 2.16 (1.99–2.09); PW 0.81 (0.84–0.84); WL 2.90 (2.86–2.90); PH 0.84 (0.94–0.94); PL 0.91 (0.94–1.01); DPW 0.61 (0.61–0.61) mm. CI 0.64 (0.63–0.67); MI 0.89 (0.88–0.92); OI 0.33 (0.31–0.35); SI 2.37 (2.27–2.38); LPI 0.93 (0.93–1.00); DPI 0.67 (0.60–0.64).

Head elongate in full-face view, wider anterad than posterad; lateral cephalic margin broadly convex; posterior cephalic margin convex; median clypeal process triangular, laminate, apex pointed; lateral clypeal process narrow, forming small angle with base of median process. Eye broadly convex, occupies approximately one-fourth of lateral cephalic margin, situated slightly dorsolaterally, anterad of mid-length of lateral cephalic margin. Cephalic dorsum mostly smooth with abundant punctulae, and scattered piligerous punctae; clypeus mostly smooth medially with oblique to longitudinal striae laterad; longitudinal sulcus extends posterad from between frontal carina to one-half eye height; clypeus and frontal carina protrude dorsally in lateral view, clypeal margin broadly convex; head ventral surface smooth and shining with sparse punctae. Scape densely punctulate, with abundant subdecumbent pilosity and

scattered subdecumbent to suberect hairs, scape extends beyond posterior cephalic margin by over half its length; third antennal segment over 4 × longer than apical width, second antennal segment almost half length of third segment; fourth antennal segment over half length of third segment, funicular segments subcylindrical. Mandible elongate, triangular, masticatory margin concave, basal half serrate, apical half edentate, length of masticatory margin almost same as basal margin; dorsal mandibular surface smooth with scattered punctae.

Mesosoma slender, markedly constricted with deep metanotal groove separating convex promesonotal margin in lateral view from broadly convex dorsal propodeal margin; mesosomal sculpture mostly smooth and shining with scattered piligerous punctae. Mesometapleural suture partially to totally scrobiculate, well impressed along mesopleuron; metapleural-propodeal suture lacking; propodeal spiracle not elevated, elongate, oriented laterally to slightly posterad; bulla of metathoracic spiracle convex, not abruptly circumscribed by sulcus; mesopleuron mostly with weak fine transverse striae, striae usually colliculate, anterodorsally mostly smooth; anteroventral carina well developed, forming prominent angular, laminate lobe anterad, in dorsal view lobe resembles small fin; mesosternum with transverse striae anterad; metapleuron with transverse striae posteroventrad; declivitous propodeal face mostly transversely striate, bulla strongly convex; propodeum rounded, without lateral lobe or tooth; mesonotum longer than wide in dorsal view, anterior margin convex; metanotal groove straight, with irregular sculpture, not scrobiculate.

Petiole elongate, subtriangular in lateral view, anterior margin brief and concave; anterodorsal margin convex, longer than posterior margin; node highest posterad; posterior margin broadly convex. Transverse section of node at mid-length has convex lateral outline. Subpetiolar process angular, posterad with projecting lobe in lateral view. Node elongate in dorsal view, anterior margin convex, half width of posterior margin; lateral margin broadly convex, posterior margin straight. Node smooth and shining, posterior face not sharply separated from lateral face. Anterodorsal postpetiolar margin convex in lateral view; gaster with scattered punctulae, constriction between abdominal segments III and IV weak; procoxae smooth and shining in lateral view. Mesosoma with no pilosity, only scattered standing to suberect hairs; decumbent to appressed pilosity present on cephalic dorsum, ventral coxal faces, femora, tibiae, and tarsi; gaster with scattered subdecumbent pilosity. Head, mesosoma, node and most of gaster black; antenna, mandibles, clypeus, legs and apex of gaster brown, coxae dark brown. Apex of protibia without setae; meso- and metatibial apex with single external seta.

Queen. Metrics: HL 1.48; HW 0.94; ML 0.74; EL 0.30; SL 2.06; PW 0.84; WL 2.70; PH 0.88; PL 0.88; DPW 0.64 mm. CI 0.64; MI 0.79; OI 0.32; SI 2.18; LPI 1.00; DPI 0.73. The queen is ergatoid with the usual differences from the workers except for the dorsal propodeal margin, which in lateral view presents a brief convexity, shaped as a distinct "hill", and posteriorly it curves smoothly onto the declivitous margin. There is a vestigial median ocellus. The petiolar node likewise has a brief convexity on the anteroventral margin. The queen is lighter colored than the worker with a more ferruginous tint.

Male. Unknown.

Derivatio nominis. The species name is the Latin noun for fin and alludes to the fin-like anteroventral mesopleural process.

Comments. The pin with the holotype has two point-mounted ants, the bottom ant was designated as the holotype, and its point was partially stained red. The top ant is the queen. *L. pinna* is different from other species of group because of the elongate mesonotum and petiolar node, well-developed anterior mesopleural process, and the marked constriction of the mesosoma in lateral view, making it look like a slender hour glass. The unusual irregular "bumps" on the queen propodeum and anterior node face, or similar sculpturing, are not present in other species, leading to believe they could be individual deformities of the specimen.

Type material. Holotype worker. **Costa Rica**, Río Reventazón, 3–5 km E Turrialba, 19.–22.i.1973, W.L. Brown, deposited in MCZC. – Paratypes. Same series as holotype. 1 queen and 2 workers deposited in MCZC.

6.5.5.4. *Leptogenys pittieri* n.sp. (Fig. 27)

Diagnosis. Eye broadly convex, occupies less than one-fourth of lateral cephalic margin, situated laterally; mandible masticatory margin edentate except for single preapical denticle; petiole subquadrate in lateral view, anterior margin half the height of posterior margin; dorsal margin convex; node subquadrate in dorsal view, slightly longer than wide.

Worker. Metrics, holotype (paratypes, n = 5): HL 1.31 (1.18–1.31); HW 0.81 (0.64–0.81); ML 0.64 (0.57–0.64); EL 0.24 (0.17–0.20); SL 1.42 (1.35–1.48); PW 0.81 (0.74–0.78); WL 2.19 (2.09–2.19); PH 0.84 (0.74–0.84); PL 0.67 (0.61–0.67); DPW 0.61 (0.54–0.57) mm. CI 0.62 (0.51–0.69); MI 0.79 (0.74–1.00); OI 0.29 (0.21–0.32); SI 1.75 (1.67–2.26); LPI 1.25 (1.10–1.25); DPI 0.90 (0.80–0.89).

Head elongate in full-face view, wider anterad than posterad; lateral cephalic margin broadly convex; posterior cephalic margin convex; median clypeal process broadly triangular, laminate, apex pointed; lateral clypeal process narrow, joining smoothly with base of median process. Eye broadly convex, occupies less than one-fourth of lateral cephalic margin, situated laterally, anterad of mid-length of lateral cephalic margin. Cephalic dorsum mostly smooth and shining with abundant punctulae, and sparse piligerous punctae; clypeus mostly with oblique to longitudinal striae, smooth medially and posterolaterally close to tentorial pit, clypeus

divided anterolaterally by fine straight sulcus defining a smooth strip from posterad of mandibular insertion to lateral clypeal lobe; PF: 4,3.

Longitudinal sulcus extends posterad from between frontal carinae to beyond one-half eye height; head ventral surface smooth and shining with scattered punctae. Scape densely punctulae, with abundant subdecumbent pilosity and scattered subdecumbent to suberect hairs, scape extends beyond posterior cephalic margin by under half its length; third antennal segment over 2 × longer than apical width, second antennal segment over half length of third segment; fourth antennal segment over three-fourths length of third segment, funicular segments subcylindrical. Mandible elongate, triangular, masticatory margin concave, edentate except for single pre-apical denticle, length of masticatory margin almost same as basal margin; dorsal mandibular surface smooth with scattered punctae.

Mesosoma with broad metanotal groove separating promesonotal margin in lateral view from broadly convex dorsal propodeal margin; mesosomal sculpture mostly smooth and shining with scattered piligerous punctae. Mesometapleural suture scrobiculate, well impressed along mesopleuron; metapleural-propodeal suture lacking; propodeal spiracle not elevated, broadly oval, oriented laterally with slight posterior angle; bulla of metathoracic spiracle convex; mesopleuron with weak striae-rugulae posteroventrad, anteroventral carina shaped as rounded triangular to subquadrate lobe; mesosternum mostly smooth; metapleuron with weak transverse striae posteroventrad; declivitous propodeal face smooth anterad, transversely striate posterad; propodeum rounded, without lateral lobe or tooth; mesonotum broader than long in dorsal view, anterior margin convex; metanotal groove straight, smooth.

Petiole subquadrate in lateral view, anterior margin half the height of posterior margin, dorsal margin convex, node highest posterad, posterior margin weakly sinuous. Subpetiolar process subquadrate in lateral view. Node subquadrate in dorsal view, slightly longer than wide, anterior margin convex; lateral margin broadly convex, posterior margin weakly convex. Node smooth and shining, posterior face not sharply separated from lateral face. Anterodorsal postpetiolar margin convex in lateral view; gaster with scattered punctulae, constriction between abdominal segments III and IV weak; procoxae smooth and shining in lateral view. Mesosoma mostly with no pilosity, only scattered standing to suberect hairs; decumbent to appressed pilosity present on cephalic dorsum and legs. Head, mesosoma, node and most of gaster black to dark brown; antenna, mandibles, clypeus, legs, and apex of gaster ferruginous to ferruginous brown. Apex of pro- and metatibia without setae; mesotibial apex with single external seta.

Queen. Metrics (n = 2): HL 1.31, 1.28; HW 0.81, 0.84; ML 0.57, 0.57; EL 0.20, 0.20; SL 1.45, 1.45; PW 0.74, 0.74; WL 2.09, 2.06; PH 0.74, 0.74; PL 0.57, 0.54; DPW 0.54, 0.57 mm. CI 0.62, 0.66; MI 0.71, 0.68; OI 0.25, 0.24; SI 1.79, 1.72; LPI 1.29, 1.38; DPI 0.94, 1.06. The queen is very much like the worker except for the usual differences.

Male. Unknown.

Derivatio nominis. The species name alludes to the swiss botanist Henri Pittier (1857–1950), who was a key player in procuring the decree of Venezuela's first national park, Parque Nacional Rancho Grande in 1937, subsequently renamed Parque Nacional Henri Pittier in 1953. The type locality for *L. pittieri* is located within the park.

Comments. The type locality, Rancho Grande, is located at 10°21′N 67°41′W. This species has the smallest eyes of the group with EL less than OMD, and a relatively robust body and petiolar node compared with other *famelica* group members. One specimen has a mite latched on the clypeus next to an antenna. The holotype is the top specimen on a pin with two point-mounted ants, the point has been partially stained red. A specimen in the IAvH collection from the Serranía de Chiribiquete National Park in Caquetá, Colombia has an even more subquadrate petiolar node than *L. pittieri*, and a more slender mesosoma, the EL is greater than OMD, and has broader median clypeal lobe. Additionally several isolated specimens (from Putumayo, Colombia, and Amazonas, Brazil) that seem to represent other species belonging to this group are deposited in IAvH, and MPEG, but given the uncertainty with species determination concerning these specimens, it is best to wait until additional material can be gathered for another bout with this species group. All were labeled as *L. famelica* gp.

Type material. Holotype worker. **VENEZUELA**, [Aragua], Rancho Grande, 1100 m, 23.–27.vii.1971, W.L. & D.E. Brown Jr., 1w deposited in MCZC. – Paratypes. 5 workers and 2 queens with same data as holotype deposited in MCZC.

6.5.5.5. *Leptogenys serrata* n.sp. (Fig. 28)

Diagnosis. Eye convex, occupies less than one-fourth of lateral cephalic margin, situated slightly dorsolaterally; clypeus mostly smooth medially and posterolaterally close to tentorial pit, anterolaterally with oblique to longitudinal striae; mesonotum broader than long in dorsal view; petiole subtriangular in lateral view, anterior and dorsal margins joined by single convex curve, node highest posterad.

Worker. Metrics, holotype (paratypes, n = 2): HL 1.28 (1.25–1.31); HW 0.81 (0.81–0.81); ML 0.64 (0.64–0.67); EL 0.20 (0.20–0.20); SL 1.55 (1.55–1.58); PW 0.74 (0.71–0.78); WL 2.19 (2.16–2.22); PH 0.84 (0.74–0.78); PL 0.67 (0.61–0.67); DPW 0.57 (0.57–0.57) mm. CI 0.63 (0.62–0.65); MI 0.79 (0.79–0.83); OI 0.25 (0.25–0.25); SI 1.92 (1.92–1.96); LPI 1.25 (1.10–1.28); DPI 0.85 (0.85–0.94).

Head elongate in full-face view, wider anterad than posterad; lateral cephalic margin broadly convex; posterior cephalic margin convex; median clypeal process broadly triangular, laminate, apex pointed; lateral cly-

peal process narrow, joining smoothly with base of median process. Eye convex, occupies less than one-fourth of lateral cephalic margin, situated slightly dorsolaterally, anterad of mid-length of lateral cephalic margin. Cephalic dorsum mostly smooth and shining with abundant punctulae, and scattered piligerous punctae; clypeus mostly smooth medially and posterolaterally close to tentorial pit, anterolaterally with oblique to longitudinal striae; longitudinal sulcus extends posterad from between frontal carinae to one-half eye height; clypeus and frontal carina protrude dorsally in lateral view, clypeal margin broadly convex; head ventral surface smooth and shining with scattered punctae. Scape densely punctulae, with abundant subdecumbent pilosity and scattered subdecumbent to suberect hairs, scape extends beyond posterior cephalic margin by half its length; third antennal segment over 2 × longer than its apical width, second antennal segment over half length of third segment; fourth antennal segment over three-fourths length of third segment, funicular segments subcylindrical. Mandible elongate, triangular, masticatory margin concave, mostly serrate, occasionally with denticle or two, length of masticatory margin almost same as basal margin; dorsal mandibular surface smooth with scattered punctae; PF: 4,3.

Mesosoma with deep metanotal groove separating convex promesonotal margin in lateral view from broadly convex dorsal propodeal margin; mesosomal sculpture mostly smooth and shining with scattered piligerous punctae. Mesometapleural suture scrobiculate, well impressed along mesopleuron; metapleural-propodeal suture lacking; propodeal spiracle not elevated, oval, oriented laterally with slight posterior angle; bulla of metathoracic spiracle convex; mesopleuron with weak fine transverse striae in some areas, some striae present posteroventrad, anteroventral carina well developed, forming angular lobe anterad; mesosternum mostly smooth with transverse striae anterad; metapleuron with transverse striae posteroventrad; declivitous propodeal face with transverse striae posterad; propodeum rounded, without lateral lobe or tooth; mesonotum broader than long in dorsal view, anterior margin convex; metanotal groove straight, scrobiculate to relatively smooth.

Petiole subtriangular in lateral view, anterior and dorsal margins joined by single convex curve, node highest posterad, posterior margin mostly straight to weakly convex. Transverse section of node at mid-length has convex lateral outline. Subpetiolar process lobe-shaped in lateral view. Node longer than wide in dorsal view, anterior margin convex; lateral margin broadly convex, posterior margin straight; width of anterior margin more than half of posterior margin. Node smooth and shining, posterior face not sharply separated from lateral face. Anterodorsal postpetiolar margin convex in lateral view; gaster with scattered punctulae, constriction between abdominal segments III and IV weak; procoxae smooth and shining in lateral view. Mesosoma mostly with no pilosity, only scattered standing to suberect hairs; decumbent to appressed pilosity present on cephalic dorsum and legs. Head, mesosoma, node and most of gaster black to dark brown; antenna, mandibles, clypeus, legs, and apex of gaster ferruginous to ferruginous brown. Apex of pro- and metatibia without setae; mesotibial apex with single external seta.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the serrate masticatory mandibular margin. It is derived from the Latin adjective for toothed as a saw, *serratus*.

Comments. The specimen from Cundimarca differs from the Barro Colorado series by its larger size. This species can be confused with another Central American species of the *famelica* group, *L. pinna*, on account of its similar size but can be separated by comparing the elongate mesonotum and petiole of *L. pinna*, as well as the more posterolateral facing propodeal spiracle of *L. pinna*. One specimen was recorded as found in leaf litter. *L. pittieri* is similar in build, but has a single pre-apical tooth on the mandibular masticatory margin and a much more subquadrate petiolar node in lateral view. Probably more species from this group are to be discovered as indicated by specimens that apparently represent different morphs, but since they are single specimens, there is not enough information for making sound decisions. Two workers with a petiole shaped similarly as *L. serrata* have been studied but they differ by having the propodeal spiracle on an elevation and its opening facing more posteriorly, relatively larger eyes, and the clypeus with a distinct narrow strip of smooth cuticle along its anterolateral margin. One is from Parque Nacional La Paya, Putumayo, Colombia (IAvH) and the other is from from Caxiuanã, Pará, Brazil (MEPG). These specimens have been labeled as *Leptogenys* cf. *serrata*. Hopefully a future reviser can make sense of these patterns.

Type material. Holotype worker. **Panama**, Canal Zone, Barro Colorado Island, 15.viii.1938, N.A. Weber 1195, 1w deposited in MCZC. – Paratypes. (1) One worker with same data as holotype, 1w MCZC. (2) One worker from same locality as holotype, 9.v.1976, S. Levings, 1w MCZC.

Other material studied. Colombia. **Cundinamarca**: Finca Bella Vista near Sasaima, 5.vi.1965, P.R. & D.L. Craig, 1w MCZC.

6.5.6. *ingens* species group

Worker diagnosis. Compound eyes tending to dorsolateral position with head in full-face view, eyes large and convex, diameter usually ranging from one-fourth to one-third the lateral cephalic margin in full-face view, occasionally more or less; scape surpasses posterior cephalic margin by at least half its length; third antennal segment elongate, median clypeal lobe and lateral clypeal lobes well developed, median lobe with slight basal kink (except *L. ingens*) and no setae on apex nor fringing lamella; deep transverse sulcus present along posterior clypeal margin between anterior tentorial pit and anterior margin of antennal sclerite; mandible elon-

gate, not triangular, with pre-apical notch, basal sulcus well impressed; PF: 4,3. Third antennal segment elongate; mesonotum wider than long to longer than wide, never narrow and transverse; metanotal groove weakly to moderately impressed, never scrobiculate; metapleural-propodeal suture weakly impressed; propodeum unarmed, profile rounded, dorsum with transverse striae (striae weak in *L. tiobil*); propodeal spiracle elongate; petiolar node shape usually subquadrate (triangular in *L. tiobil*) in lateral view, apex of node with tooth or blunt lobe; body with abundant erect hairs, appressed pubescence present on cephalic and mesosomal dorsum; mesosoma well sculpted, not smooth and shining; body color black, with or without blue iridescence; constriction between abdominal segments III and IV moderate; protibia with 1–3, usually 2, setae on posterior face just basad of strigil; apex of mesotibia with 1 (2 in *L. ingens*) seta on external face; apex of metatibia with 1 external seta (*L. ingens* in addition with 1–2 internal apical setae); metacoxal dorsum with low posterobasal swelling; subpetiolar process abruptly projected, not tapering; posteriorly concave in lateral view.

Included species. *L. carbonaria*, *L. ingens*, *L. socorda*, *L. tiobil*.

Comments. This group of relatively large and easily recognizable species has a distribution limited to the northern South American Coastal Range, from northeastern Venezuela to northern Colombia, including Margarita Island, but none reported yet from Trinidad. The most widespread species is *L. ingens*. *L. carbonaria* is known only from the Santa Marta Cordillera in northern Colombia. Reproduction is apparently by egg-laying workers as numerous nests found and collected have failed to reveal any specimen that could be recognized as a queen using external morphology alone.

Possible apomorphies. A strong apomorphy supporting monophyly of this group is the presence of setae on the protibia just basad of strigil insertion, and also, but a bit weaker is the discrete kink of the median clypeal lobe. A posterior process on the petiolar node is also found in the species of the *unistimulosa* group.

6.5.6.1. *Leptogenys carbonaria* n.sp. (Fig. 29)

Diagnosis. Eye subglobular, placed slightly dorsomedially on head; clypeus with median lobe not acutely pointed and with triangular lobe on each side; cephalic dorsum strigulose; scape punctuate; mandible of uniform width, dorsum finely striolate. Mesosoma mostly strigulose; propodeal declivity rounded in lateral view, without tooth or lobe; petiole in lateral view with convex anterodorsal margin, a short blunt apical tooth and mostly straight posterior margin.

Worker. Metrics, holotype (paratypes, n = 3): HL 2.00 (1.90–1.95); HW 1.53 (1.40–1.50); ML 1.25 (1.25–1.40); EL 0.45 (0.40–0.43); SL 2.50 (2.35–2.45); PW 1.30 (1.20–1.25); WL 3.50 (3.35–3.50); PH 1.30 (1.15–1.20); PL 1.35 (1.20–1.30); DPW 0.85 (0.80–0.90) mm. CI 0.76 (0.74–0.77); MI 0.82 (0.83–1.00); OI 0.30 (0.27–0.30); SI 1.64 (1.60–1.68); LPI 0.96 (0.92–0.96); DPI 0.63 (0.67–0.69).

Head in full-face view elongate, slightly wider anterad; posterior and lateral margins forming single convexity anteriorly bound by compound eyes; compound eye occupies approximately one-fourth of the lateral cephalic margin, eye subglobular and set slightly dorsomedially on head. Median clypeal lobe triangular with finely rounded apex, apex slightly constricted; median lobe with triangular lobe at each side. Cephalic dorsum posterad of eye rugulose-scabriculous, and between eye and antennal fossa strigate. Scape densely punctulate, surpassing posterior cephalic border by over a third its length; funicular segments longer than wide; third antennal segment longer than first and at least as long as fourth and fifth combined. Mandible elongate, relatively straight in cephalic full-face view, of uniform width with brief concavity at base of basal margin; dorsal surface finely striolate with sparse punctae; inner margin mostly broadly convex, with single pre-apical denticle; chewing margin concave with single low triangular tooth closer to apical tooth than to pre-apical denticle. Mandible when closed leaves visible gap not wider than maximum mandibular width. Mandible in lateral view with evenly convex anterior margin, mandibular base separated from clypeal lobe by distance greater than third of mandibular thickness. Ventral cephalic surface with strigulae forming concentric ovals; hypostomal tooth shaped as rounded lobe, not visible in dorsal cephalic view; basal sulcus of mandible ill-defined.

Mesosoma in lateral view with two convexities formed respectively by promesonotum and metanotum-propodeum, the latter longer and broader; dorsal and declivitous propodeal margins form continuous convexity. Pronotal sides mostly longitudinally to obliquely strigulate; bordered by deep and crenulate ventral sulcus; propleuron transversely strigulate. Strigulae on mesometapleural and propodeal sides transverse to oblique; mesometapleural suture well impressed; metapleural-propodeal suture weakly impressed; metathoracic spiracle large, elongate and semicircular, tubercle prominent, well-defined and separated by sulcus; propodeal spiracle elongate with vertical longitudinal axis, posteriorly facing. Metapleural gland opening faces posterad. Pronotum with anterior strip of transverse strigulae, medially with longitudinal strigulae; mesonotum and propodeal dorsum transversely strigulate; metanotal groove broad but not deep; propodeal declivity transversely striate. Mesosternal process sub-rectangular, weakly sinuate ventrally in lateral view.

Petiole subquadrate in lateral view, with convex anterodorsal margin, apex of node with blunt point slightly overhanging posterior margin, posterior margin mostly broadly concave, ventrad weakly convex. Width of anterior margin of node less than half that of posterior margin in dorsal view. Node with smooth area next to spira-

cle in lateral view, becoming imbricate posterad and finally longitudinally strigulose; posterior face transversely strigulose. Posterior lateral margins rounded, posterior face slightly depressed; ventral process forms curved lobe. Anterior postpetiolar margin straight up to half of node height then convex in lateral view. Gaster mostly smooth and shining with sparse punctulae. Head, mesosoma, and petiole with appressed pilosity; body in general with abundant semi-erect hairs; scape with dense decumbent pilosity. Tergite VII with longitudinal median crest along posterior half. Procoxa smooth and shining in lateral view; sides of meso- and metacoxa smooth basally with increasingly dense punctures apicad; dorsally smooth. Metacoxa with posterodorsal low swelling. Profemur basally smooth and apically punctate in lateral view. Head, mesosoma, petiole and abdominal segments III–IV mostly black; mandibles dark brown; antennal segment three with basal half black, apical half and following segments brown; metapleural gland opening brown; apical abdominal segments dark brown.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the black color of its body. It is derived from the Latin for coal, *carbo*.

Comments. This species could be confused with *L. socorda*, due to its similar size and subquadrate profile of the petiolar node. *L. socorda* has a smooth node compared with the rough sculpturing of the node in *L. carbonaria*; and the metanotal groove is not as deeply impressed in *L. socorda*. The holotype specimen is missing an antenna, but it is glued on the point.

Type material. Holotype worker. **Colombia**, Magdalena, Sierra Nevada de Santa Marta, 695 m, 23.iii.1992, D1. One worker deposited in IAvH. – Paratypes. **Colombia**, Santa Marta Mountains, Walker Exp. 269, 25.vii.1913, F.M. Gaige. Three workers deposited in LACM, one worker in MCZC.

Other material studied. Colombia. Magdalena, Serranía de Santa Marta, 1198 m, Hacienda La Victoria, 11°08′N 74°04′W, 2004, R. Guerrero, 2w BMNH, 2w CIUSM, 2w MCZC, 3w MIZA, 2w MZSP; Sierra Nevada de Santa Marta, 1300 m, Hacienda La Victoria, 11°07′23.3″N 74°06′33.3″W, 30.iv.2006, R. Guerrero, 2w CIUSM; 1396 m, Hacienda La Victoria, 11°07′24.3″N 74°06′33.3″W, 26.–28.vii.2004, R. Guerrero, 1w CIUSM.

6.5.6.2. *Leptogenys ingens* Mayr (Fig. 30)

Leptogenys ingens Mayr, 1866a: 503. Holotype worker: Neu Granada (= Colombia) (NHMW) [examined].

Diagnosis. Large species, median clypeal lobe prominent, apex truncate with smaller median lobe; lateral median lobe triangular, prominent; petiolar node subquadrate in lateral view with prominent apical blunt point, subpetiolar process claw shaped in lateral view, almost as tall as the vertical width of the petiolar peduncle.

Worker. Metrics (n = 8): HL 2.12–2.73; HW 2.02–2.53; ML 1.82–2.12; EL 0.61–0.61; SL 2.83–3.23; PW 1.52–1.92; WL 4.24–5.05; PH 1.82–2.12; PL 1.41–1.62; DPW 0.91–1.21 mm. CI 0.87–1.19; MI 0.76–1.00; OI 0.24–0.30; SI 1.24–1.55; LPI 1.27–1.50; DPI 0.60–0.80.

Head wider anterad than posterad in full-face view, lateral and posterior margin forming continuous convexity, slightly bulging at mandibular insertion; anterior clypeal margin with lateral triangular lobe, median lobe projecting abruptly, apex truncate except for smaller median rounded lobe. Eye convex, dorsolaterally placed on head, ocular diameter at least one-fourth length of cephalic lateral margin. Area between compound eye and frontal lobe with longitudinal to oblique rugae; area posterad of eye transversely rugulose-punctulate. Frontal lobe forms longitudinal crest extending posterad to mid-eye distance; dorsal lobe of torulus laterally expanded, partially covering antennal condyle. Scape surpasses posterior cephalic margin by more than one-fourth its length, with fine piligerous punctulae, pubescence and inclined pilosity; fourth antennal segment as long as or longer than following two segments combined. Mandible slightly arched in cephalic full-face view, leaving wide space between basal margin and clypeus, dorsally shining, punctate with fine longitudinal etchings; slightly expanding in width from mid-length apicad; basal and masticatory margins separated by single fine denticle; masticatory margin with median notch and apical triangular angle. Ventral cephalic face mostly shining with blue opalescence, hypostomal tooth distinct, not visible in dorsal cephalic view. PF 4,3.

Mesosoma with pronotal margin forming single convexity separated by metanotal groove from broad concavity of dorsal propodeal margin in lateral view; pronotum laterally mostly smooth with blue opalescence, posterolaterally and anteriorly rugulose; dorsum densely punctate anterad and medially, sparse posterad; mesonotum punctate, punctae sparse medially; metanotal groove deeply impressed; propodeal dorsum transversely rugulose punctate; meso- and metapleuron transversely rugulose; mesometanotal suture well impressed.

Propodeal spiracle slit-shaped, vertical, opening posterolaterally, placed at least 2 lengths from declivity in lateral view. Petiolar node with anterior margin continuously convex in lateral view, with a blunt posterior tooth overhanging the concave posterior margin; mostly smooth with transverse rugulae posterolaterally and most of posterior face. Abdominal segments III–IV smooth and shining with sparse punctulae. Head, mesosoma, abdominal segments II–IV black with blue opalescence; remaining abdominal segments, and legs ferruginous brown; scape and mandible brown; funicular segments I–II ferruginous brown, other segments ferruginous. Body with abundant erect to sub-erect hairs; coxae mostly smooth with sparse punctulae.

Queen, male. Unknown.

Comments. Even though Mayr did not specify how many specimens he examined, the studied type seems to be the only specimen thus becoming holotype by default. This spectacular and easily determined species is the largest of the New World *Leptogenys*. Even though some specimens of *L. famelica* are comparable in total length, *L. ingens* is more robust than the slen-

der *L. famelica*. Almost all specimens of this species are known from the northern coastal mountains of Venezuela, except for the type specimen, which is from an unspecified location in Colombia, and a population on Margarita Island, close to the Venezuelan mainland. Since the Venezuelan Cordillera de la Costa is part of the Caribbean Mountain System (MEIER 1998), the possibility exists this species can be found in the Sierra Nevada de Santa Marta to the West, and the Arima Range to the East. They are particularly abundant in the Serranía de San Luis, Falcón State, Venezuela. The species has been taken in forests that range from cloud forest to dry forest, and an altitudinal range from sea level to 1100 m. It is a specialised predator of terrestrial isopods, its nests frequently easy to discern due to the pile of bleached isopod remains that fan out from the entrance. Nests are in the soil, with chambers usually in contact with roots, or beneath decomposing trunks or large branches, sometimes under stones. Workers have been observed foraging during the day. Despite the excavation of several nests, no recognisable queens have been found, leading to believe they are morphologically indistinct from the workers.

Material studied. COLOMBIA. Unspecified location, 1w NHMW (holotype). – VENEZUELA. **Aragua**: Cepe, [10°30′N 67°30′W], 50 m, 22.xii.2002, J. Lattke 2478, 1w MIZA; Valle de Santa María, Parque Nacional Henri Pittier, 13.vii.2003, 10°22′N 67°49′W, 700 m, J. Lattke 2535, 10w MIZA; Valle de Santa María, Parque Nacional Henri Pittier, 10°22′N 67°49′W, 700 m, 31.viii.2003, J. Lattke 2804, 4w MIZA. **Falcón**: Cerro Capadare, near El Cayude, 300 m, 13.xi.1982, J. Lattke 290, 24w MIZA; near Palenque along road to Coro, 950 m, 8.iv.1982, J. Lattke 234, 1w MIZA; Corocoro, near Curimagua, 5.xii.1980, J. Lattke 142, 1w MIZA; Dto. Petit, Camburales Valley, 1200 m, 26.vi.1982, J. Lattke, 2w MIZA; Valle de Curimagua, 900 m, 28.iii.1983, J. Lattke 290, 24w MIZA; Curimagua, San Lorenzo, 1040 m, 21.–24.v.1993, F. Cerdá, 2w MIZA; Curimagua, [900 m], 24.vii.1980, J. Lattke 109, 2w MIZA; San Joaquin, 1000 m, 18.viii.1993, J. Lattke, 2w MIZA; San Joaquin, 980 m, 17.viii.1993, J. Lattke, 2w MIZA. **Miranda**: cerca Cueva de Mauricio, Ocumare del Tuy, 30.viii.1980, J. Lattke 129, 13w MIZA, 1w CUSB; Parque Recreacional Los Mariches, 1150 m, ca. Caracas, 19.vii.1986, J. Lattke 903, 8w MIZA; Puesto Galindo, Parque Nacional El Avila, 950 m, 6.i.2003, J. Lattke 2520, 1w MIZA; Reserva Forestal Pedro Gual, cerca Cúpira, 20.iv.1984, J. Lattke 511, 20w MIZA; Cueva Salón de la Iglesia, Río Salmerón, 17.iv.1981, J. Lattke 169, 3w MIZA; Parque Nacional Laguna de Tacarigua, 50 m, 25.x.1992, C. Bordon, 1w MIZA; Serranía del Bachiller, 17 km WSW Cúpira, 100 m, 16.iv.1999, F. Castilla, W. Goitia, J. Lattke 1531, 2w MIZA. **Monagas**: Cupo, 90 m, 2.v.1993, W. Goitía, F. Osborn, 1w CUSB. **Nueva Esparta**: Isla Margarita, ca. Fuentidueño, 400 m, 11°00′54″N 64°54′47″W, 7.v.2008, J. Lattke 3173, 1w MIZA. **Sucre**: Las Melenas, 10°41′N 62°37′W, 800 m, [11.v.1993], J. Lattke 1489, 2w MIZA.

6.5.6.3. *Leptogenys socorda* n.sp. (Fig. 31)

Diagnosis. Eyes subglobular, slightly placed dorso-medially; clypeus with median lobe narrowing abruptly at apex, not acutely pointed and with rounded triangular lobe on each side; cephalic dorsum rugulose; scape densely punctuate; mandible of uniform width, dorsum finely striolate. Mesonotum and propodeum with transverse strigae; petiole in lateral view with convex to bluntly angular anterodorsal margin, apex bluntly rounded and posterior margin convex.

Worker. Metrics, holotype (paratypes, n = 4): HL 2.10 (2.05–2.25); HW 1.55 (1.50–1.55); ML 1.25 (1.20– 1.45); EL 0.43 (0.40–0.43); SL 2.45 (2.30–2.45); PW 1.33 (1.30–1.40); WL 3.65 (3.50–3.70); PH 1.20 (1.25–1.40); PL 1.35 (1.30–1.45); DPW 0.70 (0.65–0.75) mm. CI 0.74 (0.69–0.73); MI 0.81 (0.80–0.94); OI 0.27 (0.26–0.27); SI 1.58 (1.53–1.58); LPI 0.89 (0.93–1.04); DPI 0.52 (0.47–0.56).

Head in full-face view elongate, slightly widest anterad; posterior and lateral margins continuously convex; lateral margin broadly convex, almost straight; compound eye occupies less than one-fourth of lateral cephalic margin, eye subglobular, set slightly dorsomesad on head. Clypeal median lobe triangular with apex narrowing abruptly and finely rounded, median lobe with rounded triangular lobe at each side. Cephalic dorsum mostly rugulose; area between eye and antennal fossa with arched striae. Clypeus with transverse striae. Scape densely punctulate, surpasses posterior cephalic border by over a third its length; funicular segments longer than wide; third antennal segment twice longer than first and at least as long as fourth and fifth combined. Mandible elongate, relatively straight in cephalic full-face view, of uniform width; dorsal surface finely striolate with sparse punctae; inner margin mostly broadly convex, basal angle with single low denticle; chewing margin with single triangular notch separating low triangular pre-apical tooth from apical tooth; one mandible closes next to clypeus, other mandible leaves narrow gap. Ventral cephalic surface with strigulae forming concentric ovals, hypostomal tooth well developed as elongate lobe, not visible in dorsal cephalic view.

Mesosoma with promesonotum forming broad convexity in lateral view; posterior margin of mesonotum drops to metanotal groove, propodeal dorsal margin broadly convex, meeting declivity through single convexity. Pronotal sides mostly longitudinally to obliquely striate; propleural lateral face transversely strigulate, ventral face smoothened. Pronotum with narrow anterior strip of 3–4 transverse strigulae; medially with oblique parallel strigulae that diverge posteriorly. Mesometapleura, mesonotum and propodeum transversely striate; mesometapleural suture well impressed; metapleural-propodeal suture weakly impressed; tubercle of metathoracic spiracle prominent, smooth with fine punctulae; propodeal spiracle elongate, posterolaterally facing. Propodeum with smooth area next to petiolar insertion. Ventral mesopleural carina low, anteriorly forming triangular denticle. Mesosternum mostly smooth with transverse striae anterad and mesad. Mesosternal carina well developed.

Petiole with convex to bluntly angular anterodorsal margin in lateral view; dorsal margin straight, ascending to rounded apex that slightly overhangs posterior margin, posterior margin weakly concave. Node mostly smooth and shining with transverse striae on ventral

posterior face. Node elongate and cuneiform in dorsal view; anterior margin narrow; posterior margin forms blunt angle. Anterior postpetiolar margin vertical up to half of node height in lateral view, then convex; gaster mostly smooth and shining with sparse punctulae; pygidium with longitudinal median crest along posterior half. Body in general with abundant erect to semi-erect hairs, without appressed pilosity; scape with dense decumbent pilosity. Procoxa smooth and shining in lateral view; profemur basally smooth, becoming densely punctulate apicad in lateral view, densely punctulate in dorsal view; protibia with two setae just above strigil; apex of protarsal segments with two pairs of setae. Head, mesosoma, petiole, and abdominal segments III–IV mostly black; mandible brown; scape and legs very dark brown, almost black; antennal segments two and three mostly dark brown, remaining segments brown; apical abdominal segments brown.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the name of the religious mission close to where the ants were collected.

Comments. There is some confusion regarding the type locality since the Serranía de Perijá is the same mountain range as the Serranía de Motilones, but the former is the Venezuelan name and the latter is the Colombian name. *L. socorda* could be confused with *L. carbonaria*, but see comments for the latter for distinguishing characters.

Type material. Holotype worker. **Colombia**, Serranía de Perijá, Socorda Mission, 1400 m, 14.viii.1968, B. Malkin. One worker deposited in MCZC. – Paratypes. With the same locality data as the holotype: 1w IAvH, 1w MIZA, 9w MCZC.

6.5.6.4. *Leptogenys tiobil* n.sp. (Fig. 32)

Diagnosis. Large black species with blue iridescence; body with abundant appressed pubescence; petiolar node triangular in lateral view with blunt point that overhangs posterior margin. Mandibles slightly triangular, brown with fine striae on dorsum; median clypeal lobe prominent with longitudinal strigae.

Worker. Metrics, holotype (paratypes, n = 5): HL 2.05 (2.05–2.15); HW 1.4 (1.45–1.5); ML 1.05 (1.05–1.15); EL 0.5 (0.5–0.55); SL 2.6 (2.45–2.6); PW 1 (1.2–1.45); WL 3.55 (3.4–3.65); PH 1.1 (1.05–1.1); PL 1.5 (1.45–1.55); DPW 0.65 (0.6–0.7) mm. CI 0.68 (0.69–0.71); MI 0.75 (0.72–0.79); OI 0.36 (0.34–0.38); SI 1.86 (1.63–1.86); LPI 0.73 (0.68–0.76); DPI 0.43 (0.41–0.47).

Head in full-face view elongate, wider anterad than posterad, posterior margin broadly convex, lateral margin almost straight, median clypeal lobe prominent, in full-face view longer than half the straight line distance from the anterior edge of the antennal sclerite to the anterior-most mandibular edge; lobe apically roughly triangular with bluntly pointed apex, expanding abruptly laterad towards base; lateral clypeal lobe broadly triangular, median lobe meets lateral lobe at an angle. Scape surpasses posterior cephalic border by almost one-half its length; third antennal segment about 2 × length of either second or fourth segments. Compound eye convex and slightly bulging, situated dorsolaterally, interrupting lateral cephalic margin; ED more than one-fourth LCM. Mandible elongate and mostly semi-parallel, widening slightly towards apex; a small gap remains between mandible and clypeus when shut tight; mandible with small basal tooth and larger pre-apical denticle. Mandibular dorsum with fine strigulae and shallow piligerous punctae. Hypostomal tooth not visible in cephalic full-face view. Antennal fossa surrounded by concentric striae, frons mostly reticulate punctuate, densely punctate towards vertex; area posterad of eye striate-punctate; sculpture tends to smoothen on ventral cephalic surface with sparse punctae and shallow arching, fine strigulae. Vertexal carina distinctly visible in cephalic full-face view, carina well developed ventrally, becoming a perpendicular flange at least as wide as half the greatest scape width.

Mesosoma with promesonotal margin forming single convexity in lateral view, metanotal groove well impressed, dorsal propodeal margin slightly convex to almost straight, declivity convex with outline made jagged by transverse striae. Pronotum mostly punctate in lateral view, punctae-striate posterolaterally, dorsum densely punctate; prosternum mostly smooth and shining. Mesopleuron transversely striate, striae fine medially, coarser dorsad and ventrad; metapleuron and lateral propodeum posterad of spiracle transversely striate; mesopleuron separated from mesosternum by carina, carina widest anterad; propodeal spiracle elongate, posterolaterally directed. Metapleural-propodeal suture weakly impressed. Mesonotum and propodeal dorsum transversely striate

Petiole in lateral view triangular, with single anterodorsal broadly convex margin, apex with short blunt tooth that slightly overhangs the slightly convex posterior margin; ventral margin sinuate with anterior tooth. Node punctate laterally, punctae become sparse ventrad; posterior face medially with transverse strigulae and ventrad with coarse striae. Node in dorsal view with elongate tear-drop shape, the slender anterior section gradually becoming wider posterad. Abdominal segments III–IV densely punctulate; segment V sparsely punctulate. Pygidium with median longitudinal crest; hypopygidium with lateral row of setae and ventrally with 2 pairs of arching setae close to base of sting. Body covered with abundant appressed pilosity, standing and decumbent hairs also present. Lateral face of procoxa mostly smooth and shining; posterior face of protibia with 3–5 setae, the longest at apex. Body black with blue iridescence; antennae, mandible, femora and tarsi brown; coxae and tibiae dark brown with weak blue iridescence.

Queen, male. Unknown.

Derivatio nominis. The species name is a tribute to William L. Brown, Jr. (1922–1997), myrmecologist and

mensch. It is an indirect patronym derived from the Spanish "Tío Bill", and is a translation of "Uncle Bill". (He eschewed patronyms) *Gracias por todo Tío Bill*.

Comments. *L. tiobil* is the only *ingens* group species with a triangular petiolar node. It has a spotty distribution in Venezuela's Cordillera de la Costa, with almost all records from the mountains next to the Rancho Grande field station, and a single record 100 km to the East. Both sites have abundant humid forests, with records in the former locality ranging from 1000 to 1300 m altitude, and a single worker at 350 m in the latter site. The type series nest was found along an earthen embankment, and consisted of a single chamber some 30 cm in the earth. Some ants reacted to disturbance by hiding in nearby crevasses, others fled rapidly into the surrounding litter. Single workers have been observed foraging during day light hours. Series 1054 was found in a vertical earthen embankment with a single nest entrance some 50 cm from the ground. A pile of bleached isopod remains fanned out from the entrance. The nest entrance seemed excessively large in proportion to the ants, pointing to the possibility that they were using a previously excavated cavity. Since several nest series have been taken and none of the captured ants could be identified as a queen, the possibility exists that queens in this species are morphologically almost indistinct from the workers.

As noted above this species was collected by William Brown along the trails close to the Rancho Grande research station during 1971 and in correspondence he mentioned their presence there as common. I started collecting in the same site in the early 1980s and was able to corroborate the frequent presence of nests close to the station yet in the course of time, particularly during the 1990s, these ants became quite rare close to the station and were more noticeable at higher altitudes. At present they are quite infrequent from the station surroundings and are now found close to 1300 m.

Type material. Holotype worker. **VENEZUELA**, Aragua, Parque Nacional Henri Pittier, Rancho Grande via La Cumbre, 1300 m, 22.vii.2001, J. Lattke 2444. One worker deposited in MIZA. – Paratypes. From the same nest as the holotype: 4 workers deposited in MIZA, 1w MCZC, 1w BMNH, 1w MZSP, 1w IAvH, 1w LACM.

Other material studied. VENEZUELA. **Aragua**: Parque Nacional Henri Pittier, Rancho Grande, 1100 m, 23.–27.vi.1971, W.L. & D.E. Brown, 20w MCZC; same locality but 2.x.1982, J. Lattke 286, 1w MIZA; same locality but 20.ii.1987, J. Lattke1054, 14w MIZA; Parque Nacional Henri Pittier, Paso Portachuelo, 1100 m, 18.v.1982, G. Yépez, S. Segnini, cols, 1w MIZA. **Yaracuy**: Finca La Guáquira, ca. San Felipe, 538.555E 1.137.267N [9°22′N 67°18′W], 350 m, 6.i.2006, E. Rodríguez, J. Lattke 2990, 1w MIZA.

6.5.7. *langi* species group

Worker diagnosis. Head capsule subrectangular in full-face view; eye length greater than maximum scape width, eye convex to weakly convex, situated weakly dorsolaterally on head; mandible elongate, basal and external margins subparallel, basal mandibular margin with 2–3 stout hairs (not setae), mandibular basal sulcus well impressed, mandible leaves open space between basal margin and clypeus, does not shut tight; frontoclypeal suture shallow but well-defined; median clypeal lobe slender, length greater than basal width, apex sharply pointed, lacking apical seta; scape surpasses posterior cephalic margin by under one-fourth its length; basal funicular segments subequal in length. Mesonotum wider than long in mesosomal dorsal view; metanotal groove scrobiculate (*L. minima*, *L. mavaca*) or smooth (*L. langi*); metapleural-propodeal suture absent; propodeal spiracle facing posterolaterad with depressed area between spiracle and bulla; propodeum armed with low blunt tooth. Petiolar node longer than wide in dorsal view, anterior margin greater than half width of posterior margin, node subquadrate in lateral view; constriction between abdominal segments III & IV weak (*L. mavaca*) to moderately developed (*L. minima*, *L. langi*); sculpturing on dorsum of head, thorax, and abdomen mostly smooth and shining with standing pilosity, no pubescence present (except cephalic dorsum of *L. minima*); anterior margin of abdominal segment III vertical to weakly convex; tibial apices lacking seta; metacoxal tumosity well developed.

Included species. *L. langi*, *L. mavaca*, *L. minima*.

Comments. The three small sized species known from this group are distributed within the Amazon-Orinoco watershed. *L. langi* is the most collected and apparently the most widespread, whilst the other two species are known from a single series each. The basal funicular segments in *L. langi* tend to have a marked constriction between each while the segments are subcylindrical in the other species, with a weak constriction between each segment. The gap between the mandibles and clypeus is greatest in *L. langi*, but narrow in the other two species. One of the few species of *Leptogenys* with winged queens is *L. langi*. During the final stages of studying material for this revision at least two possible species apparently related to at least one or two of the species listed here were found. Since they are only represented by single specimens it was decided not to describe them. With the accumulation of much more specimens than at hand now hopefully additional characters may be gleaned for satisfactorily defining not only species limits but how these species are related to each other. The phylogenetic analysis placed *L. langi* as close to *L. antillana*. Clearly more work is needed here.

Possible apomorphies. This is a very weakly supported group without an explicit apomorphy. The possible apomorphies can be found in various other groups: eye weakly dorsolaterad on head, mandible does not shut tight against clypeus, internal mandibular margin with 2–4 stout hairs, median clypeal lobe elongate and slender, shortened scape, antennal segments with strong constriction, and mesotibial apex lacking setae.

6.5.7.1. *Leptogenys langi* Wheeler (Fig. 33)

Leptogenys (*Lobopelta*) *langi* Wheeler, 1923: 5, fig. 1. Syntype workers and queens: Guyana (= British Guiana), Kamakusa, 2.xi.1922 (H. Lang) (MCZC, MZSP) [examined].

Diagnosis. Head slightly elongate in full-face view; eye convex, occupying less than one-fourth of lateral margin; scape surpasses posterior cephalic border by more than 2 apical widths; mandibles when closed leave gap at base of clypeal lobe almost one-half their median width; mandible subparallel, weakly widens apicad. Node elongate in dorsal view; lateral margins semi-parallel, just slightly divergent posterad; anterior margin rounded, almost as wide as posterior margin; posterior margin straight to slightly convex.

Worker. Metrics (n = 5): HL 0.80–0.87; HW 0.53–0.57; ML 0.38–0.43; EL 0.13–0.15; SL 0.70–0.75; PW 0.45–0.48; WL1.12–1.22; PH 0.47–0.50; PL 0.43–0.45; DPW 0.33–0.35 mm. CI 0.65–0.67; MI 0.70–0.76; OI 0.24–0.28; SI 1.29–1.36; LPI 1.04–1.15; DPI 0.74–0.81.

Head slightly elongate in full-face view; posterior margin straight to slightly concave; lateral margin broadly convex; eye convex, occupying less than one-fourth of lateral margin, lens of each ommatidium distinctly convex, but indistinct at perimeter, tending to fuse; clypeal margin laterally sinuate, converging anterad to slender and acutely pointed median lobe. Median cephalic sulcus shallow, barely impressed, its width about one-third the length of frontal carinae. Scape surpasses posterior cephalic border by more than 2 apical widths; basal funicular segments subequal in length, each width more than one-half the length; basal funicular segments with strong constriction. Mandibles when closed leave gap at base of clypeal lobe almost one-half their median width; mandible subparallel, weakly widens apicad; basal margin convex with 3 stout hairs at mid-length; masticatory margin with angle or small pre-apical denticle, masticatory margin edentate, slightly sinuate; dorsum smooth and shining, basal sulcus well developed. PF: 4,3. Ventral cephalic face smooth and shining; hypostomal tooth triangular, not visible in dorsal cephalic view; maxillae and labium smooth and shining.

Mesosoma with promesonotal margin forming single convexity in lateral view; metanotal groove well impressed; propodeal dorsal margin broadly convex to straight; declivity straight to broadly convex, with lobe-like denticle at spiracular height. Pro- and mesosternum smooth and shining. Mesosoma mostly smooth and shining; ventral pronotal groove fine; mesometapleural suture well impressed; propodeal spiracle oval, facing posterolaterally. Mesonotum with curved anterior margin in dorsal view, posterior margin transverse and straight; propodeal declivity mostly smooth and shining with single transverse carina uniting base of propodeal denticles.

Petiole with vertical anterior margin not higher than half posterior margin in lateral view, vertical and dorsal margins form curve, highest posterad, posterior margin slightly convex. Anterior postpetiolar face flattened, anterior margin mostly straight, reaching three-fourths height of posterior node margin. Subpetiolar process with brief convex anterior margin in lateral view, less than half the length of posterior margin, posterior margin concave, ventral margin straight. Node elongate in dorsal view; lateral margins semi-parallel, just slightly divergent posterad; anterior margin rounded, almost as wide as posterior margin; posterior margin straight to slightly convex. Gaster smooth and shining, constriction well marked; pygidial margin in lateral view broadly convex anterad, curvature becoming sharper close to posterior apex with posterior one-fourth broadly convex to straight. Body has sparse decumbent to semi-erect hairs, no pubescence. Procoxa smooth and shining in lateral view; antennae, mandibles, legs and gastral apex yellow to brownish-yellow; body ferruginous brown. Tibial apices wanting setae; posterior margin of tarsi has 2 pairs of setae.

Queen. Metrics: HL 1.00; HW 0.70; ML 0.44; EL 0.20; SL 0.88; PW 0.64; WL 1.54; PH 0.66; PL 0.50; DPW 0.44 mm. CI 0.70; MI 0.63; OI 0.29; SI 1.26; LPI 1.32; DPI 0.88. Head with 3 ocelli on posterior frons; compound eye proportionally larger than worker, more convex; mesopleuron with transverse mesopleural suture that curves sharply ventrad briefly before disappearing; anteroventral mesopleural carina lacking; katepisternum 2 × length of anepisternum. Mesoscutum as wide as long in dorsal view, anterior margin wider than posterior margin; anterior margin convex, lateral margin concave; metanotum transverse in dorsal view, arched, anterior and posterior margins parallel; axillae separated from scutellum by shallow sulcus. Wings present. Petiolar node as wide as long in dorsal view, posterior margin of node wider than anterior margin.

Male. Unknown.

Comments. Wheeler's description of *L. langi* differs from the Brazilian and Peruvian samples in the more elongate third antennal segment, and smaller ventral petiolar process. The head is described and illustrated as posteriorly narrower than anterad, but this is not apparent in a syntype depicted on the MCZC website nor in the MZSP syntypes. The curvature of the pygydium may vary when comparing specimens, but this depends on the degree of gastral extrusion. These ants have been captured in mature rainforest in clay soil turned over by a tree fall, and at base of a large dead tree, in humus below leaf litter. This species, *L. nigricans*, and an undescribed species from Texas (Cokendolpher et al. 2009) are the only New World species known to have winged queens.

Material studied. Brazil. **Amazonas**: Ig. Marianil, Rio Branco Rd., 24 km NE Manaus. M-75, 26.viii.1962. W.L. Brown leg. 4w 1q MCZC. **Pará**: Porto Trombetas, vii.1992, J.D. Majer, 1w MZSP; Melgaço, Caxiuanã, 1°45′N 51°31′W, 9.–11.iii.2004, A.Y. Harada, 2w MPEG; Icoaraci, 3.viii.1962, W.L. Brown, 1w MCZC. – **Bolivia**. **Beni**: Cabo Esperanza, iii.1922/1923, W. Mann, Mulford Biological Expedition, 3w LACM. – **Colombia**. **Caquetá**: Puerto Solano, Parque Nac. Nat. Serranía de

Chiribiquete, Río Cuñaré [– Río] Amu, 0°13′N 72°25′W, 250 m, M. Ospino, 1w IAvH. **Nariño**: Orito, Territorio Kofan, 0°30′N 77°13′W, 1000 m, 25.ix.1998, E.L. González, 1w IAvH. – **ECUADOR**. **Morone**: Santiago, Los Tayos, 3.viii.1976, Tjitte de Vries, 2w MZSP. – **GUIANA**. Kamakusa, xi.20.1922, H.O. Lang, 3w MZSP, 3w 3q MCZC [type series]. – **PERU**. **Loreto**: Ramón Castillo, 5 km NW Leticia, 23.ii.1972, S. & J. Peck, 1w MCZC. **Madre de Dios**: Tambopata, Cuzco Amazónico, 15 km NE Puerto Maldonado, 200 m, CA 493-2, S.P. Cover, J.E. Tobin, vi.1989, 8w MCZC. – **SURINAM**. Poeroeman Kemisa, x.1959, 2-xxia-4, I.v.d.Drift, 1w MZSP; Dirkshoop, v.1959, 10-iiia-10, I.v.d.Drift, 2w MZSP. – **VENEZUELA**. **Bolívar**: Area Experimental Caura, 7°16′N 64°57′W, 45 m, 9.ix.1990, M. Alemán, 1w MIZA.

6.5.7.2. *Leptogenys mavaca* n.sp. (Fig. 34)

Diagnosis. Eye broadly convex, large, occupying more than one-fourth of lateral cephalic margin; funicular segments cylindrical and elongate; median process triangular, slender, abruptly projecting anterad; mesopleuron and ventral metapleuron with transverse, roughly parallel striae.

Worker. Metrics, holotype (paratypes, n = 2): HL 0.87 (0.87–0.90); HW 0.52 (0.50–0.52); ML 0.37 (0.33–0.38); EL 0.18 (0.17–0.18); SL 0.84 (0.84–0.84); PW 0.50 (0.48–0.52); WL 1.27 (1.25–1.32); PH 0.50 (0.52–0.55); PL 0.45 (0.42–0.45); DPW 0.35 (0.35–0.38) mm. CI 0.60 (0.57–0.57); MI 0.71 (0.67–0.74); OI 0.35 (0.33–0.35); SI 1.61 (1.61–1.67); LPI 1.11 (1.15–1.32); DPI 0.78 (0.78–0.92).

Head subrectangular in full-face view, posterior margin straight, lateral margin curves medially to posterior margin, lateral margin posterad of eye convex; clypeal margin sinuate, median process triangular, slender, abruptly projecting anterad. Eye broadly convex, occupying more than one-fourth of lateral cephalic margin; individual lens distinct, no hint of fusing into each other at perimeter. Cephalic dorsum mostly smooth and shining with sparse piligerous punctulae; frontal carinae separated by shallow sulcus almost half their length. Scape surpasses posterior cephalic border by more than 3 apical widths, widest at mid-length; funicular segments cylindrical and elongate, fourth segment more than half the length of third, third segment longer than three widths. Scape punctate, with suberect to decumbent pilosity, no pubescence; cephalic ventral surface smooth and shining; hypostomal tooth brief, close to mandibular base. Mandibles close tight against clypeus leaving gap at base of median clypeal process; mandible of uniform width; dorsal surface smooth and shining, basal margin sinuate, basal convexity with 3 stout hairs; masticatory margin edentate, basal sulcus well developed.

Mesosoma with dorsal margin forming two broad convexities in lateral view, metanotal groove well impressed; propodeal dorsal margin meets declivitous margin at blunt angle; declivity straight to broadly convex; pronotum and propleuron smooth and shining, ventral pronotal groove fine; mesopleuron and ventral metapleuron with transverse, roughly parallel, striae; mesometapleural suture scrobiculate; most of metapleuron and propodeum smooth and shining; propodeal spiracle rounded, opening posterolaterally facing; metathoracic spiracular tubercle convex, rounded. Mesosomal dorsum smooth and shining; mesonotum wider than long in dorsal view with sub-parallel posterior and anterior margins; declivity with transverse striae; propodeal teeth blunt, at same height as spiracle.

Petiole sub-quadrate in lateral view; anterior margin more than half the height of posterior margin, or forming continuous convexity with dorsal margin; dorsal margin broadly convex, highest posterad; posterior margin mostly straight to very broadly concave, with modest ventral convexity. Posterior face flat to slightly convex; node smooth and shining. Node roughly as long as wide in dorsal view, width of anterior margin ranging from half to more than half width of posterior margin; posterior margin slightly convex. Gaster smooth and shining with sparse piligerous punctulae, constriction between segments III and IV well marked; pygidium without longitudinal crest; pygidial margin evenly convex in lateral view. Procoxa in lateral view smooth and shining; setae on posterior tarsal margins reduced; tibia lacking apical setae. Antennae, and mandibles brown; legs and gastral apex light brown; body dark brown, almost black.

Queen. Metrics: HL 0.92; HW 0.53; ML 0.35; EL 0.18; SL 0.85; PW 0.43; WL 1.30; PH 0.53; PL 0.42; DPW 0.42 mm. CI 0.58; MI 0.66; OI 0.34; SI 1.59; LPI 1.28; DPI 1.00. Similar to worker with mesosoma appearing more convex in lateral view, metanotal groove appears deeper; node compressed, in dorsal view with anterior margin less than half as wide as posterior margin; gaster enlarged.

Male. Unknown.

Derivatio nominis. The species name alludes to the type locality, Mavaca, a Yekuana indian village.

Comments. This species might be taken for *L. langi* on account of similarities in size, smoothened sculpture, pointed median lobe and a strong constriction between abdominal segments III and IV, but *L. langi* has the funicular segments sharply constricted basally, the mandibles lack the internal curvature, the median clypeal process is more acute and evenly tapers from the anterior margin. The body is smoother in *L. langi*, with little or no striation on the posterior mesosomal sides. The type series was found in a rotting palm trunk on the ground in a lowland forested area. The Brazilian specimen is extremely similar to the Venezuelan specimens, and has been provisonally determined as *L. mavaca*.

Type material. Holotype worker. **VENEZUELA**, Amazonas, Alto Río Mavaca, [Tapirapecó Basecamp], 2°1′N 65°7′W, 200 m, 31.i. 1989, J. Lattke 1230. One worker deposited in MIZA. – Paratypes. All from the same nest as the holotype: 1w 1q MIZA; 1w MCZC; 1w BMNH.

Other material studied. BRAZIL. **Espirito Santo**: Santa Cruz, 1975, M. Gochfeld, 1w MCZC.

6.5.7.3. *Leptogenys minima* n.sp. (Fig. 35)

Diagnosis. Head elongate, subrectangular in full-face view; median clypeal lobe triangular, elongate; eye broadly convex in cephalic full-face view, length more than one-third lateral cephalic margin; mesopleuron anterodorsad with brief series of striae that extend transversely posterad; node mostly smooth and shining except for longitudinal striae ventrad; node slightly longer than wide in dorsal view, anterior margin convex and more than half width of posterior margin.

Worker. Metrics, holotype (paratype): HL 0.85 (0.87); HW 0.53 (0.57); ML 0.37 (0.35); EL 0.20 (0.20); SL 0.78 (0.77); PW 0.48 (0.48); WL 1.25 (1.25); PH 0.48 (0.47); PL 0.47 (0.43); DPW 0.32 (0.32) mm. CI 0.63 (0.65); MI 0.69 (0.62); OI 0.38 (0.35); SI 1.47 (1.35); LPI 1.04 (1.08); DPI 0.68 (0.73).

Head elongate, subrectangular in full-face view; lateral margin broadly convex, head width greatest posterad of eye; posterior cephalic margin straight to weakly convex; median clypeal lobe triangular, elongate, width at base less than external width of antennal fossae; apex lamellate and pointed, sometimes with single hair; lateral lobe narrow and subparallel with clypeal margin; eye broadly convex in cephalic full-face view, length more than one-third lateral cephalic margin, ocular center closer to mid-length of lateral cephalic margin than to mandibular insertion. Scape smooth and shining with abundant piligerous punctulae, surpassing posterior cephalic border by less than one-fourth its length; antennal segment III slightly longer than either segments II and IV; length of antennal segment III just under twice apical width. Mandible elongate, external and basal margins parallel; basal margin mostly broadly convex, row of 2–3 setae present on base; basal angle rounded, masticatory margin short with single apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae. Cephalic dorsum mostly smooth and shining with abdundant punctulae, ventral side with sparse punctae; labium and stipes smooth and shining; clypeus with longitudinal striae between median crest and lateral apex, rest smoother.

Dorsal pronotal margin convex in lateral view; metanotal groove broad and shallow but distinct, dorsal propodeal margin weakly convex, declivitous margin curves onto tooth; propodeal tooth bluntly triangular, dorsal margin jagged. Pronotum smooth and shining with sparse punctulae; mesopleuron weakly colliculate mesad, posteroventrad transversely strigose; anterodorsad with brief series of striae that extend transversely posterad; metapleuron smooth and shining anterad, posterad transversely striate; lateral propodeal face mostly smooth and shining except for irregular striae around spiracle. Mesometapleural suture broad and scrobiculate; metapleural-propodeal suture absent; propodeal spiracle relatively small, broadly oval with opening directed posterolaterally; anteroventral carina of mesopleuron weakly widens anterad; mesosomal dorsum smooth and shining; propodeal declivity mostly with coarse transverse striae except for broad transverse sulcus next to petiolar insertion. Prosternum smooth and shining; mesonotum over twice wider than long in dorsal view, widest mesad; metanotal groove scrobiculate.

Petiole node subrectangular in lateral view; anterior margin vertical, weakly convex; anterior margin less than half height of posterior margin; node highest posterad, dorsal margin convex, sloped. Subpetiolar process subtriangular in lateral view with posterior hook. Node slightly longer than wide in dorsal view, anterior margin convex and more than half width of posterior margin, posterior margin weakly convex, lateral margin straight to weakly convex. Node mostly smooth and shining except for longitudinal striae ventrad. Anterodorsal margin of abdominal segment III continuously convex; constriction between abdominal segments III–IV well marked; gaster mostly smooth and shining with sparse piligerous punctulae. Body color mostly dark brown; mandible, clypeus, scape, legs brown; funiculi, tibiae, gastral apex ferruginous brown. Body with scattered subdecumbent and semi-erect hairs, appressed pilosity wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; pro- and metatibial apices lacking setae, mesotibia with apical seta.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the Latin *minimus*, for least, and alludes to the relative small size of this species when compared to other members of the genus for the Americas.

Comments. This species is easily recognized on account of the small size and large striking eyes. The transverse striae discernable in lateral view along the ventral margin of the petiolar node are unusual in these small species which are dominated by smooth and shining sculpture. The mesopleuron seems to be divided into a dorsal anepisternum and ventral katepisternum by a series of striae.

Type material. Holotype worker. **Brazil**, Goias, Niquelândia, 14°17′06″S 48°55′01″W, 18.–30.v.1996, Silvestre, Silva & Brandão. One worker deposited in MZSP. – Paratype. One worker on the same pin as the holotype deposited in MZSP.

6.5.8. *luederwaldti* species group

Worker diagnosis. Head elongate, eye much larger than maximum scape width (OI > 0.29), eye dorsolaterally situated on head, its diameter covering at least one-fourth to over one-third of lateral cephalic margin; third antennal segment quite elongate compared with surrounding segments, funicular segments subcylindrical without marked constrictions between each; scape extends beyond posterior cephalic margin by one-third its length (except *L. pucuna*); mandible shuts tight against clypeus when closed, mandibular shape subtriangular tending to elongate with parallel to subparallel basal and external margins, basal mandibular margin

without basal convexity; basal sulcus deeply impressed (except *L. linda*); sulcus between basal antennal sclerite and tentorial pit shallow but well-defined; labrum with scattered piligerous tubercles on anterior face; median clypeal lobe longer than ocularmalar length, with lateral lamella, lacking setae on apex; PF: 4,4 (*L. cuneata*, *L. gaigei*) or 4,3 (*L. imperatrix*, *L. luederwaldti*). Propleuron mostly smooth; mesonotum wider than long to longer than wide, never narrow and transverse; metapleural-propodeal suture absent to indistinct; mesosoma mostly smooth and shining (except *L. imperatrix*); metanotal groove well impressed (shallow in *L. gaigei*), not scrobiculate; propodeal spiracle elongate to broadly oval; cross-section of petiolar node at mid-length V-shaped, node triangular to semi-triangular in lateral view, rounded margin between posterior and lateral face; cuneiform in dorsal view with narrow, peduncular anterior part (except *L. linda*); anterior margin of abdominal segment III in lateral view convex, continuous with dorsal margin; propodeal declivity rounded and unarmed (*L. imperatrix*, *L. cuneata*) or weakly concave with lateral tooth (*L. luederwaldti*, *L. gaigei*, *L. linda*).

Constriction between abdominal segments III and IV modest to absent; metacoxal dorsum with weakly developed posterobasal swelling; apex of protibia lacking setae (*L. cuneata* sometimes with 1 seta); apex of mesotibia with 1 external seta (*L. cuneata* with 1–2 internal additionally); apex of metatibia without seta (except *L. cuneata* with one internal seta); body with sparse, standing hairs and appressed pubescence on head only (on whole body in *L. imperatrix*, absent in *L. luederwaldti*); body sculpture mostly smooth and shining (punctate in *L. imperatrix*); blue iridescence present on body (*L. luederwaldti*, *L. gaigei*, *L. cuneata*, *L. imperatrix*) or absent.

Included species. *L. cuneata*, *L. gaigei*, *L. imperatrix*, *L. linda*, *L. luederwaldti*, *L. pucuna*.

Comments. These large to medium sized species are found from Honduras into the Amazon watershed, except for *L. luederwaldti* which is found in southeastern Brazil. The propodeum may be armed with teeth or lobes as in *L. luederwaldti*, *L. linda*, *L. pucuna*, and *L. gaigei*, or it may lack any trace of armature as in *L. imperatrix* and *L. cuneata*. The postpetiolar constriction may be well marked as *L. imperatrix*, *L. linda*, and *L. pucuna*; or it may be poorly marked as in *L. cuneata*, and *L. gaigei*. *L. gaigei* and *L. cuneata* share a translucent lobe next to the protibial strigil. Ergatoid queens are known for three species but *L. gaigei* may reproduce through gamergates as it is a fairly well collected species and no distinct queens have been recovered to date. In preliminary phylogenic analyses, *L. gaigei*, *L. imperatrix* and *L. luederwaldti* were separately considered and they were recovered as a group.

Possible apomorphies. The wedge-shaped petiole in dorsal view, with a very brief anterior margin compared with the posterior margin, and concave lateral margins, besides the triangular to subtriangular shape in lateral view is what distinctly sets this group apart from the others.

6.5.8.1. *Leptogenys cuneata* n.sp. (Fig. 36)

Diagnosis. Head elongate in full-face view; compound eye broadly convex, flattened, diameter covers one-third of lateral cephalic margin; propodeal margin convex, unarmed, without lobe or denticle; petiole elongate and triangular in lateral view, anterodorsal margin straight; protibial apex with translucent lobe next to strigil.

Worker. Metrics, holotype (paratypes, n = 5): HL 1.85 (1.70–1.85); HW 1.15 (1.05–1.15); ML 0.80 (0.70–0.80); EL 0.45 (0.40–0.45); SL 2.50 (2.10–2.45); PW 1.00 (0.90–0.95); WL 3.20 (2.90–3.25); PH 0.95 (0.80–0.90); PL 1.35 (1.15–1.30); DPW 0.50 (0.45–0.50) mm. CI 0.62 (0.62–0.63); MI 0.70 (0.64–0.71); OI 0.39 (0.36–0.41); SI 2.17 (2.00–2.14); LPI 0.70 (0.62–0.78); DPI 0.37 (0.38–0.40).

Head elongate in full-face view, posterior margin broadly convex, lateral cephalic margins gradually diverging anterad, lateral margin convex posterad, otherwise mostly broadly convex; median clypeal lobe triangular, lateral margins foliaceous, apex with small denticle; anterolateral clypeal lobe inconspicuous; PF: 4,4. Compound eye broadly convex, diameter covers one-third of lateral cephalic margin; mandible semiparallel, dorsal surface with fine parallel striae; cephalic dorsum mostly smooth and shining, with some striae on clypeus. Scape surpasses posterior cephalic border by more than one-third its length; third antennal segment more than 3 × longer than second segment; fourth antennal segment more than half length of third.

Mesosoma with promesonotum forming single convexity in lateral view, metanotal groove broadly impressed, dorsal propodeal margin broadly convex, more than twice length of declivitous margin; propodeal margin convex, unarmed, without lobe or denticle. Mesosoma mostly smooth and shining, propodeal declivity with coarse transverse striae, fine transverse striae of mesosternum extend briefly laterad in triangular shaped area between posterolateral pronotum and anteroventral mesopleuron; mesometapleural suture well impressed, scrobiculate; mesonotum slightly longer than wide. Petiole elongate and triangular in lateral view, anterodorsal margin straight, posterior margin slightly inclined, weakly convex; node wedge shaped in dorsal view, lateral margin concave. Subpetiolar process subrectangular, posterior margin longer than anterior margin.

Anterior margin of third abdominal segment evenly convex; constriction between abdominal segments III and IV weak. Coxae and rest of legs mostly smooth and shining, tibiae and femora densely punctulate; protibial apex with translucent lobe next to strigil, usually lacking apical seta, occasionally single seta present just anterad of strigil; mesotibial apex with single seta on external side, 1–2 setae present internally; metatibial apex with single internal seta. Mesosoma with sparse subdecumbent pilosity; cephalic dorsum with several suberect to erect hairs; scape with abundant pilosity, no hairs. Mandible, antenna, legs, and gastral apex brown; rest of

body black with blue iridescence; coxae sometimes also black.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the wedge shaped petiolar node. It is derived from the Latin for wedge *cuneus*.

Comments. The presence of setae on the tibial apices varies as the Colombian material has a protibial seta, but this is lacking in the type series and Peruvian specimens, and a single internal mesotibial seta is present on the Peruvian specimen. This species shares with *L. gaigei* the translucent protibial lobe, but *L. gaigei* can be separated by the shorter node with a convex anterodorsal margin and the presence of propodeal lobes. Other characters are discussed in the comments for *L. gaigei*. The Panama specimen is from a wet forest.

Type material. Holotype worker. **Ecuador**, Morona, Santiago Los Tayos, 3.viii.1978, Tjitte de Vries. Deposited in MZSP. – Paratypes. Sixteen workers from the same nest as the holotype deposited in MZSP.

Other material studied. Colombia. **Chocó**: 10 km SW San José del Palmar, Río Torito, Finca Guaduales, 850 m, 1.–4. vi.1978, C. Kugler, 5w MCZC. **Nariño**: Orito, Territorio Kofán, 00°30′N 77°13′W, 700 m, 29.ix.1998, E.L. González, 1w IAvH. **Valle**: Cuenca Media Calima, Río Azul, 550 m, 3w IAvH. – **Panama**. **Bocas del Toro**: Fortuna – Chiriquí Grande Road, 8°47′N 82°11′W, 1.–17.vii.1978, 500 m, D.M. Olson, 1w MCZC. – **Peru**. **Loreto**: San Jacinto, 2°19′S 75°52′W, 220 m, 13.vii.1993, R. Leschen, 1w MIZA.

6.5.8.2. *Leptogenys gaigei* Wheeler (Fig. 37)

Leptogenys (*Lobopelta*) *gaigei* Wheeler, 1923: 7, fig. 2. Syntype workers: Guiana (= British Guiana), Dunoon, 17.–20.viii.1914 (F.M. Gaige) (MCZC) [examined]

Leptogenys (*Lobopelta*) *gaigei* var. *defuga* Wheeler, 1923: 8. Syntype workers: Guiana (= British Guiana), Kartabo, 12.viii. 1920, nest under old log (W.M. Wheeler) (MCZC) [examined] **n.syn.**

Leptogenys (*Lobopelta*) *melzeri* Borgmeier, 1930: 27, pl. IV figs. 15, 20, 22. Holotype worker: Brazil, Goias, Campinas, 6.x. 1928, Cat. No. 4701 (P.J.S. Schwarzmaier) (IBSP) [examined] **n.syn.**

Diagnosis. Head elongate with flattened eyes at cephalic mid-length; apical strigil of protibia with lateral translucent lobe; propodeum with blunt triangular lobes; petiolar node in lateral view triangular with convex anterodorsal margin; body smooth and shining, mostly black with blue opalescence.

Worker. Metrics (n = 7): HL 1.16–1.44; HW 0.76–0.91; ML 0.46–0.58; EL 0.23–0.30; SL 1.14–1.52; PW 0.08–0.78; WL 1.77–2.23; PH 0.63–0.73; PL 0.66–0.89; DPW 0.38–0.46 mm. CI 0.63–0.65; MI 0.55–0.66; OI 0.29–0.33; SI 1.50–1.67; LPI 0.80–0.96; DPI 0.48–0.58.

Head rectangular in full-face view, slightly wider anterad than posterad; posterior margin straight; lateral margin broadly convex; anterior clypeal margin evenly tapering to triangular median lobe, apex pointed or rounded. Eye mostly flattened, weakly convex, set slightly dorsad, approximately at mid-length of lateral cephalic margin, eye occupies between one-fourth and one-third of lateral cephalic margin. Scape surpasses posterior cephalic margin by distance more than one-third its length, scape thickest at basal third, thinner apically; mostly smooth and shining with piligerous punctulae. Second antennal segment less than one-third length of third segment, third segment subequal in length to fourth and fifth combined; funicular segments subcylindrical. Cephalic dorsum mostly smooth and shining with sparse to dense piligerous punctulae; clypeus with low rugosities. Cephalic ventral surface mostly smooth and shining, discal area devoid of pubescence. External maxilla and labium mostly smooth and shining with weak strigulae. PF 4,4. Mandible shuts tight against clypeus, mandible of uniform width, basal margin sinuate, masticatory border edentate, separated from basal margin by single denticle, dorsum mostly smooth and shining except for weak strigulae, basal groove strongly impressed; convexity of basal margin with row of 3 prominent hairs.

Mesosoma in lateral view with fairly straight dorsal margin, promesonotum forming broad convexity slightly higher than dorsal propodeal margin, metanotal groove distinct but shallow, propodeal declivity with low lobe at spiracular height, lobe usually jagged on dorsal margin. Pronotum smooth and shining with sparse piligerous punctae; ventral sulcus weakly impressed; mesosomal sides mostly smooth and shining, some rugulae present along ventral margin of mesometapleura. Mesopleuron rectangular; mesometapleural suture scrobiculate; metapleural-propodeal suture absent to weakly impressed as series of irregular depressions more or less in a row, propodeal spiracle oval and facing posterolaterally; metathoracic spiracle crescent shaped, spiracular prominence flattened to slightly convex, round to oval. Mesonotum transverse in dorsal view, rectangular, posterior margin anteriorly convex; propodeal declivity with transverse strigae, median area concave; propodeum with low triangular blunt lobe to none at all. Mesosternal process with posterior margin angular to rounded in lateral view, minute posterior spine sometimes present.

Petiole in lateral view triangular with convex anterodorsal margin and vertical to slightly convex posterior margin, smooth and shining; elongate in dorsal view with anterior margin less than half as wide as posterior margin, lateral margin concave. Postpetiole with convex anterior margin; gaster smooth and shining with sparse piligerous punctulae; pygidial dorsal margin broadly convex in lateral view. Procoxa mostly smooth and shining in lateral view, with sparse punctulae; protibial apex with slender and fine seta just anterad of strigil, at least one-third length of strigil, seta missing in some specimens; strigil with basal translucent triangular lobe; setae at apical margin of tarsi reduced. Scape with abundant subdecumbent pilosity. Scape, mandible, legs, and gastral apex dark brown; funiculus ferruginous brown; rest of body black with blue opalescence.

Queen. Unknown.

Male (not previously described)**.** Cephalic dorsum mostly smooth and shining with sparse piligerous punctulae; pronotum laterally with low rugosities to striae, prosternum with low rugosities; notaulus well impressed, scrobiculate, joining posterad and extending to posterior scutal margin. Shallow straight sulcus extends longitudinally from posterolateral scutum to mid distance of lateral scutum. Protibial apex lacking transparent lobe. Most of head, thorax, and abdomen brown; clypeus, and most of antennal segments III–XIII light brown; legs, mouthparts, antennal segments I–II, and narrow fringe at each end of antennal segments III–XIII yellow to brown yellow.

Comments. WHEELER (1923) describes *L. gaigei* var. *defuga*, on account of a shinier cephalic dorsum due to the more distanced and shallower punctures, and lessened pubescence and pilosity as well. Such differences can be seen in other *Leptogenys* species, and both *L. gaigei* and *L. defuga* share a transparent lobe next to the protibial strigil. No characters could be found to justify keeping the two forms as distinct entities. BORGMEIER (1930) suspected *L. melzeri* was close to *L. gaigei*, though he compared *L. melzeri* with *L. luederwaldti*. *L. melzeri* shares with *L. gaigei* the transparent lobe next to the protibial strigil. The eye in *L. melzeri* occupies at least one-third of the lateral cephalic margin when seen in full-face biew, and the mesonotum is about as long as broad in dorsal view. It is also larger in dimensions than most *L. gaigei*, but the Pará series are as large as the *L. melzeri* forms. The promesonotal margin broadly is convex, and is higher than the propodeal margin in lateral view. The size of the propodeal lobes is variable. The type of *L. melzeri* was collected in Campinas, Goias by P. Schwarzmaier on 6.ix.1928, and deposited in the Instituto Biologico, Rio de Janeiro as specimen 4710 (BORGMEIER 1930). Besides the holotype, abundant material from the type locality, collected by Schwarzmaier, and from roughly the same time period when the type was collected, was available for study in the MZSP, all of which corresponded very close to the detailed description of *L. melzeri*. *L. cuneata* shares with *L. gaigei* the translucent lobe next to the protibial strigil but can be distinguished by its larger size, total absence of propodeal lobes, and the very elongate petiolar node with a mostly straight anterodorsal margin in lateral view. Reproduction by gamergates is suspected for this species given the abundant material availble for study, including nest series, but not one recongnizable queen as of yet. A similar mode of reproduction might be possible for *L. cuneata*, the putative sister species of *L. gaigei*.

Material studied. BRAZIL. **Amazonas**: Ig. Marianil, Rio Branco Rd, 24 km NE of Manaus, M-78, 26.viii.1962, W.L. Brown Jr., 5w MCZC; Manaus, 30.viii.1962, K. Lenko 4268, 3w MZSP; Benjamin Constant, 18.–28.ix.1962, K. Lenko, 1w MZSP; High Falls, Rio Taruma, M-119, 30.viii.1962, W.L. Brown Jr., 2w MZSP. **Goias**: Campinas, P. Schwarzmaier, 5471, 2w 1m MZSP; same locality but P. Schwarzmaier 5554, 3w 1m MZSP; same locality but P. Schwarzmaier 5897, 16w 1m MZSP. **Pará**: Fazenda Taperinha, ii.1968, Exp. Perm. Amaz., 6w MZSP; Melgaço, Caxiuanã, 1°42′23.8″N 51°27′32.7″W, 8.–10.xi.2003, A. Harada, 1w MPEG; loc. cit. 1°43′29.2″N 51°25′47.2″W, 24.vii.2003, 1w MPEG; loc. cit. 1°44′9″N 51°29′15″W, 26.vii.2003, 1w MPEG. – **COLOMBIA**. **Amazonas**: P.N.N. Amacayacu, Matamata, 03°41′S 70°15′W, 150 m, pitfall, 28.–30.ix.2000, A. Parente M.854, 1w IAvH; Zaragoza, 27.ix.1988, F. Fernández, 1w MIZA. **Nariño**: Orito, Territorio Kofán, 00°30′N 77°13′W, 700 m, Bosque caída T1T6, 29.ix.1998, El González, 1w IAvH; Orito, Territorio Kofán, 00°30′N 77°13′W, 1000 m, Bosque caída T1T10, 20.ix.1998, E.L. González, 1w IAvH. **Caquetá**: Puerto Solano, P.N.N. La Serranía de Chiribiquete, Río Cunaré, Bosque de Tepuy, 0°29′55.3″N 72°37′11″W, 250 m, T caída, T2t4, 6.–8.xi.2000, M. Ospino y E. González leg., 1w IAvH 35091. – **ECUADOR**. **Morona**: Santiago, Los Tayos, 3.viii.1976, Tjitte de Vries, 2w MZSP. **Orellana**: Tiputini Biodiversity Station, 10.ii.–3.iv.2003, K.T. Ryder, 2w MCZC. **Pichincha**: Est. Científica Río Palenque, 21.xii.1980, S. Sandoval, 1w MZSP. – **GUIANA**. Dunoon, 20.viii.1914, F. Gaige 485, 2w MCZC (*L. gaigei* syntypes); Kartabo, 12.viii.1920, 2w MZCZ (*L. defuga* syntypes).

6.5.8.3. *Leptogenys imperatrix* Mann (Fig. 38)

Leptogenys (*Lobopelta*) *imperatrix* Mann, 1922: 15, fig. 8. Syntype workers: Honduras, Lombardia, San Juan Pueblo, ii.–iii.1920, Cat. No. 24443 (W.M. Mann) (USNM); Cat. No. 20509 (MCZC) [examined].

Diagnosis. Body with abundant piligerous punctae, metanotal groove well impressed, propodeum unarmed; node in dorsal view elongate, wedge shaped; anterior margin less than half the width of posterior margin, lateral margin concave anterad. Body dorsum with abundant decumbent pilosity, and very sparse standing hairs except on head.

Worker. Metrics (n = 7): HL 1.82–2.02; HW 1.21–1.31; ML 0.91–1.01; EL 0.40–0.51; SL 2.12–2.42; PW 1.01–1.11; WL 2.93–3.33; PH 1.01–1.11; PL 1.01–1.31; DPW 0.61–0.61 mm. CI 0.63–0.68; MI 0.69–0.77; OI 0.31–0.38; SI 1.75–1.85; LPI 0.77–1.10; DPI 0.46–0.60.

Head elongate in full-face view, wider anterad than posterad, lateral margin broadly convex, posterior margin straight, vertexal carina narrow and visible throughout posterior margin; median clypeal lobe triangular and prominent, longer than oculomalar distance, apex bluntly rounded, sometimes with small median lobe. Scape surpassing posterior cephalic border by over one-third its length, finely punctulate; second antennal segment approximately one-half length of third; third antennal segment more than 4 × longer than wide, fourth antennal segment more than half the length of third. Eye strongly convex, diameter at least one-third lateral cephalic margin. Mandible with external and basal margin mostly parallel, weakly widening apicad, strongly bent ventrad close to masticatory border; dorsal surface with weak fine striae; masticatory margin weakly concave and edentate except for apical tooth; PF: 4,3. Tentorial pit apparent, frontoclypeal suture fine but distinct. Clypeus with fine longitudinial striae; frons with abundant punctae, head mostly smooth between eye and clypeus; ventral cephalic surface mostly smooth and shining with sparse weak fine striae. Prementum mostly smooth and shining; stipes varies from mostly smooth and shining to weakly striate.

Mesosoma with broadly convex dorsal pronotal margin in lateral view, mesonotal dorsal margin may form continuous convexity with pronotal margin or may be separated by brief drop; metanotal groove well impressed; propodeal dorsal margin broadly convex; length of declivitous margin one-third of dorsal margin. Mesopleuron with fine transverse striae, metapleuron transversely to obliquely striate-punctate; dorsal propodeum mostly punctate-striate, mostly punctate anterad, mostly striae posterad, declivity transversely striate, spiracle elongate. Pronotum mostly densely punctate, punctae sparse posterolaterad; mesonotum slightly wider than long in dorsal view, punctate, with median longitudinal depression of variable length. Mesosternum with fine transverse, parallel costulate; mesosternum separated from mesopleuron by short crest; bullae bulging. Propleuron mostly smooth and shining, with scattered punctae, and transverse striae anterad.

Petiole triangular in lateral view, with single broadly convex to straight anterodorsal margin, highest posterad, posterior margin broadly convex to straight, dropping at slight angle. Node punctate dorsad and dorsolaterad; most of lateral face and posterior face smooth and shining. Node in dorsal view elongate, wedge shaped; anterior margin less than half the width of posterior margin, lateral margin concave anterad. Postpetiole mostly punctate, punctae becoming progressively sparser on abdominal tergites IV and V. Pygydium with median longitudinal crest, variable in length. Procoxa mostly smooth and shining in lateral view, scattered punctae present dorsolaterad. Body dorsum with abundant decumbent pilosity, and very sparse standing hairs except on head. Mandible, funiculus, tarsi, and gastral apex light brown to ferruginous; coxae, femora and tibiae mostly dark brown; head, mesosoma, petiole and most of gaster black.

Queen. Not examined.

Male. Unknown.

Comments. This species has as a distinctive character the presence of a mesonotal depression, usually sulcus shaped, which can be situated anterad, posterad or mesad on the mesonotum, and of variable length. Specimens have been taken mostly in humid forests, including litter from *Quercus* Linnaeus, 1753, within or beneath rotten logs, but some records are from open pasture. The MCZC has 2 pins of syntypes with 3 workers on each, and the USNM has 3 workers on a singe pin. Mann (1922) examined a queen and found it to be quite similar to the worker, with the usual differences in petiole shape and enlarged gaster.

Material studied. Costa Rica. **Alajuela**: Río Peñas Blancas, 800 m, 10°19′N 84°43′W, 23.vi.1991, J. Longino 2929, 1w INBIO; 14 km S Volcán Arenal, 1000 m, 10°20′N 84°43′W, 29.iv.1988, J. Longino 2035-S, 1w INBIO. **Puntarenas**: Monteverde, 13–1500 m, 10°18′N 84°48′W, 1982–1999, J. Longino, 5w INBIO, 3w LACM; 2 km SE Monteverde, 1100 m, 10°17′N 84°48′W, 7.vii.1991, J. Longino, 3w INBIO; Monteverde, CR31, 1250 m, S. Cover, M. Moffett, 14w MCZC; Monteverde, 1220 m, 22.v.1979, P. Ward 3466, 3w PSWC. – **Honduras**. **Atlántida**: Lombardia, San Juan Pueblo, [ii–iii.1920, W.M. Mann], 3w USNM, 6w MCZC. – **Panama**. **Chiriquí**: La Fortuna, Finca La Suisse, 11.vi.1995, R. Anderson 17838, 2w WPMC.

6.5.8.4. *Leptogenys linda* n.sp. (Fig. 39)

Diagnosis. Smooth and shining body except for transverse striae on propodeal dorsum, low propodeal denticle present, head elongate head, scape surpasses posterior cephalic margin by half its length; constriction between abdominal segments II and IV well marked.

Worker. Metrics, holotype: HL 1.89; HW 1.31; ML 1.18; EL 0.37; SL 2.59; PW 1.04; WL 3.27; PH 1.04; PL 1.04; DPW 0.54 mm. CI 0.70; MI 0.90; OI 0.28; SI 1.97; LPI 1.00; DPI 0.52.

Head elongate in full-face view, wider anterad than posterad, lateral cephalic margin straight to weakly convex, posterior cephalic margin straight; clypeal lobe blunt; lateral clypeal lobe shaped as broad convexity, stretching to same level as anterior margin of eye to mid diameter of antennal fossa. Eye diameter covers more than one-third lateral cephalic margin. Scape surpasses posterior cephalic border by half its length, third antennal segment 5 × its width, length of second antennal segment more than half length of third segment. Cephalic dorsal and ventral faces mostly smooth and shining with sparse piligerous punctulae. Mandibles mostly semiparallel, weakly widening apicad, preapical angle convex, basal margin broadly convex, external margin weakly concave medially, mandibular dorsum with fine longitudinal parallel striae, and scattered piligerous punctae. Stipes and labium smooth and shining.

Mesosoma with deep metanotal groove in lateral view, dividing promesonotal convexity from straight to weakly convex propodeal dorsal margin; propodeal dorsal margin more than 2 × length of declivitous margin; declivitous margin forms rounded obtuse angle with dorsal propodeal margin. Mesosoma mostly smooth and shining, some arched striae present at posterolateral pronotal area and posterior metapleuron; propodeal declivity transversely striate, low denticle present just dorsad of bulla; spiracle elongate, slightly elevated and posterolaterally facing. Mesonotum in dorsal view slightly longer than broad. Petiole subtriangular in lateral view, with brief convex anterior margin, broadly convex sloping anterodorsal margin that reaches posterior summit, posterior margin straight, not vertical but slightly sloping. Node in dorsal view elongate, gradually diverging posterad, anterior margin more than haf width of posterior margin. Node smooth and shining. Gaster mostly smooth and shining with sparse piligerous punctulae; anterior margin of abdominal segment III forms single convexity in lateral view; constriction between segments III and IV well marked; pygidium with brief posteromedian crest. Coxae smooth and shining. Mandibles, antennae, legs, and gastral apex mostly ferruginous brown, rest of body brown. Scape with short subdecumbent pilosity, body with scattered sudecumbent fine hairs,

large standing hair present mostly on clypeus, procoxa and gastral apex, some on head, and ventral body parts. Hairs golden.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to sleek beauty of the ant. It is derived from the Spanish for beautiful, lindo.

Comments. This species is described from a single specimen yet it is so distinct from any others of its group on account of its large size, dominant smooth and shining sculpture, elongate head, propodeal denticles, and well marked gastral constriction. The possibility exists that the single specimen could be recently eclosed and the brownish color might eventually give way to black.

Type material. Holotype worker. **COLOMBIA**, Cundinamarca, Medina, Miralindo, 1500 m, 4°35′33″N 73°23′17″, W.F. Escobar, ii.–iv.1997. One worker deposited in IAvH.

6.5.8.5. *Leptogenys luederwaldti* Forel (Fig. 40)

Leptogenys (*Lobopelta*) *luederwaldti* Forel, 1913: 206. Holotype worker: Brazil, Santa Catherina, Hammonia, Ihering no. 16841 (Lüderwaldt) (MHNG) [examined]

Leptogenys (*Lobopelta*) *anacleti* Borgmeier, 1930: 30, pl. III fig. 9, pl. IV figs. 18, 19. Holotype worker: Brazil, Rio de Janiero, Petropolis, i.1928, Cat. No. 3390 (A. Wiltuschnig) (IBSP) [examined] **n.syn.**

Diagnosis. Head elongate in full-face view; eye situated dorsolaterally on head in full-face view, and close to mid-length of lateral cephalic margin; large, occupying close to one-third lateral cephalic margin; scape surpasses posterior cephalic border by one-fourth its length; second funicular segment more than 3 × longer than first; mandible triangular. Petiole elongate and fulcrum-shaped in dorsal view, lateral margins concave, slender anterad; petiole in lateral view triangular.

Worker. Metrics (n = 5): HL 1.28–1.35; HW 0.81–0.81; ML 0.57–0.64; EL 0.27–0.30; SL 1.48–1.62; PW 0.71–0.74; WL 2.19–2.33; PH 0.67–0.84; PL 0.84–0.88; DPW 0.40–0.47 mm. CI 0.60–0.63; MI 0.71–0.79; OI 0.33–0.38; SI 1.83–2.00; LPI 0.80–0.96; DPI 0.48–0.54.

Head elongate in full-face view, head widest at mandibular insertion, lateral margin broadly convex, posterior margin straight to concave, with prominent vertexal carina. Eye situated dorsolaterally on head in cephalic full-face view, and close to mid-length of lateral cephalic margin; large, occupying close to one-third lateral cephalic margin; cephalic dorsum mostly smooth and shining. Clypeus with longitudinal striae medially and oblique striae laterally; median clypeal lobe prominent, evenly tapering to sharp point, lateral lobe narrow and weakly convex. Scape surpasses posterior cephalic border by one-fourth its length; second funicular segment more than 3 × longer than first; third segment little more than half length of second. Mandible triangular, edentate except for apical tooth, dorsum smooth and shining; basal margin slightly convex, masticatory margin more than half length of basal margin; lateral basal sulcus present; PF: 4,3.

Mesosoma with broadly convex promesonotal margin and straight to broadly convex dorsal propodeal margin in lateral view, dorsal propodeal margin more than twice length of declivitous margin, metanotal groove deeply impressed, propodeal declivity with broad triangular tooth that forms continuity with dorsal margin, apex of tooth at spiracular level. Space between propodeal spiracle and apex of tooth with 3–5 oblique striae, striae continue transversely across dorsal half of propodeal declivity, ventral half with singe broad, transverse sulcus. Body sculpturing almost all smooth and shining, mesometapleural suture well impressed and scrobiculate; mesopleuron bordered anteroventrally by low carina.

Petiole elongate and wedge-shaped in dorsal view, lateral margins concave, slender anterad; petiole in lateral view triangular, anterodorsal margin broadly convex, node highest posterad, posterior margin mostly vertical, weakly concave. Subpetiolar process shaped as rounded or triangular lobe. Propodeal spiracle elongate and vertical, slightly wider dorsad than ventrad. Abdominal segment III with anterodorsal margin convex in lateral view, constriction between abdominal segments III and IV well marked. Body wanting pubescence, pilosity sparse, mostly on head and ventral parts; dorsal pilosity usually subdecumbent, pronotum with two erect hairs anterad; scape with abundant subdecumbent pilosity. Body and scape black with blue opalescence; legs, funiculus, clypeus, and mandibles brown to dark brown.

Queen (not previously described)**.** Metrics (n = 1): HL 1.92; HW 1.21; ML 0.94; EL 0.51; SL 2.29; PW 1.11; WL 3.10; PH 1.04; PL 1.08; DPW 0.74 mm. CI 0.63; MI 0.78; OI 0.42; SI 1.89; LPI 0.97; DPI 0.69. Vestigial 3 ocelli present on posterior cephalic dorsum, propodeum evenly convex in lateral view; petiolar node with sinuous anterior margin in lateral view, dorsal margin sloped and mostly straight to slightly convex, apex convex, posterior margin broadly convex; node in dorsal view shaped as rough equilateral triangle with blunt corners; gaster noticeably swollen compared with workers. General body color ferruginous brown.

Male (not previously described)**.** Metrics (n = 1): HL 1.01; HW 1.25; ML 0.27; EL 0.74; SL 0.34; PW 1.31; WL 2.86; PH 0.91; PL 1.01; DPW 0.54 mm. CI 1.23; MI 0.22; OI 0.59; SI 0.27; LPI 0.90; DPI 0.53. Cephalic dorsum mostly smooth and shining, clypeus with low rugulae; abundant subdecumbent to decumbent hairs on head; antennae bristly, with abundant subdecumbent hairs. Pronotum, prosternum, mesoscutum mostly smooth and shining, prosternum with longitudinal striae along basal margin; scutellum and posterior portion of scutum with longitudinal striae; metanotum with median tumosity, propodeum rugulose. General color yellow with flagellum and gaster slightly brown-yellow.

Comments. The type specimen (Geneva) is a worker with the handwritten labels: *L. Lüderwalti*. Worker sym-

bol. Col by Jhering für [illegible] Hammonia, Sta Catharina; 16.841; Typus; coll Forel. This specimen is considered the holotype (by monotypy) as in the same paper Forel (1913) gives an interval of length variability for other ant species when he examined several specimens, but for *L. luederwaldti* there is only one length, and one locality. The Ipiranga specimen mentioned below has a red *cotypus* (= syntype) label, a handwritten *L. luderwalti* For. label and small label with the number 11.567. It has the propodeal teeth low in comparison with other *L. luederwaldti* specimens. Forel (1913) only mentions the Hammonia specimens in his description so why this specimen should bear a cotype label is unclear. The type (MHNG) compares well with the Boraceia specimens. The specimens from Caraguatatuba were collected in rain forest. Borgmeier (1930) describes *L. anacleti* as close to *L. iheringi* but differing from it on account of a paler color, more elongate mesosoma and petiole, and other unmentioned traits, but examination of the type reveals it is simply a smaller than usual specimen of *L. luederwaldti*.

Material studied. Brazil. **Rio de Janeiro**: Petrópolis, 4.ii.1949, T. Borgmeier, 1w MZSP. **São Paulo**: Caraguatatuba, Res. Florestal, 40–80 m, 18.–22.v.1971, W.L. Brown, 1w MZSP, 3w MCZC; Salesópolis, Est. Biol. Boraceia, 5.ii.1962, R. Kloss, 1w MZSP; loc. cit., 3.–5.vi.1996, Silvestre, Brandão, Yamamoto, 3w MZSP; loc. cit., 850 m, ii.1967, W.L. Brown, 6w 1q 1m MCZC; Ipiranga, 13.viii.1908, H. Luederwaldt, 1w MZSP.

6.5.8.6. *Leptogenys pucuna* n.sp. (Fig. 41)

Diagnosis. Body mostly black, head with blue iridescence; eyes close to lateral cephalic mid distance with a diameter close to one-fourth the length of the lateral cephalic margin; petiolar node semi-triangular, elongate and low in height; mesonotum wider than long; postpetiolar constriction well marked.

Worker. Metrics, holotype: HL 1.37; HW 0.83; ML 0.61; EL 0.23; SL 1.59; PW 0.76; WL 2.23; PH 0.48; PL 0.86; DPW 0.46 mm. CI 0.61; MI 0.73; OI 0.27; SI 1.91; LPI 0.56; DPI 0.53.

Head elongate in full-face view, wider anterad than posterad, posterior margin straight, lateral margin broadly convex, anterior clypeal margin tapers to a pointed triangular median lobe, lateral lobes inconspicuous. Cephalic dorsum mostly smooth and shining with scattered piligerous punctulae, clypeus with longitudinal striae; compound eye convex, situated slightly anterad of lateral cephalic mid-length, its diameter about one-fourth length of lateral cephalic margin. Scape surpasses posterior cephalic border by slightly more than one-third its length, thickest close to mid-length in cephalic full-face view; third antennal segment more than 3 × longer than width, second and fourth antennal segments each respectively over two-thirds length of segment III. Mandible with semi-parallel external and basal margins in cephalic full-face view; basal margin mostly convex, slightly concave close to basal angle; external margin with discrete but well-defined angle close to the mandibular base originating from the basal sulcus that divides the external margin into short posterior basal margin and much longer anterior margin.

Mesosoma with well-defined but shallow metanotal groove in lateral view that divides promesonotal convexity from lower, mostly straight propodeal dorsal margin; declivitous margin weakly convex with small triangular lobe posterad of spiracle; spiracle broadly oval, not significantly elevated over surrounding cuticle. Mesopleuron with anteroventral carina that widens anterad into brief triangular lobe; mesometapleural suture scrobiculate. Mesosoma mostly smooth and shining except for some striae along posteroventral mesopleuron, metapleuron close to bulla, and propodeal declivity anterad of lateral lobes; declivity with broad sulcus between lobes and petiolar insertion. Width of mesonotum in dorsal view more than twice its length.

Petiole semi-triangular in lateral view, relatively low with brief vertical anterior margin followed by long, straight sloping anterodorsal margin, apex rounded, posterior margin weakly convex. Node elongate in dorsal view, anterior margin half width of posterior margin, lateral margin broadly concave; anterior margin of postpetiole convex in lateral view; constriction between abdominal segments III and IV well marked; hypopygidium without median carina. Gaster mostly smooth and shining with scattered piligerous punctae. Mandible, legs, and gastral apex brown; clypeus, scape dark brown; funiculus light brown; most of head, mesosoma, petiole and gaster back; head with blue iridescence. Body without pubescence, with sparse subdecumbent to suberect fine hairs; scape with subdecumbent hairs mostly of same length but with several of varying lengths.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from that of the type locality Maquipucuna.

Comments. The locality is described as a ridge top montane forest and the specimen was taken from a leaf litter sample. The eyes in *L. pucuna* are not as displaced dorsad on the head as in other species of the *luederwaldti* group, and it is also different in the present of an internal seta in the interior apex of the meso and well as metatibia, though more specimens are needed to establish the constancy of these characters. In the individual studied the iridescence is only present on the head. The relatively large basal mandibular sulcus creates a notch on the mandibular external margin.

Type material. Holotype worker. **Ecuador**, Pichincha, R.B. Maquipucuna, 1620 m, 00°05′34″N 78°37′37″W, 29.x.1999-213, R. Anderson. One worker deposited in CASC.

6.5.9. *maxillosa* species group

Worker diagnosis. Head broader than long, compound eyes dorsolaterally situated on head, diameter greater than maximum scape width; sulcus between basal anten-

nal sclerite and tentorial pit well impressed; median clypeal lobe broadly triangular, bordered by narrow translucent lamella that extends laterad beyond lateral margin of antennal fossa to mid-point between clypeal apex and mandibular insertion; two setae present on clypeal apex; lateral clypeal lobe indistinct; mandible smooth and shining, slender, except for basal curve, arching and tapering apicad; apex of hypostomal tooth visible in cephalic full-face view; anterior face of labrum with a anterior series of transverse crests that form an irregular arch, without scattered tubercles; scape extends beyond posterior cephalic margin by less than one-fourth its length; antennal segments II–VI narrower basad than apicad, segments beyond of uniform diameter; antennal segment III not noticeably longer than other segments; metanotal groove weakly impressed in lateral view, not scrobiculate; mesometapleural suture weakly impressed, metapleural propodeal suture obsolete; propodeum unarmed, laterally broadly angular; node in lateral view subquadrate with a brief posterior shelf, sides convex, ventral process shaped as en elongate triangular anterior lobe; cross-section of petiolar node at mid-length convex; constriction between abdominal segments III and IV well developed. Cuticle opaque and dominated by rough to fine pruinosity; fine, appressed pubescence present throughout body, dorsum of body without standing hairs except on gastral apex, and scattered hairs on cephalic and gastral ventrum. Apex of protibia with single stout seta; apex of mesotibia and metatibia without setae; metacoxal dorsum with posterobasal low swelling.

Included species. *L. maxillosa*

Comments. This is a group native to Africa that includes several tramp species (BOLTON 1975), of which only *L. maxillosa* is known from the New World, though *L. falcigera* could be present. Superficially *L. maxillosa* resembles a *wheeleri* group species, especially on account of similarities in the cuticular texture, lack of standing hairs, and slender mandibles, but a number of characters suggest this to be convergence. The median clypeal lobe in the *wheeleri* group does not extend laterad beyond the antennal fossa, and the lateral lobe is distinct; the clypeal apex lacks setae such as those in *L. maxillosa*. The mandibles in *L. maxillosa* are very smooth, whilst the mandibles in the *wheeleri* group show some fine striae. The shagreened appearance of the cuticle in *L. maxillosa* is construed by fine areolae or rugulae, with occasional sparse punctae; the shagreening in *L. wheeleri* is based on fine punctuation, without larger punctures or other features. The protibial apex has a short stout seta on the external side in *L. maxillosa*, a feature lacking in *wheeleri* species. The subpetiolar process in *L. maxillosa* appears as an elongate triangle in lateral view, with a long slope, whilst in the *wheeleri* group the process is short and abrupt. The mandibular basal sulcus in *L. maxillosa* is rough and contrasts with the rest of the smooth mandible, whilst the sulcus in the *wheeleri* group is smooth. The base of funicular segments II–VI in *L. maxillosa* are of a lesser diameter basad than apicad, contrasting with the regular diameter of all the funicular segments in the *wheeleri* group. The posterior margin of the petiolar node of *L. maxillosa* in lateral view has a modest shelf, a feature lacking in the *wheeleri* group species, and the prora protrudes anterad more than in the *wheeleri* group.

6.5.9.1. *Leptogenys maxillosa* (F. Smith) (Fig. 42)

Ponera maxillosa F. Smith, 1858: 93. Syntype workers: Mauritius (Dr. Beke) (BMNH) [not examined].

Leptogenys maxillosa (F. Smith); Combination by ROGER 1861: 43.

Leptogenys falcata Roger, 1861: 42. Syntype workers: Cuba (Diehl) (ZMHB) [examined]. Synonymy by FOREL 1901c: 46.

Formica vinsonnella Dufour, 1864: 210. Holotype? worker: Réunion, sugar cane plantation (Vinson) [not examined]. Synonymy by BOLTON 1975: 254.

Leptogenys cribrata Emery, 1895b: 20. Syntype workers: South Africa, Vrijburg (E. Simon) (MCSN) [not examined]. Synonymy by BOLTON 1975: 254.

Diagnosis. Body mostly opaque, with rough pruinosity; hypostomal teeth visible in cephalic full-face view, anterior clypeal margin forms obtuse angle medially bordered by narrow translucent lamella, not differentiated into median clypeal lobe and lateral lobes; clypeal apex with 2 setae; posterior protibial apex with single seta; subpetiolar process shaped as triangular lobe with long posterior slope.

Worker. Metrics (n = 3): HL 1.32–1.49; HW 1.34–1.54; ML 1.09–1.27; EL 0.30–0.33; SL 1.32–1.42; PW 0.89–0.99; WL 2.18–2.53; PH 0.89–0.96; PL 0.61–0.76; DPW 0.68–0.68 mm. CI 0.97–1.03; MI 0.80–0.82; OI 0.20–0.24; SI 0.92–0.99; LPI 1.27–1.46; DPI 0.90–1.13.

Head subquadrate in full-face view, widest just before eye or at eye level; lateral cephalic margin convex; posterior margin broadly convex; eyes large and flattened, length covers a fourth of lateral cephalic margin. Head with opaque pruinosity, clypeus rugulose, not opaque. Scape surpasses posterior cephalic margin by at least 2 apical widths, lacking standing hairs but with fine appressed pubescence; second funicular segment more than 2 × longer than wide, third about 2 × longer than wide and first about 1.5 × longer than wide. Anterior clypeal margin convex, forming blunt obtuse angle, bordered by narrow, translucent lamella; long hairs present along clypeal anterior margin, two median long hairs and two median setae present in front of lamella. Mandible arched, especially basad; parallel-sided and elongate, mostly smooth and shining, basally with rugulose opaque sculpturing that narrows and extends along mandible external margin; masticatory margin brief and edentate. Hypostomal teeth partially visible in cephalic full-face view.

Mesosoma in lateral view mostly continuously convex, metanotal groove broad and weakly impressed; mesosomal sculpting as in head; meso-metapleural suture well impressed; metapleural propodeal suture mostly

effaced, best marked close to propodeal spiracle; spiracle elongate and slit shaped, slightly arched. In lateral view declivitous margin straight to slightly curved, separated from dorsal margin by blunt angle. Propodeum without teeth, at most with low angular lobe. No standing hairs.

Petiole in lateral view tilted anterad with semi-parallel anterior and posterior margins and a broadly curved dorsal margin; higher than long; process subquadrate with anterior and and posterior angles, with long posterior margin. Petiole shorter than long in dorsal view. Gastric sculpture more shining than mesosoma, not with rough pruinosity; fine reticule with shallow punctae with rounded edges, separated from each other by a length approximately equal to their width. Procoxa shining in lateral view. Body lacking standing pilosity except for clypeus, ventral parts of body, apex of gaster. Color grey to grey brown for body, antennae; mandibles, clypeus, legs brown. Head grey to grey brown in color.

Queen, male. Not studied.

Comments. This is a tramp species of African origin with Neotropical locality records in Cuba and Brazil (Bolton 1975), but given increased globalisation this species could be present in other sites especially close to major ports. The specimens from São Paulo, Brazil were taken in urban areas, with some nesting in cracks in cracks and fissures of walls in preformed cavities (Freitas 1995). The species refered to as *Leptogenys propefalcigera* by Freitas (1995) is probably *L. maxillosa* since specimens studied in the MZSP coincide with the collection data cited in the publication. The studies by Freitas (1995) point to specialised depredation on sowbugs, and a high frequency of nest relocation, with one colony relocating 17 times within 50 days. The sculpturing of this species, lack of standing hairs and elongate mandibles bears resemblance to similar traits in the *wheeleri* group. Please refer to the discussion for the *maxillosa* group for characters that will separate the two species groups. The *L. falcata* syntypes consist of two workers and a male from the Humboldt Universität collection that bear a green Cuba label, Diehl; Type. One worker is in excellent condition, the other is missing the gaster posterad of the third abdominal segment and an antenna. All specimens are point-mounted.

Material studied. **Brazil**. **Pernambuco**: Tapera, Pickel, 1w MZSP. **São Paulo**: Santos Sonzaya, 8.ii.1992, J. Diniz, 1w MZSP; São Vicente, Centro, 1994, R. Freitas, 1w MZSP; Santos, 11.x.1990, M.L. Andrade, 1w INLU. – **Cuba**. Habana, Cojimar, J.T. Sierra, 1w LACM. – **Madagascar**. **Toamasina**: Tomatave, 1w USNM. – **Mauritius**. Picke, 3w LACM. – **Philippines**. **Panay**: Culasi, 10.vii.[19]18, R.C. McGregor, 3w LACM. – **Seychelles**. Amirante Islands, Eagle Is., x.1905, Percy Sladen Trust Expedition, 1w LACM. – **South Africa**. **Northern Transvaal**: Lake Fundase[?], Zontpansberg Dist., 1.22.1931, H. Lang, Vanay Lang Talahasi Exp., 3w USNM.

6.5.10. *pusilla* species group

Worker diagnosis. Head rectangular in full-face view, lateral cephalic margin broadly convex, head widest at eyes (except *L. corniculans*, and *L. glabra*), eye weakly dorsolaterad to laterally placed on head; eye length longer (except *L. corniculans*, *L. pusilla*, *L. ritae*) than maximum scape width, eye broadly to weakly convex, ommatidia tend to become fused; at least one mandible shuts tight against clypeus, mandibular basal and external margins subparallel, basal mandibular margin with low convexity at base (weak in *L. quadrata*) upon which are 2–4 setae, basal mandibular sulcus well developed; median clypeal lobe slender, without apical setae; lateral lamella of median clypeal lobe absent or very narrow, poorly developed; PF: 4,4. Basal funicular segments subequal in length, the third antennal segment frequently weakly longer than neighbouring segments, scape surpasses posterior cephalic margin by under one-fourth its length; suture between basal antennal sclerite and tentorial pit well impressed; mesonotum transverse, narrow; metanotal groove fine, shallow, smooth, not scrobiculate (except *L. guianensis*); mesometapleural suture well impressed, scrobiculate; metapleural-propodeal suture absent; dorsal propodeal margin at least 2 × longer than declivitous margin in lateral view; propodeum laterally bluntly angular or armed with blunt lobe (distinctly triangular in *L. corniculans*), declivitous face with transverse striae, spiracle faces posterolaterad (laterad in *L. guianensis*); node subquadrate in lateral view; cross-section of petiolar node at mid-length V-shaped to subparallel, not convex; node longer than wide in dorsal view; anterior margin of abdominal segment III vertical, flat to weakly convex, dorsal margin convex in lateral view; constriction between abdominal segments III and IV well developed; exoskeleton mostly smooth and shining; no appressed pubescence present; sparse standing hairs present on dorsum of body; metacoxal dorsum with well-developed posterobasal swelling; mesotibial apex with or without single apical seta.

Included species. *L. corniculans*, *L. glabra*, *L. gorgona*, *L. guianensis*, *L. josephi*, *L. melena*, *L. pusilla*, *L. quadrata*, *L. rasila*, *L. ritae*.

Comments. The mostly small to medium sized species of this group range from southern Mexico south into Colombia, eastern Ecuador and Venezuela into the Amazon Basin and the Mata Atlantica. Towards the end of this study specimens representing unknown species of this group from southern Mexico were supplied by John Longino. The queens are ergatoid, with or without the greatly swollen, yellow mandibles in *L. josephi*, *L. pusilla*, and *L. ritae*. In *L. glabra* the head is widest anterad. Found mostly in humid forests but some species have been recorded from dry forests (*L. ritae*) or from arid thorny brush vegetation (*L.* cf. *gorgona*) on Santa Cruz Island of the Galapagos Archipelago. Several specimens representing what could be distinct species were seen during the course of this study but they were not pursued any further than a species group determination given the scant material involved. At least one form has a scrobiculate metanotal groove. This is a difficult group with uncertainties about the extent of morpho-

logical variability and how this affects discernment of species limits. The node cross-section in *L. ritae* and *L. guianensis* is not as clearly V-shaped since it tends to be weakly convex dorsad, but overall it is not a convex section but the specialised queens shared by *L. ritae* and *L. josephi* point to membership in this group. The trend towards fusion of the ommatidia is evidenced by a loss of convexity for each ommatidium, with the separation between each reduced to a fine line as if a hot iron had partially flattened the eye. All species show this either totally or partially for each eye. This modification of the lens is best developed in the *rufa* species group where a single lens seems to cover the reduced compound eyes.

Possible apomorphies. The elongate mandibles with the basal margin bearing a broad concavity at the base, followed apicad by a convexity, along with the presence of 2–4 setae basad along the basal mandibular margin define this group from other New World species. Setae or thickened hairs on the inner mandibular margin have apparently developed a number of times in the New World fauna, but the sinusoidally shaped basal mandibular margin is distinctive for this assemblage of species. Other derived traits for this group is the shortened scape, transverse mesonotum, well-developed constriction between abdominal segments III and IV, and well-developed constriction between each antennal segment. But several instances of the presence of these traits will be found in other New World *Leptogenys*.

6.5.10.1. *Leptogenys corniculans* n.sp. (Fig. 43)

Diagnosis. Head rectangular in full-face view; with head in oblique anterolateral view, anterolateral cephalic margin appears flattened, eye straddling blunt crest along dorsal edge; median clypeal lobe narrow, propodeal teeth triangular and well developed; body black, legs brown.

Worker. Metrics, holotype: HL 0.85; HW 0.53; ML 0.32; EL 0.10; SL 0.68; PW 0.50; WL 1.15; PH 0.47; PL 0.43; DPW 0.28 mm. CI 0.63; MI 0.59; OI 0.19; SI 1.28; LPI 1.08; DPI 0.65.

Head rectangular in full-face view, widest posterad of eyes, lateral cephalic margin mostly straight to weakly convex, posterior margin weakly concave, vertexal carina well developed, narrow, visible along all of posterior cephalic margin; median clypeal lobe longer than wide, apex pointed, without setae, with 2 preapical long hairs; lateral clypeal lobe narrow, weakly projecting anterad. Compound eye small, not more than 6 ommatidia in length, lens of ommatidia indistinct, eye placed laterally on head, distance from ocular midpoint to mandibular insertion greater than that from eye to mid-distance of lateral cephalic margin, eye in dorsal cephalic view weakly convex. Cephalic dorsum mostly smooth and shining except for scattered piligerous punctulae. Scape surpasses posterior cephalic border by under 2 × its apical width, antennal segments I–IV subequal in length, longer than wide, width of each segment more than one-half respective length. Scape mostly smooth and shining with scattered punctae, abundant mostly decumbent to subdecumbent pilosity, no appressed pubescence. Mandible elongate, basal and external margins subparallel, basal margin sinuate with row of 3 setae close to base; masticatory margin edentate except for apical tooth, mandibular dorsum mostly smooth and shining except for scattered piligerous punctae.

Mesosoma with mostly continuously broadly convex dorsal margin in lateral view, metanotal groove barely impressed; pronotal margin with brief, straight anterior margin and broadly convex dorsal margin; pronotum mostly smooth and shining with scattered punctae anterad, meso- and metapleuron colliculate, small rugulose area present posterad of propodeal spiracle; declivitous margin jagged anterad of tooth, propodeal tooth elongate and triangular. Mesometapleural suture distinct; metapleural-propodeal suture absent, brief ledge extends anterad of propodeal spiracle to same level of posteroventral mesopleural corner, mesopleuron subrectangular, propodeal spiracle broadly elliptical, facing posterolaterad. Width of mesonotum more than twice its length, metanotal groove distinct but finely impressed.

Petiolar node subquadrate in lateral view with vertical anterior margin half as long as posterior margin; dorsal margin convex, node highest posterad, posterior margin broadly convex. Subpetiolar process subquadrate, posterior margin longer than anterior margin. Node in dorsal view longer than wide, anterior margin broadly convex, width of anterior margin more than half the width of broadly convex posterior margin, lateral margin straight to weakly concave. Cross-section of node V-shaped, with straight lateral margins. Node mostly smooth and shining with weak colliculae lateroventrad and striae anteroventrad. Anterior margin of abdominal segment III broadly convex in lateral view, dorsal margin convex, constriction between abdominal segments III and IV well developed. Gaster mostly smooth and shining with scattered piligerous punctulae; pro- and metatibial apices without apical setae; mesotibia with single apical seta. Head and body without pubescence, only scattered pilosity. Body mostly black; mandibles, antennae, legs and gastral apex brown.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the slender propodeal teeth of the ant. It is derived from the Latin for horn shaped, *corniculatus*.

Comments. This is an apparent endemic to the Atlantic Forests of Bahia, and quite easy to distinguish, especially on account of the well-developed propodeal teeth, which are almost as long as the second antennal segment. It would seem close to the *pusilla* group species on account of size, shape of the basal mandibular margin, mandibular setae, slender median clypeal lobe, small eye, transverse mesonotum and other characters, but it would be separated from the nearest *pusilla* group members by the Andes and the whole Amazon Basin. The well-developed propodeal spines are quite unlike

any *pusilla* group species but even if this could be considered an autopomorphy of the species, the head shape is very unlike the *pusilla* species. In *L. corniculans* the head seems to have been partially flattened dorsoventrally close to the eye. If the head is seen in an oblique anterolateral view, a pinched aspect of the anterolateral cephalic margins becomes apparent with the eye straddling the formed blunt crest on its dorsal edge.

Type material. Holotype worker. **Brazil**, Bahia, CEPEC, Ilhéus, 1987, J.H. Delabie leg. One worker deposited in CEPEC.

6.5.10.2. *Leptogenys glabra* n.sp. (Fig. 44)

Diagnosis. Median clypeal lobe, laterally lamellate with median denticle, no apical seta; width of second funicular segment less than a third of its length; mesonotum 3 × wider than long in dorsal view; mesometapleural suture fine, smooth, not scrobiculate; propodeal declivity mostly smooth with 3–5 transverse striae between lobes.
Worker. Metrics, holotype (paratype): HL 0.67 (0.70); HW 0.70 (0.70); ML 0.50 (0.48); EL 0.15 (0.15); SL 0.67 (0.67); PW 0.60 (0.60); WL 1.45 (1.49); PH 0.53 (0.53); PL 0.52 (0.55); DPW 0.37 (0.37) mm. CI 1.05 (1.00); MI 0.71 (0.69); OI 0.21 (0.21); SI 0.95 (0.95); LPI 1.03 (0.97); DPI 0.71 (0.67).

Head subquadrate in full-face view; lateral margin broadly convex; posterior cephalic margin weakly concave, almost straight; median clypeal lobe triangular, laterally lamellate, apex angular with median denticle, no apical seta; lateral lobe narrow, widest towards median lobe, forming rounded angle; eye weakly convex in cephalic full-face view; eye elongate, length not more than 7 ommatidia, width 4–5 ommatidia. Head widest posterior to compound eyes. Scape smooth and shining with abundant piligerous punctulae, surpassing posterior cephalic border by more than one-fourth its length; funicular segments elongate; lengths of antennal segments II–IV more than twice respective lengths. Mandible elongate, internal and external margins parallel; basal margin broadly sinuate, row of 2–3 stiff hairs present on basal convexity; masticatory margin short with blunt apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae. Cephalic dorsum mostly smooth and shining with piligerous punctulae; clypeus with weak striae mesad, laterally smooth.

Dorsal mesosomal margin mostly continuous in lateral view, pronotal dorsal margin broadly convex, metanotal groove weakly impressed, dorsal propodeal margin broadly convex, forming obtuse angle with straight declivitous margin. Declivitous margin jagged at base of tooth, propodeal tooth shaped as low swelling on dorsal margin of bulla. Mesosoma mostly smooth and shining with sparse piligerous punctulae, mesometapleural suture distinctly impressed, mostly fine and smooth, scrobiculate posteroventrad; mesopleuron with small rugulose area posteroventrad, mesopleural carina well developed, widest anterad; metapleural-propodeal suture absent; propodeal spiracle round with opening directed laterally, weakly oblique; propodeal declivity mostly smooth with 3–5 transverse striae between lobes. Prosternum smooth and shining; mesonotum 3 × wider than long in dorsal view, metanotal groove smooth.

Petiole node subrectangular in lateral view; anterior margin weakly convex, height less than half height of mostly straight posterior margin, dorsal margin mostly broadly convex, dorsal margin posteriorly convex, node highest posterad; node mostly smooth and shining. Subpetiolar process subtriangular in lateral view, with long anteroventral margin. Node subrectangular, elongate in dorsal view, wider posterad than anterad; anterior margin broadly convex, over half the width of posterior margin; posterior margin straight, lateral margins straight to slightly concave. Transverse section of node at mid-length roughly V-shaped with straight lateral margins. Anterior postpetiolar margin broadly convex in lateral view, dorsal margin convex; constriction between abdominal segments III–IV broad; gaster mostly smooth and shining with scattered piligerous punctulae. Body mostly dark brown; mandibles, clypeus, legs, antennae, and gastral apex light brown. Body with scattered erect and semi-erect hairs, appressed pilosity wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; pro- and metatibial apices lacking setae, mesotibial apex with seta.
Queen, male. Unknown.
Derivatio nominis. The species name is derived from the Latin for smooth and glossy, *glabra*, and alludes to the polished and mostly denudate exoskeleton of this species.
Comments. Several other sympatric *Leptogenys* could be confused with this species, such a *L. gorgona*, which is smaller and has a more elongate cephalic capsule: likewise *L. quadrata* has a more elongate cephalic capsule, but its eyes are located more towards the cephalic mid-length than in *L. glabra*. The mandibles in both specimens are not totally closed but the little overlap between the two mandibles, when compared with other species of the *pusilla* group, suggest the mandibles can be totally closed in this species.

Type material. Holotype worker. **Colombia**, Valle, Bajo Calima, 120 m, [no date], RA 182, R. Aldana leg. One worker deposited in IAvH. – Paratype. One callow worker with same data as holotype. Deposited in IAvH.

6.5.10.3. *Leptogenys gorgona* n.sp. (Fig. 45)

Diagnosis. Head rectangular in full-face view; eye length equal to one-fourth lateral cephalic margin; length of antennal segments II–IV approximately 2 × their respective length. Petiolar node elongate in dorsal view, anterior margin broadly convex and half the width of posterior margin, posterior margin straight, lateral margins straight to slightly concave.

Worker. Metrics (n = 3): HL 0.80–0.87; HW 0.48–0.50; ML 0.32–0.35; EL 0.10–0.15; SL 0.67–0.75; PW 0.45–0.48; WL 1.14–1.22; PH 0.40–0.45; PL 0.45–0.48; DPW 0.27–0.27 mm. CI 0.58–0.61; MI 0.66–0.70; OI 0.21–0.30; SI 1.38–1.50; LPI 0.89–0.93; DPI 0.55–0.59.

Head rectangular in full-face view; lateral margin broadly convex; posterior cephalic margin weakly concave, almost straight; median clypeal lobe triangular, apex acutely pointed; lateral lobe narrow, inconspicuous; eye broadly convex in cephalic full-face view; head widest posterior to compound eyes. Scape surpasses posterior cephalic border by 2 apical widths; basal funicular segments approximately of same length; length of antennal segments II–IV approximately 2 × their respective lengths. Mandibular basal margin broadly sinuate, row of 3 stiff hairs present basad; masticatory margin short with blunt apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae; mandible of same width in oblique ventral view. Cephalic dorsum mostly smooth and shining with sparse punctulae.

Dorsal mesosomal margin mostly continuous in lateral view, metanotal groove broad and shallow; straight to weakly convex, pronotal and propodeal dorsal margin each broadly convex; declivitous margin of propodeal declivity convex, with blunt, modest triangular lobe at spiracular height; mesosomal side smooth and shining, mesometapleural suture distinctly impressed, scrobiculate; metapleural-propodeal suture absent; propodeal spiracle oval with opening directed posterolaterally, weakly oblique; shallow depression located between spiracle and propodeal lobe; mesosomal dorsum smooth and shining, propodeal declivity with 4–5 transverse striae. Mesopleuron with anteroventral carina widest anterad; mesonotum 2.5 × wider than long in dorsal view, posterior margin straight.

Petiole node subquadrate in lateral view, slightly inclined anterad; anterior and posterior margins vertical, anterior margin less than half the height of posterior margin; node highest posterad, dorsal margin convex, without sharp lateral edges. Subpetiolar process rectangular in lateral view, with anterior margin shorter than posterior margin. Node elongate in dorsal view, anterior margin broadly convex and half the width of posterior margin, posterior margin straight, lateral margins straight to slightly concave. Transverse section of node at mid-length roughly V-shaped with straight lateral margins. Anterodorsal postpetiolar margin continuously rounded in lateral view or with anterior margin more broadly convex than dorsal margin; constriction between abdominal segments III–IV well marked. Body color ferruginous to dark brown; mandibles, legs, and antenna brownish-yellow. Body with scattered erect and semi-erect hairs, appressed pilosity wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; tibial apices usually lacking setae, mesotibia occasionally with seta.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from an island included within the geographic range of the species: Isla La Gorgona along the southwestern Colombian coast.

Comments. This ant can be easily confused with *L. pusilla* on account of its similar size and general characteristics but the following traits can be used to separate the two. The dorsal propodeal margin in lateral view curves onto the declivitous margin, differing from the blunt angle of *L. pusilla*. *L. gorgona* has a better defined metanotal groove, a more elongate node and head, and relatively larger eyes. *L. gorgona* can also be confused with the sympatric *L. quadrata* because of the elongate head and node, but *L. quadrata* is considerably larger, and lacks propodeal armature. The Magdalena specimen seems very close to *L. gorgona*, though its scapes are shorter, and the funicular segments are not as elongate. It was labeled as *L.* cf. *gorgona*. The Ecuadorean samples key out to *L. gorgona*, and resemble it so closely I labelled the specimens as the same species. Two workers from the Galapagos also resemble these ants very closely, differing notably in the shape of the propodeal lobes, though given there are only two specimens available, the reliability of this character has yet to be corroborated. The Galapagos specimens most probably represent another species simply on account of their geographical isolation and the dry habitat in which they are found, compared with the humid locality for the "other" *L. gorgona*. They have been labelled as *L.* cf. *gorgona*, pending better resolution of the situation.

Type material. Holotype worker. **COLOMBIA**, Valle, Anchicayá, 200 m, 17.–19.vi.1971, W.L. Brown leg. One worker deposited in MCZC. – Paratypes. Seven workers from the same series as holotype. 5w deposited in MCZC, 1w IAvH, 1w MIZA.

Other material studied. COLOMBIA. **Cauca**: Isla Gorgona, 29.ix.1989, M. Baena, 1w WPMC; PNN Gorgona Mancora, 60 m, 2°58′N 78°11′W, 18.–20.xii.2000, R. Duque, 1w IAvH. **Chocó**: Río Sucio, La Balsa, 50–80 m, 7°2′26″N 77°20′16″W, F. Fernández, 1w IAvH. **Magdalena**: Tayrona Pk, Pueblito, 1.x.1976, C. Kugler, W.L. Brown, 1w MCZC. **Valle**: Bajo Calima, Villa Clara, 18.iii.1967, R. Root, W.L. Brown, 3w MCZC; PNN Farallones de Cali, Anchicayá, 730 m, 3°26′N 76°48′W, 11.–14.xii.2001, S. Sarría, 2w IAvH. – **ECUADOR**. **Pichincha**: Centro Científico Río Palenque, 20.xii.1980–26.ii.1981, Sonia Sandoval, 7w MZSP. **Galapagos**: Santa Cruz, Bellavista, 0°41′38.1″S 90°19′16.8″W, 10.vii.2005, H. Herrera, HWH134, 2w CDRS.

6.5.10.4. *Leptogenys guianensis* Wheeler (Fig. 46)

Leptogenys (*Lobopelta*) *guianensis* Wheeler, 1923: 12, fig. 5. Syntype workers: Guiana (= British Guiana), Dunoon, 2.viii.1914, Cat. No. 1–2, 20508 (F.M. Gaige) (MCZC) [examined].

Diagnosis. Head elongate, eyes flattened placed slightly anterad of lateral cephalic margin mid-distance; propodeal dorsal margin straight in lateral view, dorsal margin of propodeal tooth serrate in lateral view; node trapezoid in dorsal view, anterior and posterior margins parallel, anterior margin half the width of posterior margin.

Worker. Metrics (n = 3): HL 0.89–0.97; HW 0.58–0.62; ML 0.43–0.45; EL 0.12–0.14; SL 0.80–0.87; PW 0.52–0.55; WL 1.32–1.40; PH 0.52–0.53; PL 0.45–0.50;

DPW 0.33–0.38 mm. CI 0.64–0.66; MI 0.70–0.74; OI 0.20–0.23; SI 1.37–1.41; LPI 1.07–1.19; DPI 0.74–0.81.

Head rectangular in full-face view, slightly wider anterad than posterad; posterior margin straight with vertexal carina visible most of length; lateral cephalic margin mostly broadly convex. Anterior clypeal margin evenly converges anterad to triangular median lobe, apex pointed to slightly blunt; clypeus longitudinally striate medially, laterally with transverse striae. Scape surpasses posterior cephalic border by less than one-fourth its length; densely punctulate; antennal segment III longer than either segments II or IV; segments II and IV each over half the length of III; segment III twice longer than wide. Cephalic dorsum mostly smooth and shining, with sparse piligerous punctulae. Mandibles shut tight against clypeus; elongate, parallel width, basal margin convex, external margin concave; dorsum with sparse punctulae and weak fine, parallel striae; basal angle obtuse, bluntly angular, apical tooth broad, basal margin with two stout hairs; PF: 4,4. Eye flat, situated laterally with slight medial tendency.

Mesosoma with broadly convex promesonotal margin in lateral view, posterior mesonotal margin drops into metanotal groove, dorsal propodeal margin mostly straight, curving onto declivity, propodeal tooth broadly triangular. Mesosoma mostly smooth and shining, with weak, oblique striae on ventral mesopleuron, propodeal spiracle round; mesometapleural suture well impressed, scrobiculate; propodeal spiracle elongate, posterolaterally facing. Mesonotum wider than long in dorsal view, anterior margin curved, posterior margin straight, metanotal groove scrobiculate; propodeal declivity with transverse striae. Petiole subquadrate in lateral view, anterior margin almost half length of posterior margin, dorsal margin mostly sloped with rounded apex, node highest posterad of mid-length; posterior margin mostly straight. Node trapezoid in dorsal view, anterior and posterior margins parallel, anterior margin half the width of posterior margin, gaster smooth and shining with sparse piligerous punctulae. Procoxa smooth and shining laterally, body with sparse standing pilosity, no appressed pilosity. Mandible, clypeus, antennae, and legs light brown; head, mesosoma, petiole and gaster ferruginous brown; apex of protarsus with slender seta; dorsal surface of metacoxa with low posterior lobe. Constriction between abdominal segments III and IV well marked.

Queen, male. Unknown.

Comments. The syntypes are two point-mounted workers on the same pin: MCZ Cotype 1–2, 20508. Wheeler's (1923) description is quite detailed and I agree with all save the extension of the scape beyond the posterior cephalic border, which is one-third according to him. The type series specimens are paler in color than the specimens from Surinam or Brazil.

Material studied. Brazil. **Pará**: Melgaço, Caxiuanã, ECFPn II, 1°44′09″S 51°29′15″W, 19.iv.2003, A. Harada, 1w MPEG; same data but 21.–23.i.2004, 2w MPEG. – **Guiana**. Dunnon, 2.viii.1914, F.M. Gaige 222, 2w MCZC. – **Surinam**. Courantyne River, 16.vii.1936, N.A. Weber 569, 3w MCZC.

6.5.10.5. *Leptogenys josephi* MacKay & MacKay

(Fig. 47)

Leptogenys josephi MacKay & MacKay, 2004: 255, figs. 1–6. Holotype queen: Costa Rica, Guanacaste, Pitilla Field Station, 600 m, 2.v.1995 (R. Anderson) (CWEM) [examined].

Diagnosis. Median clypeal lobe with weak concavity along lateral margin; scape surpasses posterior cephalic border by 3 apical widths; antennal segments II–IV approximately 2 × respective width; propodeal declivity mostly smooth and shining, with 2–3 transverse striae close to petiolar insertion.

Worker (not previously described)**.** Metrics (n = 5): HL 0.87–0.94; HW 0.55–0.62; ML 0.35–0.43; EL 0.12–0.13; SL 0.77–0.85; PW 0.50–0.53; WL 1.20–1.34; PH 0.48–0.52; PL 0.45–0.50; DPW 0.33–0.35 mm. CI 0.63–0.68; MI 0.64–0.71; OI 0.19–0.23; SI 1.28–1.48; LPI 0.97–1.07; DPI 0.67–0.74.

Head subrectangular in full-face view; lateral margin broadly convex; posterior cephalic margin straight to weakly concave; median clypeal lobe triangular, lateral margin with weak concavity, apex acutely pointed; lateral lobe narrow, slightly expanded at internal end into rounded lobe that forms right angle with base of median lobe; eye broadly convex in cephalic full-face view, separated from mandibular insertion by distance greater than its diameter; head widest posterior to compound eyes. Scape surpasses posterior cephalic border by 3 apical widths; antennal segments III, IV respectively longer than segment II; length of antennal segments II–IV approximately 2 × respective width. Mandibular basal margin broadly sinuate, row of 3 stiff hairs present basad; masticatory margin short with single apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae; mandible of same width in oblique ventral view. Cephalic dorsum mostly smooth and shining with sparse punctulae.

Dorsal mesosomal margin mostly continuous in lateral view, straight to weakly convex; weak depression present at metanotal groove; propodeal dorsal margin forms blunt angle with declivity, low rounded lobe present at spiracular height; mesosomal side smooth and shining, mesometapleural suture distinctly impressed, continuous to weakly scrobiculate; metapleural-propodeal suture absent; propodeal spiracle round with opening directed posterolaterally; depression located between spiracle and propodeal lobe; mesosomal dorsum smooth and shining; propodeal declivity mostly smooth and shining, with 2–3 transverse striae close to petiolar insertion, short transverse striae present along lateral margin of declivitous face. Prosternum smooth and shining; anteroventral carina of mesopleuron weakly widens anterad; mesonotum 3 × wider than long in dorsal view, posterior margin straight.

Petiole node subrectangular in lateral view, slightly inclined anterad; anterior and posterior margins vertical, weakly convex; anterior margin less than half height of posterior margin; node highest posterad, dorsal margin convex, without sharp lateral edges. Subpetiolar process triangular in lateral view, anterior margin much shorter than posterior margin. Node elongate in dorsal view, anterior margin broadly convex and half the width of posterior margin, posterior margin straight, lateral margins broadly concave. Anterior margin of abdominal segment III weakly convex, dorsal margin convex; constriction between abdominal segments III–IV well marked. Body color mostly black with gastral apex ferruginous; mandible, apex of scape, and funiculus brownish-yellow; clypeus, most of scape, and legs brown. Body with scattered erect and semi-erect hairs, appressed pilosity wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; pro- and metatibial apices lacking setae, mesotibia usually with seta.

Queen. With usual differences from worker, but with greatly swollen mandibles, both basal and external mandibular margins convex. Body ferruginous, mandibles yellow.

Male. Unknown.

Comments. This species was recently described by MACKAY & MACKAY (2004) based upon two queens. During the separation of morphotypes close to *L. pusilla*, a group of workers and queens, both based upon larger size and more elongate basal funicular segments have been separated and considered as conspecific with *L. josephi*. The queen from Panama is slightly smaller in size than the Costa Rican queens and presents a more convex dorsal propodeal margin in lateral view than the relatively straight to weakly convex shape of the CR specimens. This species could be confused with *L. quadrata*, a morphologically similar species from western Colombia and Ecuador. Locality labels indicate a preference of moist forested sites for this species.

Material studied. COSTA RICA. Alajuela: 27 km N & 8 km W San Ramón, 10°13′30″N 84°35′30″W, 950 m, 14.vi.1997, R. Anderson 18698B, 1w CWEM. **Cartago**: Río Reventazón, 3–5 km E Turrialba, 18.–22.i.1973, W.L. Brown, 4w MCZC. **Guanacaste**: Pitilla Field Stn, 600 m, 2.v.1995, R. Anderson, 2w CWEM. **Heredia**: Est. Biol. La Selva, 10°26′N 84°01′W, 150 m, 25.vi.1999, INBIO-OET, 1q INBIO; La Selva, 4.ii.1974, Talbot & Van Devender, 1w LACM. – **PANAMA. Canal Zone**: Pipeline Rd, N Gamboa, 100 m, 25.vii.1979.

6.5.10.6. *Leptogenys melena* n.sp. (Fig. 48)

Diagnosis. Scape surpasses posterior cephalic border by almost one-fourth its length; funicular segments subcylindrical. Petiole subquadrate in lateral view with anterior margin shorter than either posterior or dorsal margin; anterior margin broadly convex, separated from broadly convex dorsal margin by sharp curve, posterior margin convex. Mesosoma mostly smooth; propodeal spiracle round. Head and mesosoma with blue iridescence.

Worker. Metrics, holotype (paratypes, n = 4): HL 0.94 (0.95–0.97); HW 0.57 (0.58–0.60); ML 0.40 (0.38–0.42); EL 0.15 (0.15–0.15); SL 0.82 (0.85–0.87); PW 0.52 (0.52–0.57); WL 1.34 (1.35–1.37); PH 0.48 (0.48–0.53); PL 0.47 (0.48–0.50); DPW 0.32 (0.33–0.35) mm. CI 0.61 (0.60–0.63); MI 0.71 (0.64–0.71); OI 0.26 (0.25–0.26); SI 1.44 (1.44–1.46); LPI 1.04 (1.00–1.10); DPI 0.68 (0.67–0.72).

Head rectangular in full-face view; posterior margin broadly convex, almost straight; lateral margin mostly straight, curving posterad; eye placed laterally on head, ocular mid-point is slightly anterad of mid-length of lateral cephalic margin; eye relatively flattened; anterolateral clypeal margin concave, lateral clypeal lobe discrete, small; median lobe triangular, apex acutely pointed, process longer than greatest diameter of scape. Cephalic dorsum mostly smooth and shining, with sparse punctulae, clypeus smooth to slight rugulose, with some oblique strigulae. Scape mostly smooth with abundant decumbent hairs, surpassing posterior cephalic border by almost one-fourth its length; antennal segment IV slightly shorter than III; width of fourth segment more than half its length, width of III twice its length. Funicular segments subcylindrical, without pronounced constriction between each. Mandibles close tight against clypeus when closed; mandible flattened, basal margin basally convex, apically concave; 2 setae present at base of basal margin; single preapical denticle present; external and internal mandibular margins sub-parallel; mandibular dorsum smooth with few punctae; PF: 4,4.

Mesosoma with promesonotal margin broadly convex in lateral view, separated by metanotal groove from broadly convex propodeal dorsal margin. Mesosoma mostly smooth and shining; mesopleuron, lower metapleuron, and propodeum posterad of spiracle with faint transverse to oblique strigae. Mesonotum transverse, wider than long in dorsal view, with sub-parallel anterior and posterior margins. Propodeal spiracle round, opening faces laterally. Mesometapleural suture well developed, metapleural propodeal suture wanting. Mesopleuron separated from mesosternum by low ridge. Propodeum with short triangular denticle, not longer than 5 diameters of spiracle. Mesosternum with transverse ridge that forms rounded lobe medially. Metasternum with similar ridge, but not as high and medial lobes not as blunt.

Petiole subrectangular in lateral view with anterior margin shorter than either posterior or dorsal margin; anterior margin broadly convex, separated from broadly convex dorsal margin by sharp curve, posterior margin convex; node mostly smooth and shining, lateral face with faint longitudinal striae ventrad, posterior face separated from rest by sharp curve. Petiolar node elongate in dorsal view, anterior margin convex, about half width of straight posterior margin; constriction between abdominal segments III and IV moderately developed. Scape, mesosoma, and abdomen brown; head slightly darker; funiculus, mandible, legs and gastral apex

brownish yellow; head and mesosoma with blue iridescence. Procoxa smooth and shining laterally; apex of fourth protarsal segment with single pair of setae; mesotibial apex with single apical seta; posterior metacoxal swelling well developed.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to a small village near the collection site for the ants.

Comments. The type series nest was located beneath the bark of a dead tree on the ground, the ants proved to be fast runners as only a few could be caught as they fled into the surrounding litter. The type locality for this species is the Paria Peninsula, a humid, forested area that shares many faunal elements with the Orinoco Delta and southern Venezuela.

Type material. Holotype worker. **Venezuela**, Sucre, vía Las Melenas a Santa Isabel, ca. Cerro Humo, 10°42′N 62°38′W, 930 m, 9.v.1993, J. Lattke 1474. Deposited in MIZA. – Paratypes. Three workers from the same nest as holotype, deposited as follows: 1w MCZC, 1w BMNH, 1w LACM.

Other material studied. Venezuela. **Sucre**: cerca Las Melenas, 10°41′N 62°37′W, 1000 m, v.1993, J. Lattke, 3w MIZA.

6.5.10.7. *Leptogenys pusilla* (Emery) (Fig. 49)

Lobopelta pusilla Emery, 1890b: 43. Syntype workers: Costa Rica, Jiménez (A. Alfaro) (MCSN) [examined].

Leptogenys pusilla (Emery). Combination in *Leptogenys* by Forel 1899: 17.

Diagnosis. Head subrectangular in full-face view; median clypeal lobe longer than basal width, apex acutely pointed; eye weakly convex, distance between eye and mandibular insertion greater than ocular diameter; mesonotum 4 × wider than long in dorsal view; petiolar node trapezoidal in dorsal view, anterior margin convex and at least half the width of posterior margin.

Worker. Metrics (n = 4): HL 0.72–0.87; HW 0.47–0.50; ML 0.28–0.35; EL 0.08–0.15; SL 0.53–0.75; PW 0.42–0.48; WL 0.94–1.22; PH 0.37–0.45; PL 0.37–0.48; DPW 0.27–0.27 mm. CI 0.58–0.65; MI 0.61–0.70; OI 0.18–0.30; SI 1.14–1.50; LPI 0.89–1.00; DPI 0.55–0.73.

Head subrectangular in full-face view; lateral margin broadly convex; posterior cephalic margin weakly concave, almost straight; anterior clypeal margin with abrupt, relatively slender (longer than basal width) median lobe, apex acutely pointed; lateral lobe narrow, laterally extends as low crest on clypeal dorsum, weakly rounded close to median lobe; eye weakly convex in cephalic full-face view, placed closer to middle of lateral cephalic margin than to mandibular insertion; eye about same length as mid-width of scape, distance between eye and mandibular insertion greater than ocular diameter; head widest posterior to compound eyes, cephalic width slightly less anterad of eye. Scape surpasses posterior cephalic border by 1–2 apical widths; basal funicular segments approximately of same length; width of each segment more than half respective length. Mandibular basal margin broadly convex basad, concave and tapering apicad; masticatory margin short with blunt apical tooth, basal convexity with row of 2–3 setae; mandibular dorsum mostly smooth and shining with scattered punctulae; mandible of same width in oblique ventral view. Cephalic dorsum mostly smooth and shining with sparse punctulae.

Dorsal mesosomal margin mostly continuous in lateral view, straight to weakly convex, weak depression present at metanotal groove; curvature sharper at propodeal declivity, with blunt, modest triangular lobe at spiracular height; mesosomal sides smooth and shining, mesometapleural suture distinctly impressed, uninterrupted or scrobiculate; metapleural-propodeal suture absent; propodeal spiracle round with opening directed mostly laterally, weakly oblique; depression located between spiracle and propodeal lobe; mesosomal dorsum smooth and shining, propodeal declivity smooth and shining to transversely striate. Prosternum smooth and shining; mesopleuron with fine anteroventral carina; mesonotum 4 × wider than long in dorsal view, posterior margin with weak median concavity.

Petiole node subquadrate in lateral view, slightly inclined anterad; anterior and posterior margins vertical, anterior margin less than half the height of posterior margin; node highest posterad, dorsal margin convex, without sharp lateral edges. Subpetiolar process triangular-shaped in lateral view. Node trapezoidal in dorsal view, anterior margin convex and at least half the width of posterior margin, posterior margin straight to weakly concave, lateral margins straight to slightly convex. Anterior margin of postpetiole roughly vertical up to node height in lateral view; dorsal margin convex; constriction between abdominal segments III–IV well marked. Body ferruginous brown to black; legs and antenna brownish yellow to brown. No applied pilosity, with sparse erect and semi-erect hairs. Tibial apices lacking setae.

Queen. Morphology similar to worker, with usual differences besides greatly swollen mandible, with convex internal and external margins. Body ferruginous, mandible yellow.

Male. Unknown.

Comments. The type specimens studied are 2 card-mounted workers from Jiménez, Costa Rica deposited in the MCSN. This ant is very similar to *L. josephi* but *L. pusillus* is a smaller ant, compared with L. *josephi* (WL 1.20–1.34), and its head is not as elongate in appearance. Emery (1894: 49) published *L. pusilla* as a new species for the second time. The locality labels point to moist forested areas as the habitat for this species, ranging from secondary to primary forest or cocoa plantations. Nests have been found in decomposing wood on the ground. One specimen has a mite adhered to the apical internal side of the metatibia.

Material studied. Costa Rica. **Alajuela**: Río Peñas Blancas, 10°19′N 84°43′W, 800 m, 26.–28.iv.1987, J. Longino 1579-s, 1w

INBIO. **Heredia**: 3 km S Pto. Viejo, 10°26′N 84°00′W, 50 m, 15.–21.vii.1986, J. Longino 1386-s, 1w INBIO; La Selva, 50 m, 10°26′N 83°59′W, 16.iii.1987, D.M. Olson 242, 3w PSWC; La Selva, 27.iii.1988, Cover, Moffet, Tobin, 4w MCZC; Est. Biol. La Selva, 10°26′N 84°01′W, 50–150 m, 2.–12.viii.2004, J. Lattke 2923, 1q 1w MIZA; Est. Biol. La Selva, 10°26′N 84°01′W, 50–150 m, 2.–12.viii.2004, R. Johnson 3450, 1q 1w MIZA; same locality but vi.1999, INBIO-OET, 1q INBIO; same locality but 10.v.1974, Talbot, 1q LACM. **Limón**: Res. Biol. Hitoy-Cerere, 09°40′N 83°02′W, 200 m, 29.viii.1985, J. Longino 942-s, 1w INBIO. **Puntarenas**: Sirena, Península de Osa, 8.28°N 83.35°W, 50 m, 9.xi.1981, D. Meyer, 1w MCZC, 1w LACM, 1w INBIO; Osa, Rancho Quemado, 08°42′N 83°33′W, 200–300 m, 15.xii.1990, J. Longino 2760-s, 1w INBIO; Osa, Cerro Helado, 24.vi.1997, 08°46N 83°25′W, R. Anderson, 1w WPMC. – **PANAMA**. Barro Colorado, 9.xii.1977, S. Levings, 1w MIZA; Barro Colorado, 17.vi.1938, Williams, 2w MCZC; Barro Colorado, 9.xi.1975, S. Levings, 1w MCZC.

6.5.10.8. *Leptogenys quadrata* n.sp. (Fig. 50)

Diagnosis. Head elongate, rectangular in full-face view; eye broadly convex in cephalic full-face view, length less than one-fourth lateral cephalic margin; ocular center closer to mid-length of lateral cephalic margin than to mandibular insertion; petiole node subrectangular in lateral view.

Worker. Metrics, holotype (paratypes, n = 4): HL 1.08 (0.94–1.06); HW 0.68 (0.58–0.64); ML 0.48 (0.38–0.44); EL 0.18 (0.12–0.16); SL 1.04 (0.82–0.92); PW 0.60 (0.54–0.62); WL 1.60 (1.34–1.52); PH 0.52 (0.52–0.58); PL 0.60 (0.54–0.62); DPW 0.36 (0.32–0.40) mm. CI 0.63 (0.60–0.62); MI 0.71 (0.63–0.72); OI 0.26 (0.20–0.25); SI 1.53 (1.41–1.53); LPI 0.87 (0.90–0.97); DPI 0.60 (0.57–0.65).

Head elongate, rectangular in full-face view; lateral margin weakly convex; posterior cephalic margin straight to weakly convex; median clypeal lobe triangular, lateral margin straight to weakly concave, apex lamellate and pointed, sometimes with single hair; lateral lobe narrow and subparallel with clypeal margin; eye broadly convex in cephalic full-face view, length less than one-fourth lateral cephalic margin, ocular center closer to mid-length of lateral cephalic margin than to mandibular insertion. Scape smooth and shining with abundant piligerous punctulae, surpassing posterior cephalic border by not more than 3 apical widths; constriction between antennal segments II and III stronger than those of following segments; antennal segment III longer than either segments II and IV; length of antennal segment III twice apical width. Mandible elongate, external and basal margins parallel; basal margin weakly sinuate to mostly broadly convex, row of 2–3 setae present on basal convexity, apically weakly concave; basal angle rounded, masticatory margin short with single apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae; PF: 4,4. Cephalic dorsum and ventral face mostly smooth and shining with sparse punctulae; labium and stipes smooth and shining; clypeus with longitudinal striae and sparse piligerous tubercles medially, rest smoother.

Dorsal mesosomal margin mostly continuous in lateral view, straight to weakly convex; weak depression present at metanotal groove; propodeal dorsal margin curves smoothly with weakly convex declivity; propodeal tooth vestigial, low lobe with jagged margins present at spiracular height; mesosomal side mostly smooth and shining, with oblique striae at posteroventral corners of both mesopleuron and metapleuron; sparse striae present along mesopleural carina. Mesometapleural suture distinctly impressed, scrobiculate; metapleural-propodeal suture absent; propodeal spiracle relatively small, broadly oval with opening directed posterolaterally, bordered ventrad by longitudinal carina that extends to bulla; area between spiracle and bulla impressed; anteroventral carina of mesopleuron weakly widens anterad; mesosomal dorsum smooth and shining; propodeal declivity mostly with coarse transverse striae except for broad transverse sulcus next to petiolar insertion. Prosternum smooth and shining; mesonotum over twice wider than long in dorsal view, anterior margin convex, posterior margin straight; metanotal groove smooth.

Petiole node subrectangular in lateral view; anterior margin vertical, weakly convex; anterior margin more than half height of posterior margin; node highest posterad, dorsal margin convex, without sharp lateral edges. Subpetiolar process subrectangular in lateral view; wider posterad with anterior margin shorter than posterior margin. Node elongate in dorsal view, anterior margin weakly convex and less than half width of posterior margin, posterior margin straight, lateral margin straight to weakly concave. Node smooth and shining. Anterior margin of abdominal segment III weakly convex, dorsal margin convex; constriction between abdominal segments III–IV well marked. Body color mostly black to dark brown; mandible, clypeus, scape, legs brown; gastral apex ferruginous brown. Body with scattered erect and semi-erect hairs, appressed pilosity wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; pro- and metatibial apices lacking setae, mesotibia with or without apical seta.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the Latin, *quadratus*, meaning four-cornered, and alludes to the rectangular shape of the head in full-face view.

Comments. The type series was found under a stone. The paratype worker from the holotype nest is missing the gaster as well as several legs. The hair frequently present on the apex of the median clypeal lobe of this species suggests the seta found in other species groups, but it is never so stout as to be qualified as a seta. The broad range of localities and altitudes, ranging from 1700 m to almost sea level, plus minor morphological differences suggest there could be more than one species under his name. See the comments for *L. gorgona*. Specimens from Magdalena, Colombia have more convex eyes, relatively larger ommatidia, and most of the pro-

podeum smooth and shining. The Costa Rican specimen is very black, with striae on the mandibular dorsum. The worker from Ecuador is missing the petiole and gaster.

Type material. Holotype worker. **Colombia**, Valle, 15 km NW Cali, 1700 m, 12.xii.1975, J. Lattke. One worker deposited in MIZA. – Paratypes. (1) One worker from the same nest as the holotype deposited in MIZA. (2) **Colombia**, Valle, El Saladito, 03°26′14″N 76°31′21″W, 1650 m, vii.1997, C. Estrada. One worker deposited in IAvH.

Other material studied. Colombia. **Caldas**: Aguadas, 05°36′53″N 75°27′35″W, Cañón Río Arma, 1995, C. Sarmiento, 1w IAvH; Aguadas, 05°36′53″N 75°27′35″W, 1610 m, La Playa, 21.i.1996, C. Sarmiento, 1w IAvH. **Cauca**: Isla Gorgona, 1989, M.L. Baena, 2w USBC. **Magdalena**: San Pedro de la Sierra, 1300 m, 10.ii.19?? [illegible], R.C. Kugler, 2w MCZC. **Quindío**: Finlandia, Río Barbas, 04°42′59″N 75°38′59″W, 1655 m, 5.ii.2000, J. Sossa, 1w IAvH. – **Costa Rica**. **San Vito**: Las Cruces BS, 08°47′N 82°58′W, vii.1996, L. & A. Alonso, 1w MEKOU. – **Ecuador**. **Pichincha**: 47 km S Santo Domingo, Río Palenque Sta., 215 m, 23.v.1975, S. & J. Peck, 1w MCZC.

6.5.10.9. *Leptogenys rasila* n.sp. (Fig. 51)

Diagnosis. Head in full-face view elongate, subrectagular, lateral margin broadly convex; head widest just posterad of eyes; mesonotum 3 × wider than long in dorsal view; node in dorsal view longer than wide, anterior face straight to weakly convex, half as wide as posterior margin; lateral margin weakly concave; anterodorsal margin of abdominal segment III forms more or less continuous convexity in lateral view.

Worker. Metrics, holotype (paratypes, n = 2): HL 1.00 (0.96–0.98); HW 0.60 (0.60–0.60); ML 0.44 (0.42–0.44); EL 0.16 (0.14–0.14); SL 0.96 (0.94–0.96); PW 0.54 (0.54–0.56); WL 1.50 (1.50–1.50); PH 0.56 (0.54–0.54); PL 0.56 (0.58–0.60); DPW 0.36 (0.36–0.36) mm. CI 0.60 (0.61–0.63); MI 0.73 (0.70–0.73); OI 0.27 (0.23–0.23); SI 1.60 (1.57–1.60); LPI 1.00 (0.90–0.93); DPI 0.64 (0.60–0.62).

Head in full-face view elongate, sides sub-parallel, lateral margin broadly convex; head widest just posterad of eyes; posterior margin weakly convex; median clypeal lobe triangular with acute apex, uniformly tapering, no apical setae; cephalic dorsum mostly smooth and shining with sparse punctulae; eyes weakly convex, closer to cephalic capsule mid-length than to mandibular insertion, dorsolaterally situated on head, diameter less than one-fourth lateral cephalic margin. Mandible shuts tight against clypeus; elongate, basal and external margin mostly parallel; masticatory border edentate, basal angle sometimes with small denticle; dorsal mandibular surface smooth and shining with sparse punctae. Clypeus with oblique striae close to antennal fossa, some piligerous tubercles present close to median carina, laterally mostly smooth. Scape smooth and shining with abundant piligerous punctulae, surpasses posterior cephalic border by more than one-fourth its length; frontal lobe covers less than half of condyle; basal funicular segments cylindrical with weakly marked constrictions separating each segment; antennal segment III longer than either II or IV, length of segments II and III over twice respective width; segment IV twice longer than wide.

Mesosoma with shallow and broad metanotal groove in lateral view, separating convexities formed by promesonotum and propodeum. Anterodorsal pronotal margin convex, posterodorsal margin weakly convex; dorsal propodeal margin weakly convex to straight, curvature of propodeum stronger towards declivity; tooth low and rounded, dorsal margin jagged; mesosomal sides mostly smooth and shining except for fine, oblique striae along posteroventral corners; mesometapleural suture well impressed, scrobiculate, widens close to metathoracic spiracle; metapleural-propodeal suture absent; mesonotum 3 × wider than long, anterior margin convex, metanotal groove smooth; declivity with transverse strigulae; mesopleural carina well developed, weakly widening anterodorsad. Mesopleuron with few rugulae ventrally and rugulae around bulla; propodeal spiracle oval, posterodorsally facing. Propodeal declivity mostly with coarse transverse striae, broad smooth and shining transverse sulcus present next to petiolar insertion.

Petiolar node with highest point posterad in lateral view; anterior margin broadly convex, brief, anterodorsal long, weakly convex, inclined; posterior margin broadly curved; subpetiolar process subrectangular in lateral view, with anterior lobe smaller than posterior lobe. Node in dorsal view longer than wide, anterior face straight to weakly convex, half as wide as posterior margin; lateral margin weakly concave. Gaster smooth and shining with sparse piligerous punctulae; anterodorsal margin of abdominal segment III forms more or less continuous convexity in lateral view; constriction between abdominal segments III and IV well marked. Body mostly dark brown; mandibles, antennae, legs, and gastral apex slightly clearer; head, mesosoma, node, and gaster with scattered suberect to erect short hairs, no appressed pubescence; procoxa in lateral view smooth and shining; tibial apices lacking setae.

Queen, male. Unknown.

Comments. This species can be confused with *L. iheringi*, but *L. iheringi* is smaller, has a more elongate petiolar node as seen from above, the mesonotum is not as transverse (width not quite twice its length), the eye length is more than one-fourth the lateral cephalic margin when seen in cephalic full-face view, and the mesopleural carina is poorly developed or effaced. The distribution ranges of the two species are also quite disjunct, with *L. iheringi* only known from se Brazil. The type series are 3 point-mounted workers on same pin, the holotype being the top specimen, and the base of its point has been marked red.

Type material. Holotype worker. **Ecuador**, Pichincha, Centro Científico Río Palenque, 21.xii.1980, Sonia Sandoval. One worker deposited in MZSP. – Paratypes. Two workers on the same pin as the holotype also deposited in MZSP.

6.5.10.10. *Leptogenys ritae* Forel (Figs. 52–54)

Leptogenys ritae Forel, 1899: 17. Holotype worker: Panama, Colon (C. Emery) (MCSN) [examined].
Leptogenys venatrix Forel, 1899: 17. Syntype queens (mistaken for workers in orginal publication): Panama, Colon (C. Emery) (MCSN) [examined] **n.syn.**
Leptogenys (*Lobopelta*) *pusilla* var. *panamana* Wheeler, 1923: 14. Syntype workers and male: Panama, C.Z., Ancon, 10.xi.1911, under stone (W.M. Wheeler) (MCZC) [examined] **n.syn.**

Diagnosis. Eye placed anteriorly on side of head, greatest diameter with 6 ocelli, separated from posterolateral clypeal margin by less than one diameter. Node elongate in dorsal view, anterior margin convex, a bit more than half the width of the posterior margin, post margin straight, lateral margins straight to slightly convex.

Worker. Metrics (n = 8): HL 0.75–0.84; HW 0.52–0.57; ML 0.35–0.42; EL 0.07–0.12; SL 0.62–0.75; PW 0.35–0.50; WL 1.04–1.24; PH 0.43–0.50; PL 0.38–0.48; DPW 0.28–0.33 mm. CI 0.62–0.71; MI 0.65–0.81; OI 0.13–0.21; SI 1.16–1.45; LPI 1.00–1.13; DPI 0.64–0.78.

Head elongate in full-face view, sides semi-parallel; lateral margin broadly convex; posterior cephalic margin weakly convex, almost straight; anterior clypeal margin with triangular median lobe, gradually tapering to acute point, usually with single apical seta; lateral clypeal lobe narrow, expanding as modest lobes close to median lobe; cephalic dorsum mostly smooth and shining with sparse punctulae; eye about same length as mid-width of scape; eye anteriorly placed on side of head, elliptical, greatest diameter with 6 ocelli, separated from posterolateral clypeal margin by less than one diameter; head widest posterior to compound eyes, eyes slightly converge anterad, cephalic width slightly less anterad of eyes. Scape smooth with abundant piligerous punctae, surpasses posterior cephalic border by two apical widths; antennal segments III–IV same length, segment II slightly longer; width of each segment more than half respective length. Mandible elongate, basal and external margins subparallel, basal margin broadly mostly convex with brief concavity next to brief masticatory margin, basal convexity with row of 2–3 setae; dorsal surface smooth and shining with sparse punctae.

Mesosoma with dorsal margin relatively continuously broadly convex, or at most forming two weak convexities in lateral view, slight depression present at metanotal groove; dorsal propodeal margin approximately twice the length of declivity, the two margins form broadly curved angle, declivitous margin ends at apex of blunt, modest triangular lobe at spiracular height. Pronotum mostly smooth and shining with narrow band of transverse striae on anterior face, mesonotum transverse and narrow in dorsal view, 3–4 × wider than long; propodeal dorsum mostly smooth and shining with scattered, posterior facing piligerous punctae and traces of transverse imbricate etchings, declivity with transverse fine striate. Meso-metapleuron ranging from colliculate to rugulose or striate, striae curved or straight, raised lineations slightly undulate or asperous; metapleural-propodeal suture absent; propodeal spiracle round, posterolaterally facing, with depression posterad of spiracle; mesopleuron with fine anteroventral carina, mesosternum with low transverse striae.

Petiole node subquadrate in lateral view; anterior margin less than half height of posterior margin, node highest posterad, dorsal margin convex, without sharp lateral edges; lateral node face mostly smooth and shining with irregular to transverse striae or folds, mostly anteroventrad; subpetiolar process triangular in lateral view. Node elongate in dorsal view; anterior margin convex, width slightly more than half width of posterior margin, posterior margin straight, lateral margins straight to slightly convex. Anterior margin of postpetiole vertical, broadly convex to straight, joined by broad angle with broadly convex dorsal margin; dorsal margin of postpetiole convex. Gaster mostly smooth and shining, abdominal tergite III with scattered punctulae, tergite IV dorsad with posteriorly scalloped punctae, laterad punctulate with some punctae anterad; constriction well developed. Procoxa smooth and shining in lateral view. Body mostly black to ferruginous dark-brown; gastral apex ferruginous brown; antennae, clypeus, mandibles, and legs ferruginous; clypeus and coxae darker. Cephalic dorsum with abundant short suberect hairs, body with scattered subdecumbent hairs; no applied pilosity.

Queen. Metrics: "Normal" queen (n = 2): HL 0.82–0.84; HW 0.55–0.58; ML 0.37–0.40; EL 0.08–0.12; SL 0.67–0.68; PW 0.47–0.47; WL 1.09–1.10; PH 0.45–0.47; PL 0.33–0.42; DPW 0.28–0.35 mm. CI 0.67–0.70; MI 0.67–0.69; OI 0.15–0.20; SI 1.17–1.21; LPI 1.08–1.40; DPI 0.68–1.05. "Mandibular" queen (n = 2): HL 0.82–0.84; HW 0.58–0.58; ML 0.42–0.45; EL 0.12–0.12; SL 0.68–0.72; PW 0.45–0.47; WL 1.09–1.12; PH 0.47–0.47; PL 0.40–0.40; DPW 0.33–0.33 mm. CI 0.70–0.71; MI 0.71–0.77; OI 0.20–0.20; SI 1.17–1.23; LPI 1.17–1.17; DPI 0.83–0.83. Usual differences from worker: Head longer than wide, ovoid in full-face view, posterior margin convex; propodeal dorsal margin convex in lateral view, declivity with low, blunt triangular lobe. Petiolar node triangular in dorsal view, anterior margin narrow, truncate and rounded, lateral margin straight, posterior margin weakly convex; node subrectangular in lateral view, slightly inclined anterad, anterior margin shorter than posterior margin, dorsal margin convex. Gaster noticeably enlarged. Two types of queens distinguishable by mandible: (1) mandible same shape and color as in worker (Fig. 53); (2) mandible greatly thickened and swollen, pale yellow in color (Fig. 54).

Male. Head subglobular in full-face view, eye covers most of lateral cephalic margin, posterior cephalic margin strongly convex; ocelli large, mid ocellus smaller than lateral ocellus. Clypeus extends anterad from inner margin of eye, anterior clypeal margin broadly convex. Mesosoma with flattened dorsal mesonotal margin in lateral view, anterior mesonotal margin brief, convex.

Comments. Immediately after the description of *L. ritae* FOREL (1899: 17) describes *L. venatrix* from an unspecified number of workers taken in the same locality as *L. ritae*. Curiously the description of *L. venatrix* fits more an ergatoid queen than a worker, and the diagnostic characters that FOREL (1899: 18) uses to separate *L. venatrix* from *L. ritae* correspond with those typical of an ergatoid queen: more robust body, squamiform petiole, and larger eyes. Given that multiple queen nests of *L. ritae* have been recorded (see section 5.3. Reproduction), it seems likely the specimens Forel studied to describe *L. venatrix* were actually queens and not workers as he assumed. They might even be part of the nest series of *L. ritae*. Ironically on the same page he noted *Leptogenys* queens were unknown and probably apterous. The only type specimen I could examine for *L. venatrix* is a queen in the MCSN, and I found nothing that could justify separating it from *L. ritae*. WHEELER (1923: 14) describes *L. panamana* as a variety of *L. pusilla* based upon differences in color and density of pubescence, but an examination of the type reveals it is actually *L. ritae*.

There seems to be two types of queens in this species, one with the normal modifications expected of the gyne, whilst the other type is easily distinguished by its remarkably hypertrophied, pale yellow mandibles. The possibility the two queens represent different species exists, but this is apparently not reflected by worker morphology. The role of the enlarged mandible is unknown though it might be associated with the presence of glands. The possibility of parasitism can not be ruled out. Queens of the latter type are known from Caripe, Venezuela. They come from two apparent nests (numbers 1017 and 1018) taken only 80 cm apart from each other. Each series has a single queen of the enlarged mandible type, but neither nest was completely collected. Number 1017 was taken from a rotten log beneath the leaf litter, but no detailed information is given for 1018 in Lattke's field book. The short distance separating the two implies they could be components of the same nest. The existence of 2 normal queens in the series from Trujillo, Venezuela implies either polygyny or the presence of virgin queens that will eventually abandon the mother nest. Natural history studies as well as molecular methods would probably help to unravel the mystery behind the two types of queens.

This species is found from Panama into northern South America, including Trinidad, and south into Colombia and Ecuador. Collection sites include both dry and humid forests as well as coffee and cocoa plantations. Two nests are described from beneath partially buried stones. The adults flee quite rapidly upon discovery of the nest. Throughout much of its range the morphology is relatively uniform, with gradual changes as one travels from one region to another, though some specimens suggest the existence of more than one species. Specimens from Panama have slightly more robust mandibles, a slightly longer mesonotum and laterally facing propodeal spiracles, with a shallow depression posterad of the spiracle. The scape of the ants from Trinidad is a bit longer than those from neighboring Venezuela. Specimens from Trujillo, Venezuela are smoother than those from eastern Venezuela, and show a relatively straight mesosomal dorsal margin in lateral view. Northern Colombian specimens have weak parallel striae on the metapleuron. The opening of the propodeal spiracle becomes laterally directed in specimens from Trujillo, Venezuela and localities westward, down into Ecuador. The specimens from Tiputini, Ecuador and southern Colombia (Nariño, Vaupés, and Caquetá) present a more slender median clypeal lobe with a rounded apex, and additionally a transverse section of the node at midlength is laterally more rounded, and the head is more ovoid in full-face view. The ant from Santander, Colombia could represent another species due to its more elongate head, cephalic punctuation, elongate third antennal segment, and more acutely pointed propodeal armature, but it is only one specimen, and not in the best of shape so more material should be accumulated before judging its status.

Material studied. **COLOMBIA**. **Bolívar**: Zambrano, Hacienda Monterrey, 3.vi.1993, F. Fernández, 1w IAvH. **Caquetá**: Puerto Solano, P.N.N. La Serranía de Chiribiquete, Río Cuñaré-Amú, 01°12′47.8″N 72°25′25.4″W, 250 m, 1.–3.iii.2001, M. Ospina, E. González, 1w IAvH. **Magdalena**: Bahía de Gairaca, P.N. Tayrona, 20 km NE Sta. Marta, 11°20′N 74°07′W, 26.vii.1985, H.-G. Müller, 1w PSWC; Tayrona Park, Los Naranjos, 24.–29.vi.1977, C. Kugler, 1m 5w MCZC. **Nariño**: Orito, Territorio Kofan, 00°30′N 77°13′W, 700 m, 29.ix.1998, E. González, 1w IAvH. **Santander**: Charala Virolin Cost., El Fara, 06°06′N 73°13′W, 1800 m, 29.iii.1999, E.L.G., 1w IAvH. **Tolima**: Icononzo, Boquerón, Río Sumapaz, 550 m, 6.ix.1996, E. Palacio, 1w IAvH. **Vaupés**: R.N. Mosiro-Itajura (Caparu), Igapo, 01°04′S 69°31′W, 60 m, 24.–26.x.2002, L. Benavides, 1w IAvH. **Undetermined**: Fundación, 8.viii.1938, F.M. Gaige, 1w MCZC. – **ECUADOR**. **Orellana**: Tiputini Biodiversity Station, 10.ii.–3.iv.2003, K.T. Ryder, 4w MCZC. – **PANAMA**. **Canal Zone**: Barro Colorado, 1938, N. Weber, 2w MCZC; Barro Colorado, 22.i.1960, W.L. Brown, 1w MCZC. – **TRINIDAD**. **St. Andrew**: Arena Forest Reserve, E. San Rafael, 2/3.iii.1992, 35 m, S.P. Cover, 1w MCZC. **Undetermined**: River Estate, Cacao, 1943, Strick or Mc. C. Callen, 1w MCZC. – **VENEZUELA**. **Distrito Federal**: Caracas, Jardin Botánico, 20.iii.1978, J. Lattke, 1q MIZA. **Miranda**: P.N Guatopo, Agua Blanca, 15 km N Altagracia, S. & J. Peck, 1w MIZA. **Monagas**: Caripe, 1000 m, 31.xi.1986, J. Lattke 1018, C.R. Brandão, 1q 3w MIZA; Caripe, 1000 m, 31.xi.1986, J. Lattke 1017, 1q 2m 15w MIZA, 3w CUSB, 1w NHMW, 1w MHNG, 1w MCSN; Caripe, 31.xi.1986, R. Brandão, 6w MIZA. **Sucre**: 50 km W Güiria, 23.vii.1987, S. & J. Peck, 1w MIZA. **Trujillo**: Vitú, 10.5 km NNE Trujillo, 9°28′N 70°25′W, 15.vi.1986, J. Lattke 890, 1q 9w MIZA. **Zulia**: Sierra de Perijá, El Tucuco, 450 m, 24.vi.1979, J. McLaughlin, 3w MIZA.

6.5.11. *quiriguana* species group

Worker diagnosis. Head subrectangular in full-face view; eye flattened, situated close to middle of head and weakly dorsolaterally, eye extending more laterad; eye without circumocular sulcus, eye length greater than maximum scape width; apex of median clypeal lobe with single median hair, plus two lateral hairs, no apical setae (except *L. orchidiodes* with weak seta), median

clypeal lobe with or without lamella; median clypeal lobe broadly triangular (slender in *L. gagates*); suture between tentorial pit and basal antennal sclerite weakly impressed; mandible shuts tight against clypeus (except *L. gagates*), mandibular basal sulcus moderately to well developed, mandible usually with subparallel basal and external margins, less frequently subtriangular or triangular, basal mandibular margin lacking basal convexity, with 2–4 stout hairs; PF: 4,3. Scape surpasses posterior cephalic margin by not more than one-fourth its length; basal funicular segment longer than wide, neighboring segments subequal in length, funiculus weakly incrassate (except *L. yocota*). Body mostly smooth and shining, propleuron smooth and shining; metanotal groove relatively shallow, smooth, not scrobiculate; mesonotum wider than long in dorsal view, rectangular to narrow and transverse; promesonotal and dorsal propodeal margin relatively at same level in lateral view; propodeal spiracle oval to round, laterally to posterolaterally facing, without distinct sulcus from spiracle to metapleural bulla (except *L. deborae*, *L. gagates*, and *L. yocota*); declivitous margin shorter than dorsal margin, dorsal margin weakly convex to straight; propodeum with lobe or tooth (except *L. erugata*); metapleural-propodeal suture absent; mesosomal dorsum with sparse standing hairs and no appressed pubescence; no pubescence on cephalic dorsum; petiolar node subquadrate in lateral view; postpetiolar constriction weak to moderate; metacoxal dorsum with moderate posterobasal swelling; pro- and metatibial apex with no apical setae; mesotibial apex with single apical seta.

Included species. *L. amu*, *L. consanguinea*, *L. deborae*, *L. erugata*, *L. gagates*, *L. kiche*, *L. nigricans*, *L. orchidiodes*, *L. quiriguana*, *L. yocota*.

Comments. Most of these ants are distributed from Central America into northern South America along the Cordillera de la Costa of Venezuela except for *L. nigricans* and *L. amu*, both known from the Amazon watershed. Both *L. yocota* and *L. amu* have the compound eye situated more dorsolaterally on the head, while in the rest of the species it extends laterad. The mesonotal width is not more than twice its length in most species except *L. amu*. Almost all of these ants have fine standing hairs on the mesosoma except *L. yocota* which has noticeably stouter hairs than the rest. Ergatoid queens are known for this group, besides the only other known winged queen for the New World species, or at least a queen with the mesosomal sclerites associated with flight (*L. nigricans*).

Possible apomorphies. Apparently derived characters for this species are the flattened compound eye, mandible with 3–4 stout hairs along the inner margin, shortened scape, and the apex of the median clypeal lobe with a thick median hair flanked by two lateral hairs of lesser diameter. Most of these characters can be also found in other taxa, but the configuration of the hairs on the apex of the median clypeal lobe seems to be unique to these species.

6.5.11.1. *Leptogenys amu* n.sp. (Fig. 55)

Diagnosis. Head longer than wide in full-face view; widest at mid-length; scape surpasses posterior cephalic border by less than two apical widths; mesosomal dorsal margin forms continuous line in lateral view; petiole subrectangular in lateral view, higher than long; node subquadrate in dorsal view; wider posterad than anterad.

Worker. Metrics, holotype (paratype): HL 0.95 (0.94); HW 0.63 (0.62); ML 0.43 (0.45); EL 0.15 (0.13); SL 0.82 (0.82); PW 0.58 (0.57); WL 1.49 (1.50); PH 0.57 (0.57); PL 0.45 (0.45); DPW 0.38 (0.40) mm. CI 0.67 (0.66); MI 0.68 (0.73); OI 0.24 (0.22); SI 1.29 (1.32); LPI 1.26 (1.26); DPI 0.85 (0.89).

Head longer than wide in full-face view; widest at mid-length; lateral margin broadly convex, posterior margin weakly concave to straight; vertexal carinae narrow, visible throughout most of posterior cephalic margin; eye mostly laterally placed with slightly dorsal extension, relatively flattened, separated from mandibular insertion by more than one diameter; median clypeal process triangular with pointed apex; lateral clypeal lobe narrow; clypeus with longitudinal strigae. Head mostly smooth and shining, with scattered piligerous punctulae. Scape smooth with sparse piligerous punctulae, decumbent pilosity and scattered subdecumbent to suberect hairs, scape surpasses posterior cephalic border by less than two apical widths; second and third antennal segments approximately same length; fourth antennal segment shorter than second and third antennal segments. Mandible shuts tight against clypeus, elongate, mostly parallel-sided, weakly widening apicad, basal margin mostly convex, with 3–4 hairs; mandibular dorsum smooth and shining, sparsely punctate; cephalic ventral face shining with weak longitudinal striae and sparse piligerous punctulae.

Mesosomal dorsal margin forms continuous line in lateral view; promesonotal margin broadly convex; dorsal propodeal margin mostly straight; dorsal propodeal margin almost 2 × length of declivitous margin. Mesosoma mostly smooth and shining; mesonotum wider than long, anterior margin convex, posterior margin broadly convex, metanotal groove distinctly impressed. Mesometapleural suture well impressed, scrobiculate; propodeal spiracle small, rounded to oval, laterally to posterolaterally facing; mesopleuron with triangular anterior lobe, anteroventral carinae distinct; propodeum with low, blunt tooth at spiracular height; declivity transversely striate. Cervix with transverse striae; prosternal process with posterior minute denticle in lateral view.

Petiole subrectangular in lateral view, higher than long; dorsal margin broadly convex, highest posterad; posterior margin straight to very broadly convex; triangular ventral tooth present; node subquadrate in dorsal view; wider posterad than anterad, anterior margin convex, more than half as wide as posterior margin, posterior margin mostly straight, lateral margin straight to

weakly convex; postpetiolar anterior margin vertical in lateral view, with distinct blunt angle separating broadly convex dorsal margin. Node and gaster smooth and shining; procoxa smooth and shining in lateral view; head, thorax, and most of abdomen brown; antenna, clypeus, mandibles, legs and apical gastral segments ferruginous. Body with sparse short standing hairs, no appressed pilosity; apex of pro- and metatibiae lacking setae, mesotibial apex with single seta.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the name of the locality where the specimens were collected.

Comments. This species, along with *L. quiriguana* are the smallest of the *quiriguana* group. *L. amu* is easily separated from the other species by lacking a distinctly transverse mesonotum and has the southernmost distribution, the other species being found from Central America to the Coastal Cordillera of northern South America. The paratype specimen lacks its gaster.

Type material. Holotype worker. **Colombia**, Caquetá, Puerto Solano, P.N.N. La Serranía de Chiribiquete, Río Cuñaré – [Río] Amu, 0°12′48″N 72°25′3.2″W, 250 m, 19.–22.ii.2001, M. Ospina, E. González, deposited in IAvH (No. 35074). – Paratype. One worker with same locality data as holotype, deposited in IAvH (No. 35081).

6.5.11.2. *Leptogenys consanguinea* Wheeler (Fig. 56)

Leptogenys (*Lobopelta*) *consanguinea* Wheeler, 1909: 229. Syntype workers: Mexico, Córdoba, Cat. No. 3–4, 20503 (F. Silvestri) (MCZC) [examined].

Diagnosis. Eye weakly convex, almost flat, diameter less than one-fourth lateral cephalic margin; one mandible shuts tightly against clypeus, with other mandible leaving narrow gap in cephalic full-face view; mandible mostly parallel-sided, gradually expanding apicad, basal angle curved, dorsum smooth and shining with sparse punctate; basal margin with two setae at mid-length.

Worker. Metrics (n = 6): HL 1.06–1.16; HW 0.71–0.81; ML 0.53–0.63; EL 0.20 0.15–0.20; SL 0.99–1.14; PW 0.61–0.68; WL 1.62–1.92; PH 0.61–0.66; PL 0.53–0.61; DPW 0.38–0.43 mm. CI 0.66–0.70; MI 0.72–0.79; OI 0.19–0.26; SI 1.34–1.45; LPI 1.08–1.14; DPI 0.65–0.74.

Head subrectangular in full-face view, wider anterad than posterad; posterior margin mostly straight, lateral cephalic margin mostly very broadly convex. Anterior clypeal margin converges to triangular median lobe, median lobe broadly triangular with lamellate lateral margins, apex pointed; lateral lobe narrow, convex. Eye weakly convex, almost flat, diameter less than one-fourth lateral cephalic margin, ocular-malar margin more than one eye diameter long, ocular midpoint closer to lateral cephalic midpoint than to mandibular insertion. Scape surpasses posterior cephalic border by one-third its length, antennal segments II and III subequal in length, segment II almost 2 × longer than wide, flagellum mostly subcylindrical; cephalic dorsum mostly smooth and shining, clypeus with weak longitudinal striae medially, and sparse piligerous tubercles. One mandible shuts tightly against clypeus, with other mandible leaving narrow gap in cephalic full-face view; mandible mostly parallel-sided, gradually expanding apicad, basal angle curved, dorsum smooth and shining with sparse punctate; basal margin with 2–3 hairs at mid-length. Anterior surface of labrum with sparse piligerous tubercles.

Mesosoma with anterior pronotal margin convex in lateral view, posteriorly broadly convex; mesonotal margin slightly impressed below pronotal margin, posteriorly curving into broad metanotal groove; propodeal dorsal margin broadly convex, length of dorsal margin more than 2 × declivitous margin, declivity with truncate lobe. Mesometanotal suture well impressed; mesosoma mostly smooth and shining, oblique striae present on ventral meso- and metapleura. Propodeal spiracle faces posterolaterally, with broad sulcus extending from spiracle to bulla; declivity with weak transverse striae. Mesonotum wider than long in dorsal view, anterior margin convex, posterior margin broadly convex, almost straight.

Petiole with brief vertical anterior margin in lateral view, dorsal margin broadly convex, posterior margin slightly sinuate, almost straight, node smooth and shining. Node longer than wide in dorsal view, trapezoid shaped with anterior margin more than half the width of posterior margin; posterior margin straight, anterior margin convex, coxae smooth and shining. Constriction between abdominal segments III and IV well marked. Mesometathorax and propodeum black; head, prothorax, petiole, and first two gastral segments irregular dark brown; clypeus, mandible, antenna, and legs ferruginous brown; gastral apex orange. Body mostly without appressed pilosity; anterior cephalic dorsum with sparse short, decumbent hairs; preapical protarsal segment with 2 pairs of setae as in preceding segments.

Queen. Metrics: HL 1.09; HW 0.73; ML 0.53; EL 0.15; SL 1.01; PW 0.61; WL 1.59; PH 0.48; PL 0.48; DPW 0.38 mm. CI 0.67; MI 0.72; OI 0.21; SI 1.38; LPI 1.00; DPI 0.79. Closely resembles the worker except for usual differences.

Male. Described by Wheeler (1909). Not examined.

Comments. The MCZC syntypes consist of one pin with 2 workers and another pin with a worker and a male. The male is rather battered lacking parts of the antennae, wings, most legs, besides abdominal segments IV and posterad. The Las Tuxtas specimens are from evergreen forest. This species can be confused with *L. yocota*, and a number of characters that permit separation are mentioned in the discussion for *L. yocota*.

Material studied. Guatemala. El Petén, Tikal National Pk, 25.vi.1990, W. Tschinkel, 5w 1m MCZC. – **Mexico**. **Chiapas**: Jetja, 7.iii.1945, T.C. Schneirla, 3w LACM. **Córdoba**: F. Silvestri, Cotype MCZ 20503, 3w 1m MCZC. **Oaxaca**: 10 km S Valle Nacional, 610 m, 19.v.1971, S. Peck B-203, 4w MCZC; Cueva del

Lencho Virgen, 10 km SSW Acatlán, 3.i.1974, J. Reddell, D. McKenzie, 1w MCZC. **Veracruz**: Las Tuxtlas, Las Hamacas, 17 km N Santiago, 26.–28.viii.1953, E.O. Wilson 341, 18w MZSP, 4w USNM, 8w 1q MCZC; Estación Las Tuxtlas, ix.1993, L. Quiroz, 1w IEXA.

6.5.11.3. *Leptogenys deborae* n.sp. (Fig. 57)

Diagnosis. Eye width less than one-fourth lateral cephalic margin, situated laterally on head and close to mandibular insertion; mandibles with masticatory borders apparently in opposition except towards apex; mandible triangular, dorsum smooth and shining; mesonotum transverse, node subquadrate in dorsal view; propodeum unarmed, body mostly smooth and shining with sparse punctae.

Worker. Metrics, holotype (paratypes, n = 3): HL 1.35 (1.28–1.35); HW 0.88 (0.84–0.84); ML 0.74 (0.67–0.74); EL 0.17 (0.17–0.20); SL 1.35 (1.31–1.35); PW 0.74 (0.74–0.74); WL 2.06 (2.02–2.02); PH 0.84 (0.81–0.84); PL 0.67 (0.67–0.71); DPW 0.61 (0.61–0.61) mm. CI 0.65 (0.63–0.66); MI 0.85 (0.80–0.88); OI 0.19 (0.20–0.24); SI 1.54 (1.56–1.60); LPI 1.25 (1.19–1.25); DPI 0.90 (0.86–0.90).

Head with straight posterior margin in full-face view, broadly convex lateral margin almost seamlessly joins mandibular lateral margin; median clypeal lobe broadly triangular, ending in sharp point, lateral margins of lobe translucent; clypeus mostly longitudinally striate, tending to smooth medially. Cephalic dorsum mostly smooth and shining with sparse piligerous punctulae. Scape surpasses posterior cephalic border by about one-third its length, covered with dense decumbent pubescence; second and fourth antennal segments both approximately of same length, each longer than half the length of third antennal segment. Eye situated laterally, diameter less than one-fourth lateral cephalic margin, separated from mandibular insertion by distance equal to its diameter. Mandible shuts tight against clypeal margin, triangular with smooth and shining dorsum, edentate except for apical tooth; masticatory border of each mandible barely overlaps the other except towards apex, giving appearance of perfectly opposing margins.

Mesosoma with promesonotal margin broadly convex in lateral view, metanotal groove deep, propodeal dorsal margin broadly convex, separated by blunt obtuse angle from almost straight declivity, propodeum unarmed. Mesosoma mostly smooth and shining with sparse piligerous punctae; appressed pilosity absent, sparse standing and decumbent hairs present. Mesopleuron separated from mesosternum by carina, carina widest anterad; mesometapleural suture scrobiculate; metapleuron posteroventrally striate, metapleural-propodeal suture absent; propodeal spiracle oval, posterolaterally facing, set in low depression that continues posterad to bulla; declivitous face mostly smooth and shining, flat, with 2–3 transverse striae posterad. Mesonotum wider than long, mesosternal carina expands medially as triangular lobe. Petiole in lateral view subrectangular, higher than long, anterior margin mostly vertical to irregularly broadly convex, dorsal margin convex, posterior margin vertical; node subquadrate in dorsal view, slightly wider posterad than anterad, anterior margin convex, posterior margin transverse; ventral petiolar margin mostly straight in lateral view, anterior triangular tooth present with blunt posteriorly directed lobe. Gaster smooth and shining with sparse piligerous punctulae. Stridulitrum present on fourth abdominal acrotergite. Extruded sting is more than half gastral length; lateral face of procoxa smooth and shining. Head, thorax and abdomen black, antennae, clypeus, mandibles, and legs brown; apical gastral segments ferruginous.

Queen. Metrics: HL 1.35; HW 0.88; ML 0.74; EL 0.20; SL 1.35; PW 0.74; WL 1.95; PH 0.84; PL 0.71; DPW 0.64 mm. CI 0.65; MI 0.85; OI 0.23; SI 1.54; LPI 1.19; DPI 0.90. Gaster slightly larger than worker; petiolar node anteroposteriorly more compressed; mesonotum relatively longer than in worker; propodeal margin more convex than worker in lateral view.

Male. Unknown.

Derivatio nominis. The species is dedicated to a friend and companion of countless caving trips, Débora Urribarrí, present when these ants were found at the edge of a pothole during a lunch break.

Comments. The type locality is a limestone plateau with an average height of 800–1100 m, covered with a mix of semi-deciduous humid forest and pasture for cattle. The area where the nest was found is rugged karst with crevasses, potholes and pinnacles. The nest was found in the soil rock interface, the ants fled upon disturbance and attempted to hide by jamming themselves in fissures in the surrounding rock. In the same plateau, *L. unistimulosa* is frequently found, and there is abundant nocturnal isopod activity in the leaf litter starting during the early evening hours.

Type material. Holotype worker. **VENEZUELA**, Falcón, Cerro Los Caracoles, 27.6 km E Santa Cruz de Bucaral, 10°52′N 69°02′W, 950 m, 16.iv.2003, J. Lattke 2534. Deposited in MIZA. – Paratypes. A series of 14 workers and 2 queens from the same nest as the holotype. Deposited as follows: 1w MCZC, 1w LACM, 1w BMNH, 1w IAvH, 1w MZUSP, 9w 2q MIZA.

6.5.11.4. *Leptogenys erugata* n.sp. (Fig. 58)

Diagnosis. Eye laterally placed, relatively flattened, separated from mandibular insertion by one diameter; mandible mostly parallel-sided but slightly widening apicad, dorsum smooth and shining, sparsely punctate; cephalic dorsum mostly smooth and shining with sparse piligerous punctulae. Scape smooth with abundant piligerous punctulae, surpasses posterior cephalic border by less than one-third its length.

Worker. Metrics, holotype (other specimens, n = 4): HL 1.11 (1.06–1.16); HW 0.78 (0.76–0.83); ML 0.58 (0.56–0.61); EL 0.15 (0.15–0.15); SL 0.99 (0.94–1.01); PW

0.63 (0.63–0.68); WL 1.67 (1.57–1.72); PH 0.71 (0.63–0.73); PL 0.58 (0.56–0.61); DPW 0.51 (0.48–0.51) mm. CI 0.70 (0.69–0.72); MI 0.74 (0.71–0.73); OI 0.19 (0.18–0.20); SI 1.26 (1.21–1.26); LPI 1.22 (1.14–1.22); DPI 0.87 (0.83–0.91).

Head subrectangular in full-face view; wider anterad than posterad; both posterior and lateral margins broadly convex, almost straight; vertexal carinae narrow, but visible throughout most of posterior cephalic margin; eye laterally placed, relatively flattened, diameter less than one-fourth lateral cephalic margin, separated from mandibular insertion by one diameter; anterior clypeal margin with broadly triangular median lobe, apex bluntly pointed; lateral clypeal lobe narrow; clypeus laterally smooth, medially with longitudinal strigae. Scape smooth with abundant piligerous punctulae, surpassing posterior cephalic border by less than one-third its length; second and third antennal segments approximately same length; fourth antennal segment shorter, more than half the length of segment three. Mandible shuts tight against clypeus, elongate, mostly parallel-sided but slightly widening apicad; mandibular dorsum smooth and shining, sparsely punctate; cephalic dorsum mostly smooth and shining with sparse piligerous punctulae. PF: 4,3.

Mesosoma with two very broad convexities in lateral view; promesonotum forms continuous convexity, posterior one-fourth of mesonotum drops abruptly into promesonotal suture; dorsal propodeal margin weakly convex, almost straight; dorsal propodeal margin almost 2 × length of declivitous margin. Mesosoma mostly smooth and shining; mesonotum wider than long. Cervix with transverse striae; mesonotum wider than long in dorsal view; prosternal process with posterior minute denticle in lateral view. Mesometapleural suture well impressed, scrobiculate; metapleural propodeal suture wanting; propodeal spiracle small, rounded to oval, laterally to posterolaterally facing; mesopleuron with anterior crest, widening anterad close to pronotum; propodeum unarmed.

Petiole subquadrate in lateral view; dorsal margin convex, highest posterad; posterior margin straight to very broadly convex; triangular ventral tooth present; anterior margin slightly less than half as long as posterior margin in dorsal view; node and gaster smooth and shining. Node subquadrate in dorsal view; anterior margin convex, more than half as wide as posterior margin, posterior margin straight medially to convex laterally; procoxa smooth and shining in lateral view; stridulitrum present. Pygidium with or without brief longitudinal crest. Head, thorax, and most of abdomen dark brown to almost black; antenna and mandible brown; legs and apical gastral segments ferruginous brown. Body with sparse short standing hairs, no appressed pilosity; scape with abundant decumbent pilosity and hairs.

Queen. Lighter colored than worker, mostly ferruginous brown; dorsal propodeal margin more convex in lateral view; node compressed in lateral and dorsal views.

Male. Unknown.

Derivatio nominis. The species name alludes to the smooth integument of this species. It is derived from the Latin, *erugatus*, for smooth.

Comments. This species can be confused with the Central American species *L. quiriguana*, which has distinct triangular denticles on the propodeum in contrast to the unarmed propodeum of *L. erugata*. Examined samples of *L. erugata* from Colombia differ from the Venezuelan samples in a scape with pilosity of uniform length, slightly more punctae on the cephalic dorsum, and the promesonotal margin more flattened in lateral view. *L. erugata* from Falcón, Venezuela (both localities in the humid Serranía de San Luis) have the propodeal spiracle rounded and laterally placed on the mesosoma, but other populations tend to have the spiracle oval and facing posterolaterally, with the cuticle posterad of the spiracle indented. Nests have been found in humid forested sites, including shade cocoa plantations, at ground level in rotting wood such as branches or logs. They are found from almost sea level to 1200 m above sea level. Specimens have also been taken in leaf litter samples. Reaction upon disturbance to the nest is to run and hide in surrounding litter.

Type material. Holotype worker. **Venezuela**, Falcón, 2 km ESE Curimagua, 11°10′N 69°35′W, 1150 m, 19.vii.1993, J. Lattke 1513. One worker deposited in MIZA. – Paratypes. From the same nest as the holotype: 1w MCZC, 1w BMNH, 1w 1q MIZA.

Other material studied. Colombia. **Magdalena**: Tayrona Park, ca. Pueblito, 360 m, 10.xi.1976, C. Kugler, 2w CUSB, 8w MCZC, 4w 1q MIZA. – **Venezuela**. **Aragua**: [Parque Nacional Henri Pittier], Rancho Grande, 1100 m, 14.vii.1979, J. Lattke, 6w 1q MIZA; same locality but 31.xii.1983, J. Lattke, 2w MIZA; same locality but 9.vii.1994, J. Lattke, 1w MIZA; same locality but 19.x.1988, W. MacKay 1123-2, 2w WPMC; Girardot, [Parque Nacional Henri Pittier], Rancho Grande, 14.vii.1979, No. 15, R.W. Brooks, 3w 2q UCDC, 1w 1q MIZA; Choroní, Sta. Polonia, 24.vii.1996, J. Araque, 1w MIZA; Parque Nacional Henri Pittier, Valle de Santa María, El Platanal, 628.592E 1.145.137N [10°21′N 67°50′W], 1100 m, 25.viii.2003, E. Rodríguez, J. Lattke 2734. **Falcón**: ca. Santa María, 17 km SSE Coro, 11°16′N 69°35′W, 1200 m, 20.vii.1993, J. Lattke 1521, 4w MIZA; ca. San Joaquín, 11°12′N 69°37′W, 980 m, 17.vii.1993, J. Lattke 1494, 4w MIZA. **Miranda**: Padrón, Estación Experimental Caucagua, 16.iii.1982, K. Jaffé, C.R. Brandão, P. Jaisson 94, 1w CUSB. **Sucre**: Península de Paria, N Macuro, 20.x.1992, J. Lattke, 1w MIZA. **Táchira**: vía Santa Ana – Río Frío, 1000 m, 14.viii.1983, J. Lattke 408, 18w 1q MIZA, 1w MCZC.

6.5.11.5. *Leptogenys gagates* Mann (Fig. 59)

Leptogenys (*Leptogenys*) *gagates* Mann, 1922: 11, fig. 5. Syntype workers: Honduras, San Juan Pueblo, ii.–iii.1920, Cat. No. 24439 (W.M. Mann) (USNM) [examined].

Diagnosis. Head subquadrate in full-face view, mandibles elongate, not shutting tight against clypeus; median clypeal lobe slender and forming convex margin with lateral lobes; eye weakly convex; scape surpasses posterior cephalic margin by one-fourth its length; width of mesonotum more than twice its length in dorsal view, anterior margin convex, posterior margin concave. Propodeal spiracle round.

Worker. Metrics (n = 4): HL 0.94–1.01; HW 0.71–0.78; ML 0.51–0.61; EL 0.15–0.18; SL 0.89–0.96; PW 0.51–0.63; WL 1.54–1.59; PH 0.56–0.63; PL 0.51–0.56; DPW 0.46–0.51 mm. CI 0.74–0.78; MI 0.71–0.77; OI 0.19–0.24; SI 1.27 1.19–1.27; LPI 1.10–1.19; DPI 0.82–0.91.

Head subquadrate in full-face view, slightly wider anterad than posterad; posterior margin relatively straight, cephalic margin posterad of eye mostly straight, curving posterad towards posterior margin; eye convex, length less than one-fourth lateral cephalic margin; anterior clypeal margin laterally concave, lateral lobe low and triangular, apex rounded; clypeus with low weak striae and sparse piligerous tubercles; PF 4,3. Cephalic dorsum mostly smooth and shining with sparse punctulae. Scape surpasses posterior cephalic border by one-fourth its length, smooth and shining with sparse punctulae; funicular segments longer than wide, wider apicad than basad; antennal segments II–IV subequal in length. Mandible elongate and slender, leaving gap between basal margin and clypeus, subparallel internal and external margins, basal angle with minute denticle, basal margin broadly convex, external margin sinuate, basal margin with two stout hairs at mid-length; dorsum mostly smooth and shining with sparse piligerous punctae.

Mesosoma with broadly convex pronotal margin in lateral view; mesonotal margin briefly descends into metanotal groove, propodeal margin slightly convex to mostly straight before curving onto declivitous margin, declivitous margin straight with short triangular tooth at spiracular height. Width of mesonotum more than twice its length in dorsal view, anterior margin convex, posterior margin concave. Mesosoma mostly smooth and shining with sparse piligerous punctulae; weak striae present about bulla; propodeal spiracle rounded, propodeal side posterad of spiracle indented. Mesopleural carina gradually expands anterad, forming low angular anterior lobe. Declivity with transverse crest between denticles, insertion of petiole surrounded by low sheath.

Petiole subquadrate in lateral view with vertical anterior margin half height of posterior margin, dorsal margin broadly convex, posterior margin feebly convex, practically straight. Node trapezoidal, elongate in dorsal view; anterior margin convex, more than half width of posterior margin, posterior margin weakly convex. Node smooth and shining, posterior face flat, separated from lateral face by sharp curvature, ventral process triangular with long anterior slope and brief vertical posterior margin. Gaster, coxae smooth and shining; body with sparse standing and decumbent hairs, no appressed pilosity; constriction between abdominal segments III and IV well marked. Scape with abundant decumbent pilosity and sparse decumbent hairs. Body mostly black to very dark brown; antennae, clypeus, mandibles, legs and gastral apex ferruginous brown.

Queen, male. Unknown.

Comments. This distinct species is only known from the type series: 3 point-mounted workers on a single pin, and a single worker on another pin.

Material studied. HONDURAS. San Juan, Pueblo, W.M. Mann, 4w USNM.

6.5.11.6. *Leptogenys kiche* n.sp. (Fig. 60)

Diagnosis. Eye laterally placed, relatively flattened; eye length more than one-fourth lateral cephalic margin in full-face view; scape surpasses posterior cephalic border by less than one-fourth its length; mandible shuts tight against clypeus, elongate, basal and external margins parallel, basal margin mostly broadly convex, basally with 2–3 stout hairs; propodeum unarmed. Width of mesonotum just under 2 × its length in dorsal view; node subquadrate in dorsal view, slightly wider posterad than anterad.

Worker. Metrics, holotype (paratypes, non-types, n = 5): HL 0.92 (0.96–1.02); HW 0.60 (0.60–0.70); ML 0.42 (0.40–0.50); EL 0.14 (0.16–0.20); SL 0.76 (0.76–0.90); PW 0.52 (0.54–0.60); WL 1.36 (1.36–1.44); PH 0.56 (0.58–0.64); PL 0.46 (0.46–0.50); DPW 0.38 (0.38–0.44) mm. CI 0.65 (0.63–0.69); MI 0.70 (0.64–0.73); OI 0.23 (0.24–0.29); SI 1.27 (1.27–1.30); LPI 1.22 (1.20–1.28); DPI 0.83 (0.80–0.92).

Head subrectangular in full-face view; lateral margin broadly convex, posterior margin straight to weakly convex; vertexal carinae narrow, but visible throughout most of posterior cephalic margin; eye laterally placed, broadly convex, relatively flattened; eye length more than one-fourth lateral cephalic margin in frontal cephalic view; centre of eye closer to mid-distance of lateral cephalic margin than to mandibular insertion; lateral clypeal lobe narrow, little expanded towards base of median lobe; clypeus smooth except for few short longitudinal striae and scattered piligerous tubercles. Head mostly smooth and shining, with scattered piligerous punctulae. Scape smooth with abundant piligerous punctulae, abundant subdecumbent pilosity and subdecumbent hairs present, scape surpasses posterior cephalic border by less than one-fourth its length; antennal segments II–IV wider apicad than basad, constriction between each segment distinct, apical width more than one-half length; segment II longer than either segment III or IV. Mandible shuts tight against clypeus, elongate, basal and external margins parallel, basal margin mostly broadly convex, basally with 2–3 stout hairs; mandibular dorsum smooth and shining, sparsely punctate; PF 4,3; cephalic ventral face smooth and shining with sparse piligerous punctulae.

Mesosomal dorsal margin with well-impressed metanotal groove, separating broadly convex dorsal promesonotal margin from broadly convex dorsal propodeal margin, declivitous margin straight, curving smoothly onto dorsal margin, propodeum unarmed. Mesosoma mostly

smooth and shining with transverse striae on pronotal cervix and anterior face, striae also on posteroventral mesopleural corner; rugulae present on posteroventral metapleuron. Propodeal spiracle faces posterolaterally, depression present between spiracle and bulla; declivitous face mostly smooth and shining with variable amounts of brief transverse striae laterad, totally transverse posterad. Width of mesonotum just under twice its length in dorsal view, anterior margin convex, posterior margin broadly convex, metanotal groove smooth; mesopleural carina well developed; mesosternum with transverse parallel fine striae.

Petiolar node subquadrate in lateral view; anterior margin weakly convex, longer than half posterior margin; posterior margin broadly convex; dorsal margin broadly convex, highest posterad; triangular ventral lobe present. Node subquadrate in dorsal view; slightly wider posterad than anterad, anterior margin convex, posterior margin broadly concave, lateral margin straight to weakly convex; node mostly smooth and shining with sparse punctae dorsad. Postpetiolar anterior margin vertical to weakly convex in lateral view, with sharper convexity separating broadly convex dorsal margin; constriction between segments III and IV well developed. Node and gaster smooth and shining with scattered punctulae; procoxa smooth and shining in lateral view; body with scattered long suberect to erect hairs, no appressed pubescence. Head, thorax, and most of abdomen black; scape, clypeus, mandibles, coxae and femora dark brown; funiculi, tibiae and gastral apex ferruginous brown. Apex of pro- and metibiae without setae, mesotibial apex with seta.

Queen, male. Unknown.

Derivatio nominis. The species name is that of the mayan language, k'iche', spoken in Central America, including the Departamento de Suchitepéquez where the type series specimens were collected. It is mostly a lowland area.

Comments. Two series taken from under stones in lowland areas. The type series was ironically taken in disturbed urban habitat next to a gas station in a grassy-weedy area (W.P. MacKay, pers. comm.). The shape of the petiolar node cross-section may be confusing as taken strictly at node mid-length it is straight, but towards the anterior half the node is rounded, especially dorsolaterally.

Type material. Holotype worker. **Guatemala**, Suchitepéquez, [242 m], 14°23′31″N 91°11′36″W, 31.vii.2004, W.P. MacKay 20816. One worker deposited in MCZC. The bottom specimen of two workers on the same pin. The base of the point bearing the holotype is inked red. – Paratypes. One worker from the same pin as the holotype deposited in MCZC. Three further workers from same series as holotype: 1w WPMC, 1w MIZA, 1w MZSP.

Other material studied. **Guatemala**. **Escuintla**: Escuintla, Finca Montijo, 31.vii.2004, 538 m, W.P. MacKay 20824, 2w WPMC. **Suchitepéquez**: Finca Tarrales, 12.3 km N Patulul, 740 m, 14°31′21.2″N 91°08′11.1″W, 31.vii.2004, 2w WPMC.

6.5.11.7. *Leptogenys nigricans* n.sp. (Fig. 61)

Diagnosis. Head subquadrate in full-face view; eye dorsolaterally situated on head, occupying close to one-third lateral cephalic margin; median clypeal lobe broadly triangular, apex blunt, lacking apical setae; mandible triangular in dorsal vew, external margin with weakly convex basal margin distinctly separated by basal mandibular sulcus, rest of external margin straight to broadly convex.

Worker. Metrics, holotype (paratypes, n = 5): HL 1.65 (1.28–1.52); HW 1.15 (0.88–1.08); ML 0.84 (0.61–0.78); EL 0.34 (0.27–0.30); SL 1.62 (1.18–1.48); PW 0.98 (0.78–0.88); WL 2.49 (1.92–2.33); PH 1.08 (0.81–0.98); PL 0.91 (0.71–0.84); DPW 0.71 (0.54–0.61) mm. CI 0.69 (0.68–0.79); MI 0.74 (0.60–0.76); OI 0.29 (0.28–0.31); SI 1.41 (1.29–1.40); LPI 1.19 (1.08–1.22); DPI 0.78 (0.72–0.78).

Head subquadrate in full-face view, slightly wider anterad than posterad, lateral margin weakly convex, posterior margin straight to weakly concave; median clypeal lobe broadly triangular, apex blunt, lacking apical setae, median area mostly smooth with striae laterad; clypeus laterally mostly smooth, lateral lobe weakly developed. Head mostly smooth and shining dorsad with scattered piligerous punctulae, punctulae denser anterad and close to eye; frontal carinae extend posterad close to mid eye height, defining narrow rugulose area. Eye dorsolaterally situated on head, occupying close to one-third lateral cephalic margin, broadly convex, closer to lateral cephalic mid-length than to mandibular insertion. Ventral face of head mostly glabrous with sparse punctae. Scape surpasses posterior cephalic border by over one-fourth it length, scape with abundant decumbent pilosity and scattered subdecumbent to suberect hairs especially apicad. Funicular segments elongate, wider apicad than basad; apical width of third antennal segment over half its length; antennal segments II–IV similar in length, IV slightly shorter. Mandible triangular in dorsal vew, external margin with weakly convex basal margin distinctly separated by basal mandibular sulcus, rest of external margin straight to broadly convex; basal margin mostly convex, masticatory margin mostly straight to weakly concave, apex concave. Dorsum mostly smooth and shining with weak longitudinal strigulae and scattered punctae; PF: 4,3.

Mesosoma with promesonotal margin forming single convexity in lateral view, dorsal propodeal margin broadly convex, curving onto weakly convex declivituous margin that becomes bluntly jagged towards low rounded tooth. Metanotal groove well impressed. Mesosoma mostly smooth and shining to glabrous, mesopleuron with brief transverse lineal impression next to metathoracic spiracle; mesometapleural suture well impressed, scrobiculate; propodeal spiracle round to broadly oval, posterolaterally facing; mesonotum wider than long in dorsal view, anterior margin convex, posterior margin concave. Declivitous face medially most-

ly smooth and shining, weakly colliculate, especially posterad, 3–4 transverse striae present along lateral margin.

Petiolar node subquadrate in lateral view, anterior margin vertical, shorter than posterior margin, dorsal margin convex, highest posterad. Node roughly as wide as long in dorsal view, convex anterior margin more than half length of mostly straight posterior margin. Node smooth and shining, transverse section at mid-length convex; anteroventral process hook shaped. Anterior postpetiolar margin vertical in lateral view, dorsal margin convex, constriction between abdominal segments III and IV weak; gaster smooth and shining with sparse punctulae. No pubescence on body, just sparse suberect hairs on mesosomal sides and dorsum. Body mostly jet black; mandible, clypeus, antennae, legs, and gastral apex brown to dark brown. Tibiae with apical seta on only on mesotibiae.

Queen. Median ocellus present, lateral ocelli present to absent, only a puncture left as trace. Anterior margin of scutum convex in dorsal view, mostly smooth and shining with sparse piligerous punctae. Tegulae, wing stumps, axillae, scutellum, and metanotum well developed. Propodeal dorsal margin weakly convex in lateral view, petiolar node anterolaterally compressed; gaster larger than in worker.

Male. Unknown.

Derivatio nominis. The species name alludes to the jet black color that dominates the body. It is derived from the Latin for black, *nigra*.

Comments. On account of the clearly recognizable wing stumps, this is the only other known species in the genus, besides *L. langi*, to have queens with wings plus the additional associated sclerites. The locality records suggest this is a species inhabiting low land forests of the western and northwest Amazonas watershed.

Type material. Holotype worker. **BRAZIL**, Amazonas, Benjamin Constant & vicinity, BC-73, 22.ix.1962, W.L. Brown Jr. Deposited in the MCZC. The holotype is the middle specimen on a pin with three point-mounted workers. – Paratypes. (1) **BRAZIL**, Amazonas, Benjamin Constant & vicinity, BC-73, 22.ix.1962, W.L. Brown Jr. Two workers deposited in the MCZC. The top and bottom specimens on the same pin as the holotype. (2) **BRAZIL**, Amazonas, Benjamin Constant & vicinity, BC-3X, 18.ix.1962, W.L. Brown Jr. One worker and one queen on the same pin. Deposited in the MCZC.

Other material studied. COLOMBIA. **Amazonas**: Caquetá, Araracuara, correg. vía Putumayo, x.1994, G. Gangi, 1w 1q IAvH. – **ECUADOR**. **Morona**: Santiago, Los Tayos, 3.viii.1976, Tjitte de Vries, 11w MZSP. **Napo**: Limoncocha, 00°24′S 76°36′W, 280 m, 19.vii.–13.viii.1973, L. Morales, 9w MZSP; same locality but 10.vii.1972, L. Morales, 1w MZSP; Limon Cocha & vic., x.–xi.1964, H.R. Hermann, 1w MCZC; Sushijindi, 2.x.1987, 2w CUSB. **Orellana**: Tiputini Biodiversity Station, 10.ii–3.iv.2003, K.T. Ryder, 4w MCZC, 1w MIZA.

6.5.11.8. *Leptogenys orchidioides* n.sp. (Fig. 62)

Diagnosis. Median clypeal lobe laterally lamellate basad; mandible elongate, basal and external margins subparallel, weakly widening apicad; propodeal declivity mostly smooth with 3–5 transverse striae between teeth. Node subquadrate in dorsal view, wider posterad than anterad; anterior and lateral margins U-shaped in dorsal view.

Worker. Metrics, holotype (paratypes, n = 4): HL 1.11 (1.09–1.16); HW 0.81 (0.78–0.81); ML 0.58 (0.58–0.63); EL 0.18 (0.18–0.18); SL 0.94 (0.96–0.99); PW 0.68 (0.68–0.68); WL 1.75 (1.64–1.70); PH 0.73 (0.71–0.73); PL 0.56 (0.53–0.53); DPW 0.53 (0.53–0.53) mm. CI 0.73 (0.70–0.73); MI 0.72 (0.72–0.81); OI 0.22 (0.22–0.23); SI 1.16 (1.19–1.26); LPI 1.32 (0.00–1.38); DPI 0.95 (1.00–1.00).

Head subquadrate in full-face view; lateral margin broadly convex; posterior cephalic margin weakly convex; median clypeal lobe broadly triangular, laterally lamellate basad, apex pointed, no apical seta; lateral lobe narrow, widest towards median lobe, forming rounded angle; eye weakly convex in cephalic full-face view, laterally placed on head, length under one-fourth length of lateral cephalic margin. Head widest anterad. Scape smooth and shining with abundant piligerous punctulae, surpassing posterior cephalic border by less than one-fourth its length; funicular segments elongate; antennal segments II–IV equal in length; length of segment II twice its apical width, segments III–IV not as elongate; each segment slightly wider apicad than basad. Mandible elongate, basal and external margins parallel; basal margin broadly convex, 1–2 prominent hairs sometimes present on mandibular basal margin opposite median clypeal lobe; masticatory margin short with blunt apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae. Cephalic dorsum mostly smooth and shining with piligerous punctulae; clypeus mostly smooth with sparse weak striae and piligerous tubercles.

Dorsal mesosomal margin mostly continuous in lateral view, pronotal dorsal margin broadly convex, metanotum straight, metanotal groove weakly impressed, dorsal propodeal margin broadly convex, forming obtuse angle with straight to weakly convex declivitous margin. Modest triangular propodeal tooth present opposite spiracle. Mesosoma mostly smooth and shining with sparse piligerous punctulae, dorsum with weak undulations and punctulae of larger diameter; metapleuron with rugulae posteroventrad; mesometapleural suture distinctly impressed, scrobiculate; mesopleural carina well developed, widest anterad; metapleural-propodeal suture absent; propodeal spiracle elliptical with opening directed posterolaterally, broad depression present between spiracle and propodeal tooth; propodeal declivity mostly smooth with 3–5 transverse striae between teeth. Prosternum smooth and shining; mesonotum 2 × wider than long in dorsal view, metanotal groove smooth.

Petiole node subrectangular in lateral view, anteriorly inclined, anterior margin half height of mostly straight posterior margin, dorsal margin convex, node highest posterad; node mostly smooth and shining. Sub-

petiolar process subtriangular in lateral view, with long anteroventral margin. Node subquadrate in dorsal view, wider posterad than anterad; anterior and lateral margins U-shaped in dorsal view. Anterior postpetiolar margin broadly convex in lateral view, dorsal margin convex; constriction between abdominal segments III–IV broad; gaster mostly smooth and shining with scattered piligerous punctulae. Body black to dark brown with blue opalescence; mandibles, clypeus, legs, antennae, and gastral apex brown. Body with scattered erect and semi-erect hairs, some appressed hairs present, pubescence wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; pro- and metatibial apices lacking setae, mesotibial apex with seta.

Queen. Metrics (n = 2): HL 1.08–1.10; HW 0.80–0.82; ML 0.60–0.60; EL 0.18–0.18; SL 0.96–0.98; PW 0.68–0.68; WL 1.54–1.58; PH 0.56–0.58; PL 0.48–0.48; DPW 0.56–0.58 mm. CI 0.73–0.76; MI 0.73–0.75; OI 0.22–0.23; SI 1.20–1.20; LPI 1.17–1.21; DPI 1.17–1.21. Queen very much like worker except for more convex dorsal propodeal margin in lateral view, petiole node more compressed, enlarged gaster, and vestigial ocelli. Propodeal spiracle more elongate than worker.

Male. Unknown.

Derivatio nominis. The species name alludes to the apparent nesting site of the type series, an orchid. It is derived from the Greek for Orchid, *Orchios*.

Comments. The series seem to represent specimens taken from a single nest found in a shipment of orchids of the genus *Odontoglossum* by customs authorities. This raises the question of the nesting habits for this species, was the orchid collected as an epiphyte in the field along with the ants, or did the ants move into the plant later? Another interesting aspect about this series is the large ratio of queens versus workers: almost the same number (8w, 7q). The hairs on the mandibular inner margin are not seta such as those found on the same place in the mandibles of other groups, as they are flexuous in *L. orchidioides* and not stiff and wire-like.

Type material. Holotype worker. **Guatemala**, 3-30-47, Br. 63953, 47-5066. One point-mounted worker deposited in USNM. – Paratypes. Seven workers and seven queens with same data as the holotype. Two workers on same pin as holotype. All deposited in USNM.

6.5.11.9. *Leptogenys quiriguana* Wheeler (Fig. 63)

Leptogenys (*Lobopelta*) *quiriguana* Wheeler, 1923: 10, fig. 4. Lectotype workers: Guatemala, Quirigua, 13.i.1912, under log (W.M.Wheeler) (MCZC) [examined]

Diagnosis. Eye diameter covers less than one-fourth lateral cephalic margin; clypeus mostly smooth with sparse longitudinal strigae; width of mesonotum more than 2 × its length, anterior margin convex, posterior margin broadly convex; petiole subquadrate in lateral view; node triangular in dorsal view; anterior margin convex, about half as wide as posterior margin.

Worker. Metrics, non types (n = 5): HL 1.01–1.11; HW 0.68–0.76; ML 0.51–0.56; EL 0.15–0.18; SL 0.91–1.06; PW 0.58–0.66; WL 1.52–1.77; PH 0.61–0.68; PL 0.53–0.61; DPW 0.40–0.46 mm. CI 0.68–0.69; MI 0.71–0.76; OI 0.20–0.25; SI 1.28–1.40; LPI 1.08–1.19; DPI 0.70–0.86.

Head longer than wide in full-face view; widest at mid-length; lateral margin weakly convex, posterior margin weakly concave to straight; vertexal carinae narrow, but visible throughout most of posterior cephalic margin; eye laterally placed, relatively flattened, separated from mandibular insertion by more than one diameter, diameter covers less than one-fourth lateral cephalic margin; median clypeal process triangular with pointed apex; lateral clypeal lobe narrow; clypeus mostly smooth with sparse longitudinal strigae. Head mostly smooth and shining, with scattered piligerous punctulae, punctulae denser between eyes and antennal sclerite. Scape smooth with abundant piligerous punctulae, subdecumbent pilosity and scattered subdecumbent to suberect hairs, scape surpasses posterior cephalic border by approximately one-fourth its length; second and third antennal segments approximately same length, both twice as long as wide; fourth antennal segment slightly shorter. Mandible shuts tight against clypeus, elongate, mostly parallel-sided, weakly widening apicad, basal margin mostly convex, with 3–4 stout hairs; mandibular dorsum smooth and shining, sparsely punctate; cephalic ventral face smooth and shining with sparse piligerous punctulae.

Mesosomal dorsal margin forms relative continuous line in lateral view; promesonotal margin broadly convex; dorsal propodeal margin mostly straight; metanotal groove narrow and shallow; dorsal propodeal margin almost 2 × length of declivitous margin; propodeal dorsal and declivitous margins form blunt, obtuse angle. Mesosoma mostly smooth and shining, some striae may be present on posterolateral metapleuron; width of mesonotum more than twice its length, anterior margin convex, posterior margin broadly convex. Mesometapleural suture well impressed, scrobiculate; metapleural propodeal suture lacking; propodeal spiracle relatively small, oval, posterolaterally facing; mesopleuron with low triangular anterior lobe, anteroventral carina distinct; mesosternum with fine transverse regular striae; propodeum with rounded, blunt tooth at spiracular height; declivity with sparse transverse striae close to petiolar insertion. Cervix with transverse striae; prosternal process rounded in lateral view.

Petiole subquadrate in lateral view, anterior margin straight, anteriorly inclined, shorter than posterior margin, dorsal margin weakly convex, highest posterad; posterior margin straight to very broadly convex; ventral process shaped as triangular lobe; node triangular in dorsal view; anterior margin convex, about half as wide as posterior margin, posterior margin mostly straight, lateral margin straight to weakly convex; postpetiolar anterior margin vertical in lateral view, with rounded an-

gle separating broadly convex dorsal margin. Node and gaster smooth and shining; procoxa smooth and shining in lateral view; head, thorax, and most of abdomen dark brown to black; antenna, clypeus, mandibles, legs and apical gastral segments ferruginous to dark brown. Body with sparse short standing hairs, no appressed pilosity.
Queen, male. Unknown.
Comments. The type series are 3 point-mounted workers on a single pin. WHEELER (1923) thought this species as close to *L. consanguinea*, a conclusion which is supported in the present study. There is a small depression posterad of propodeal spiracle, with a distinct ventral ridge in this species but it is not a sulcus.

Material studied. BELIZE. Orange Walk, Rio Bravo Conservation Area, vic. La Milpa Stn, 23.iii.1998, L.R. Davis Jr., 2w MIZA; 4 km S Belmopán, viii.1972, S. & J. Peck B-242, 1w MCZC. – **MEXICO**. **Chiapas**: 10 km S Palenque, 30.v.1988, W. MacKay, 1w WPMC, 1w MIZA. **Veracruz**: 30 mi S Acayucán, 21.iv.1962, F.D. Parker, L.A. Stange, 1w UCDC.

6.5.11.10. *Leptogenys yocota* n.sp. (Fig. 64)

Diagnosis. Head widest anterad; eye laterally placed, separated from mandibular insertion by less than one ocular diameter; node subquadrate in dorsal view; wider posterad than anterad, anterior margin convex, more than half as wide as posterior margin; body with scattered long suberect to erect hairs.
Worker. Metrics, holotype (paratypes, n = 4): HL 1.16 (1.19–1.21); HW 0.83 (0.83–0.89); ML 0.66 (0.63–0.66); EL 0.20 (0.18–0.20); SL 1.11 (1.09–1.16); PW 0.68 (0.68–0.73); WL 1.82 (1.82–1.95); PH 0.68 (0.76–0.81); PL 0.61 (0.61–0.66); DPW 0.51 (0.53–0.58) mm. CI 0.72 (0.70–0.73); MI 0.79 (0.74–0.79); OI 0.24 (0.21–0.23); SI 1.33 (1.23–1.39); LPI 1.13 (1.15–1.28); DPI 0.83 (0.81–0.96).

Head longer than wide in full-face view; widest anterad; lateral margin broadly convex, posterior margin weakly convex; vertexal carinae narrow, but visible throughout most of posterior cephalic margin; eye laterally placed, relatively flattened, separated from mandibular insertion by less than one ocular diameter; median clypeal process triangular with bluntly pointed apex, laterally lamellate; lateral clypeal lobe narrow; clypeus mostly smooth with few short striae and scattered piligerous tubercles. Head mostly smooth and shining, with scattered piligerous punctulae. Scape smooth with abundant piligerous punctulae, abundant decumbent pilosity and scattered subdecumbent hairs present, scape surpasses posterior cephalic border by less than one-third its length; third antennal segment approximately twice as long than wide, second antennal segment slightly shorter than third; fourth antennal segment shorter than third antennal segment. Mandible shuts tight against clypeus, elongate, mostly parallel-sided, weakly widening apicad, basal margin mostly broadly convex; mandibular dorsum smooth and shining, sparsely punctate; cephalic ventral face shining with weak longitudinal striae and sparse piligerous punctulae.

Mesosomal dorsal margin forms relative continuous line in lateral view; pronotal margin broadly convex anterad, weakly convex to straight posterad; mesonotal margin weakly convex; dorsal propodeal margin weakly convex to straight; joining declivity through continuous curve. Mesosoma mostly smooth and shining; mesonotum wider than long in dorsal view, anterior margin convex, posterior margin broadly convex, metanotal groove distinctly impressed. Mesometapleural suture well impressed, scrobiculate; metapleural propodeal suture lacking; propodeal spiracle small, rounded to weakly oval, laterally to posterolaterally facing; a ledge stretches from ventral propodeal margin to dorsal margin of bulla; mesopleuron with rounded and low, triangular anterior lobe, anteroventral carina distinct; propodeum with low, blunt tooth at spiracular height; declivity transversely striate posterad. Cervix with transverse striae; prosternal process with posterior minute denticle in lateral view; mesosternum with transverse parallel fine striae.

Petiole subrectangular in lateral view, higher than long; dorsal margin broadly convex, highest posterad; anterior margin longer than half posterior margin, posterior margin straight to very broadly convex; triangular ventral lobe present; node subquadrate in dorsal view; wider posterad than anterad, anterior margin convex, more than half as wide as posterior margin, posterior margin broadly convex, lateral margin straight to weakly convex; postpetiolar anterior margin vertical to weakly convex in lateral view, with distinct blunt angle separating broadly convex dorsal margin. Node and gaster smooth and shining; procoxa smooth and shining in lateral view; head, scape, thorax, and most of abdomen brown; funiculus, clypeus, mandibles, legs and apical gastral segments ferruginous; coxae and femora may be darker. Body with scattered long suberect to erect hairs, no pilosity.
Queen. Metrics (n = 2): HL 1.16–1.19; HW 0.99–0.89; ML 0.66–0.66; EL 0.18–0.18; SL 1.11–1.14; PW 0.68–0.68; WL 1.85–1.82; PH 0.66–0.71; PL 0.56–0.51; DPW 0.58–0.63 mm. CI 0.85–0.74; MI 0.67–0.74; OI 0.18–0.20; SI 1.13–1.29; LPI 1.18–1.40; DPI 1.05–1.25. Ergatoid with usual differences from workers. Both queens present vestigial median ocellus.
Male. Lacking head, not studied.
Derivatio nominis. The species name is derived from a transformation of the name of a lake (Lago Yojoa) close to where the type series specimens were collected.
Comments. This ant could be mistaken for *L. consanguinea* because of many morphological similarities but the following traits will help in separating the two species. The compound eye is placed more anterad on the head in *L. yocota* when observed in full-face view, the distance separating the eye from the mandibular insertion being less than one ocular diameter, whilst in *L. consanguinea* this distance is more than one ocular dia-

meter. The petiolar node is more subquadrate in dorsal view than in *L. consanguinea*, which is elongate, with the anterior node margin half as wide as its posterior margin at the most. The antennal scape has short uniform pilosity in *L. consanguinea*, but in *L. yocota* it has abundant long hairs, of a somewhat thickened appearance, as well as pilosity. The contrasts in the gauge and density of body hairs is apparent between the two species as *L. consanguinea* has sparsely distributed, short, and fine suberect to erect hairs. The series collected by Bill Brown was found under a small log in a forest.

Type material. Holotype worker. **Honduras**, Cortés, L. Yojoa, 18 km NE El Mochito, 600 m, 20.viii.1974, E.M. & J.L. Fisher. Deposited in LACM. – Paratypes. (1) Two workers, one male, two queens from the same series as the holotype. All deposited in LACM. (2) **Honduras**, Cortés, Lago Yojoa, E side island hill, 750 m, iii.1979, W.L. Brown. Three workers deposited in MCZC.

Other material studied. Honduras. San Juan, Pueblo, W.M. Mann, leg. [no date], 1w USNM.

6.5.12. *rufa* species group

Worker diagnosis. Head subquadrate; sulcus between antennal basal sclerite and tentorial pit well developed; scape surpasses posterior cephalic margin by not more than one-fourth its length (slightly longer in *L. toxeres*), basal funicular segments subequal in length, wider apicad than basad; lateral clypeal lobe modest, median clypeal lobe broad, not longer than maximum scape width, apex blunt except for median apical denticle, or bluntly angular, lacking apical setae; basal and external mandibular margins semiparallel, basal mandibular margin with row of hairs; mandibular sulcus shallow to well impressed; mandible does not shut tight against clypeus, but leaves noticeable gap; PF: 4,3 (unknown for *L. toxeres*). Eye diameter less than maximum scape width, reduced number of ommatidia, eye laterally to weakly dorsolaterally placed on head, lens of each ommatidium relatively indistinct, a single lens apparently covering all; mesonotum transverse; metanotal groove moderately to well impressed, scrobiculate; metapleural-propodeal suture present or absent; shallow sulcus present posterad of propodeal spiracle; propodeum armed with triangular lobe; node wider than long in dorsal view, subquadrate in lateral view; anterior margin of third abdominal segment vertical in lateral view; constriction between third and fourth abdominal segments moderate; appressed pubescence lacking on head, mesosoma, node and most of gaster; abundant standing pilosity present on dorsum of head, and mesosoma; body sculpturing ranges from punctate, foveolate, or sulcate to smooth and shining; metacoxal posterobasal swelling moderate to well developed; pro and metatibial apices lacking setae, mesotibial apex with single seta.

Included species. *L. cordoba*, *L. rufa*, *L. toxeres*.

Comments. The members of this group are known from lowland sites from northeastern Mexico southwards into Costa Rica along the Gulf of Mexico and Caribbean coasts. Apparently rare as known from only three (possibly four) species, of which the suspect fourth species is only known from a single specimen. Queens are not yet known for this group.

Possible apomorphies. The configuration of the median clypeal lobe, apex blunt or truncate except for a median apical denticle, is not found in other New World *Leptogenys*. In *L. toxeres* this is not as apparent as its median lobe is broad but the apex ends in blunt angle. Other characters such as the reduced eye, in diameter as well as number of ommatidia, and the loss of distinct margins for each lens, which tend to become fused, a single lens apparently covering all the eye; basal mandibular margin with row of setae; mesonotum transverse; and worker node wider than long in dorsal view are found scattered throughout other New World *Leptogenys*.

6.5.12.1. *Leptogenys cordoba* n.sp. (Fig. 65)

Diagnosis. Median clypeal lobe with subparallel sides apicad, apex truncate sometimes with median denticle, sides of lobe lamellate; eye weakly convex, length not more than 6 ommatidia across, ommatidia not distinctly separated; mesometapleural suture broad, scrobiculate, widening anterad; petiolar node subquadrate in dorsal view, wider posterad than anterad, anterior margin broadly convex and more than half width of posterior margin.

Worker. Metrics, holotype (paratypes, n = 4): HL 0.87 (0.85–0.90); HW 0.65 (0.60–0.67); ML 0.43 (0.38–0.50); EL 0.10 (0.10–0.12); SL 0.70 (0.67–0.78); PW 0.52 (0.48–0.55); WL 1.27 (1.24–1.30); PH 0.50 (0.52–0.53); PL 0.42 (0.40–0.43); DPW 0.35 (0.35–0.38) mm. CI 0.75 (0.71–0.74); MI 0.67 (0.59–0.75); OI 0.15 (0.15–0.18); SI 1.08 (1.03–1.19); LPI 1.20 (1.19–1.29); DPI 0.84 (0.84–0.96).

Head mostly subrectangular in full-face view, wider anterad than posterad with greatest width at posterior margin of eyes; lateral margin broadly convex; posterior cephalic margin straight to weakly concave; median clypeal lobe with subparallel sides apicad, apex truncate sometimes with median denticle, sides of lobe lamellate, apical seta lacking; lateral lobe narrow, widest towards median lobe, forming blunt angle. Eye laterally placed on head, weakly convex in cephalic full-face view, length under one-fourth lateral cephalic margin, not more than 6 ommatidia across, ommatidia not distinctly separated. Scape surpasses posterior cephalic border by 2 apical widths, mostly smooth and shining with abundant piligerous punctulae; antenna segment II longer than segments III–IV, length of antennal segments II–IV approximately equal to width or slightly longer, each funicular segment wider apicad than basad. Mandible elongate, external and basal margins parallel, most of mandibular basal margin broadly concave, basally weakly convex, row of 2–3 stiff hairs present basad; basal an-

gle shaped as blunt angle, masticatory margin short with pointed apical tooth; mandibular dorsum mostly smooth and shining with scattered punctulae. Cephalic dorsum mostly smooth and shining with sparse punctulae; clypeus smooth with irregular striae at base of median lobe and scattered, low, piligerous tubercles.

Dorsal pronotal margin convex anterad in lateral view, posteriorly weakly convex to straight; metanotal groove broad, well developed; dorsal propodeal margin mostly straight to weakly convex, separated from declivitous margin by blunt angle, declivity weakly convex, ending in rounded triangular lobe posterodorsad of spiracle. Propodeal spiracle oval, facing posterolaterad; shallow depression located between spiracle and propodeal lobe. Pronotum mostly smooth and shining with scattered punctulae except for transverse striae on collar, anterodorsal pronotal surface occasionally with shallow piligerous lacunae; mesopleuron mostly smooth and shining with irregular shallow undulations, posteroventrad rugulose, anterodorsad with transverse sulcus of variable length; mesometapleural suture broad, scrobiculate, widening anterad; metapleural-propodeal suture absent; metapleuron-propodeal lateral face smooth with undulations anterad, posterad rugulose. Mesosomal dorsum smooth and shining with scattered piligerous punctae, propodeal declivity with carina uniting apex of each tooth, surface anterad of carina concave in cross-section and with transverse striae, declivity posterad of carina forms broad transverse sulcus. Prosternum smooth and shining; mesopleuron with anteroventral carina widest anterad; mesonotum 2.5 × wider than long in dorsal view, posterior margin straight, metanotal groove scrobiculate.

Petiole node subquadrate in lateral view; anterior and posterior margins vertical, anterior margin less than half the height of posterior margin; node highest posterad, dorsal margin convex, without sharp lateral edges; node mostly smooth and shining. Subpetiolar process broadly triangular in lateral view, with brief anterior convexity and long, broadly convex anteroventral margin. Node subquadrate in dorsal view, wider posterad than anterad, anterior margin broadly convex and more than half width of posterior margin, posterior margin straight to weakly convex, lateral margin straight to slightly convex. Anterior postpetiolar margin broadly convex in lateral view, dorsal margin convex, both margins forming right angle; constriction between abdominal segments III–IV well marked; gaster mostly smooth and shining with scattered punctulae. Body ferruginous to dark brown; mandibles, clypeus legs, and antenna brownish-yellow. Body with scattered erect and semi-erect hairs, appressed pilosity wanting. Coxae mostly smooth and shining; metacoxal dorsum with posterior rounded crest basad; pro- and metatibial apices lacking setae, mesotibia with single external seta.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the name of the town closest to where the ants were taken, Córdoba.

Comments. Some specimens bear a truncate median clypeal lobe, without a denticle, and a mesometapleural suture that notably widens anterodorsad, differences evident even amongst nestmates. The mesometapleural suture may be mostly smooth and shining or (usually) with varying amounts of transverse striae or scrobiculate. The Apazapán specimen was found in an area of coffee and banana fields.

Type material. Holotype worker. **MEXICO**, Veracruz, Córdoba, 13.vii.1966, J.S. Buckett, M.R. & R. Gardner coll. One worker deposited in UCDC. – Paratypes. Four workers with same data as holotype deposited in UCDC.

Other material studied. MEXICO. Veracruz: Coatepec, 24.viii.1997, L. Quiroz, 3w IEXA, 1w MIZA; Apazapán, 450 m, v.2000, coll. unknown, 1w IEXA; 5.5 km NE Coscomátepec, 5.vi.1988, W. MacKay, 2w WPMC.

6.5.12.2. *Leptogenys rufa* Mann (Fig. 66)

Leptogenys (*Lobopelta*) *rufa* Mann, 1922: 14. Holotype worker: Honduras, Ceiba, ii.–iii.1922, Cat. No. 24442 (W.M. Mann) (USNM) [examined].

Diagnosis. Head subquadrate in full-face view; median clypeal lobe with rounded apex and apical seta; eye small, no more than 4 ommatidia long; antennal segment 3 with strong basal constriction compared with following antennal segments, mesonotum 3 × wider than long in dorsal view; petiolar node wider than long, anterolateral margins form single convexity.

Worker. Metrics (n = 3) HL 0.82–0.84; HW 0.57–0.58; ML 0.40–0.42; EL 0.07–0.07; SL 0.67–0.67; PW 0.48–0.48; WL 1.19–1.24; PH 0.50–0.55); PL 0.43–0.43; DPW 0.38–0.40 mm. CI 0.69–0.70; MI 0.71–0.71; OI 0.11–0.12; SI 1.14–1.18; LPI 1.15–1.27; DPI 0.88–0.92.

Head subquadrate in full-face view; lateral margin broadly convex; posterior cephalic margin weakly concave, almost straight; anterior clypeal margin with triangular median lobe, apex rounded with apical denticle and long hair laterad of denticle; lateral lobe narrow, broadly triangular; eye weakly convex in cephalic full-face view, forming weak angle with median cephalic axis with posterior margin slightly more separated from cephalic median axis than anterior margin; eye roughly equidistant between middle of lateral cephalic margin and mandibular insertion; eye small, no more than 4 ommatidia across, distance between eye and mandibular insertion greater than ocular diameter; head widest posterior to compound eyes, cephalic width slightly less anterad of eye. Scape surpasses posterior cephalic border by roughly 1 apical width; each funicular segment widest apicad; antennal segments III–VI approximately of same length each, apical width approximately equal to length; segment III with greater basal constriction than following segments. Mandibular basal margin broadly convex; masticatory margin short with blunt apical tooth, basal margin with row of 3–4 hairs along

basal half; mandibular dorsum mostly smooth and shining with scattered punctulae; mandible mostly of same width in oblique ventral view. Cephalic dorsum mostly smooth and shining with sparse punctulae.

Dorsal mesosomal margin with shallow but well-defined metanotal groove in lateral view, pronotal margin broadly convex, propodeal margin mostly straight to weakly convex; curvature sharper at propodeal declivity, with triangular lobe at spiracular height; propodeal margin and dorsal margin of tooth joined by continuously curved margin in lateral view, with ventral margin of tooth overhanging propodeal declivitous margin. Mesosomal sides smooth and shining, mesometapleural suture distinctly impressed, uninterrupted or scrobiculate; metapleural-propodeal suture absent; propodeal spiracle relatively small, round to broadly elliptical with opening directed posterolaterally; depression located between spiracle and propodeal lobe; mesosomal dorsum smooth and shining, propodeal declivity smooth and shining to transversely striate. Prosternum smooth and shining; mesopleuron with fine anteroventral carina; mesonotum 3 × wider than long in dorsal view; metanotal groove scrobiculate, its width more than half the width of mesonotum.

Petiole node subquadrate in lateral view, slightly inclined anterad; anterior and posterior margins vertical, anterior margin less than half the height of posterior margin; node dorsal margin convex, without sharp lateral edges. Subpetiolar process subrectangular in lateral view with anterior margin much shorter than posterior margin and broadly convex ventral margin. Node wider than long in dorsal view, anterolateral margins form single convexity, posterior margin straight to weakly concave. Anterior margin of postpetiole roughly vertical up to half node height in lateral view before starting to curve; dorsal margin convex; constriction between abdominal segments III–IV well marked. Body ferruginous brown; legs and antenna yellowish brown. No applied pilosity, with sparse erect and semi-erect hairs. Tibial apices lacking setae.

Queen, Male. Unknown.

Comments. This species is known from a few lowland localities along the Mexican and Central American Gulf of Mexico-Atlantic Coast. The label of the specimens from Cueva de Orizaba reads more like "Yuc" than Veracruz, but the localities Orizaba and Buena Vista correspond to Veracruz, as well as the presence of caves in the Mt. Orizaba region. The holotype label bears no date but MANN (1922) mentions the period between February and March of 1920 as the time when most ants mentioned in his 1922 paper were captured. While it is usual for the second antennal segment to be quite constricted basad, and the third segment to a lesser degree in *L. rufa* the third segment has an unusually strong constriction. The mandible has a series of hairs along the basal margin but they are not stiff or seta-like as in the *pusilla* group, nor does the internal mandibular margin have the sinusoidal aspect of the *pusilla* species.

Material studied. HONDURAS. Atlántida: La Ceiba, [ii.–iii.1920], holotype w, Type No. 24442, USNM. – **MEXICO. Veracruz**: Cueva de Orizaba, 6 km S Buena Vista, 1.iv.1973, J. Reddell, D. McKenzie, 1w MCZC. **Yucatán**: Cenote Amil, 6 km S Abalá, 28.iii.1973, J. Reddell, M. Rodríguez, 4w LACM.

6.5.12.3. *Leptogenys toxeres* n.sp. (Fig. 67)

Diagnosis. Head subquadrate in full-face view, widest at cephalic mid-length; length of compound eye under one-fourth lateral cephalic margin, placed laterally on head; mesosomal dorsum shining, with abundant foveolae, each extending briefly with sulcus. Longitudinal sulci present on mesonotum and propodeal dorsum, radiating medially on pronotal discal area; petiolar node shaped as anteriorly inclined rectangle in lateral view.

Worker. Metrics, holotype (paratypes, n = 3): HL 1.11 (1.11–1.14); HW 0.83 (0.83–0.86); ML 0.61 (0.58–0.61); EL 0.13 (0.13–0.15); SL 1.01 (1.01–1.01); PW 0.73 (0.71–0.73); WL 1.64 (1.67–1.75); PH 0.73 (0.73–0.78); PL 0.61 (0.58–0.63); DPW 0.58 (0.58–0.63) mm. CI 0.75 (0.75–0.76); MI 0.73 (0.68–0.73); OI 0.15 (0.15–0.18); SI 1.21 (1.18–1.21); LPI 1.21 (1.16–1.30); DPI 0.96 (0.96–1.04).

Head subquadrate in full-face view, widest at cephalic mid-length, lateral and posterior cephalic margins broadly convex, vertexal carina well developed, visible along all of posterior cephalic margin; median clypeal lobe triangular, width of base same as external width of antennal sclerites, apex bluntly angular to pointed, no apical setae. Lateral clypeal modest, widest and convex toward median lobe. Length of compound eye under one-fourth lateral cephalic margin, placed laterally on head, not more than 8 ommatidia in length; individual ommatidia distinct to indistinct on same eye, convexity of each ommatidia weak; oculomalar distance greater than eye length, eye in dorsal cephalic view with center equidistant from mandibular insertion and midpoint of lateral cephalic margin. Cephalic dorsum mostly smooth and shining, except for piligerous punctae, which become denser between eye and frontal carina, punctuate become smaller and sparse towards antennal fossa and clypeus, punctae deeper posterolaterally on cephalic dorsum, with brief shallow sulcus projecting anterad from each depression posterolaterad of eye. Ventral cephalic surface mostly smooth and shining with sparse piligerous punctae, each depression elongate, with transverse longitudinal axis. Scape surpasses posterior cephalic border by less than one-third its length, basal funicular segments slightly longer than wide, each segment wider apicad than basad, antennal segment III longer than either segment IV or V. Scape mostly smooth and shining with abundant punctulae. Mandible elongate, does not shut tight against clypeus, external and basal margins parallel-sided, basal margin broadly concave with 5–6 stiff hairs present next to median lobe; masticatory margin edentate except for apical tooth, mandibular dorsum mostly smooth and shining

except for scattered piligerous punctae, and scattered, fine and brief longitudinal striae.

Mesosoma with broad and well-impressed metanotal groove in lateral view, pronotal margin anteriorly convex, dorsal margin weakly convex; mesonotum appears as small convexity; dorsal propodeal margin broadly convex, more than 2 × length of declivitous margin, declivitous margin straight, bluntly jagged, with blunt triangular tooth; dorsal and declivitous propodeal margins form obtuse angle. Pronotum mostly smooth and shining laterad, with punctae which become sparse and small posteroventrad, and deeper anterad; mesosomal sides mostly with oblique striae and rugulae, sculpturing strongest posteroventrad of meso- and metapleura, and posterad of propodeal spiracle. Propleuron mostly smooth and shining with weak transverse striae; mesometapleural suture well impressed; metapleural-propodeal suture present, propodeal spiracle broadly elliptical, facing posterolaterad. Mesonotum twice wider than long in dorsal view, metanotal groove scrobiculate; transverse flat area present posterad of metanotal groove; mesosomal dorsum shining, with abundant foveolae, each extending briefly with sulcus. Sulci longitudinal on mesonotum and propodeal dorsum, radiating medially on pronotal discal area; propodeal dorsum with weak, fine transverse striae; propodeal declivity flattened with transverse striae and laterally separated from rest of propodeum by low, blunt crest.

Petiolar node shaped as anteriorly inclined rectangle in lateral view; anterior margin straight, half the length of posterior margin; node highest posterad; dorsal margin straight; posterior margin straight to weakly concave. Subpetiolar process shaped as posteroventrally directed triangle. Node in dorsal view wider than long, slightly wider posterad than anterad; anterior margin broadly convex, posterior margin broadly convex. Cross-section of node at mid-length convex. Node with longitudinal sulci on dorsum, laterally with oblique sulci. Anterior margin of abdominal segment III vertical to weakly convex in lateral view, dorsal margin convex, constriction between abdominal segments III and IV well marked, scrobiculate. Gaster shining, abdominal tergites III and IV with punctae or foveolae with sulci, deepest and densest anterodorsad, shallower posterolaterad, punctae present on posterior tergites. Tibiae without apical setae. Head and body with abundant mostly subdecumbent to suberect pilosity, no appressed pubescence. Head, mesosoma, petiole and most of gaster brown; mandibles, antennae, legs and gastral apex ferruginous.

Queen. Metrics: HL 1.11; HW 0.81; ML 0.56; EL 0.15; SL 1.01; PW 0.68; WL 1.54; PH 0.73; PL 0.51; DPW 0.61 mm. CI 0.73; MI 0.69; OI 0.19; SI 1.25; LPI 1.45; DPI 1.20. Queen very much as worker except for more convex propodeal dorsum, more compressed petiolar node and larger gaster.

Male. Unknown.

Derivatio nominis. The name alludes to the elongate and delicately arched mandible of the species. It is derived from the Greek for furnished with a bow.

Comments. The specimens were taken from sifted litter containing leaf mold and rotten wood collected in a lowland forest. The sulci on the mesosomal dorsum are unique amongst the New World species, making it quite easy to determine. In an undescribed species collected in Colombia, there are sulci on the petiolar node and gaster, and traces of sulci on the pronotum. The single specimen has atrophied compound eyes with a single lens covering the vestiges of 4 or 5 ommatidia, placed laterally on the head, close to the mandibular insertion. It lacks mandibular setae, but has a single seta on the apex of the median clypeal lobe. On the account of these characters, and others, it seems related to the *rufa* group but more material should be studied before making judgement.

Type material. Holotype worker. **COSTA RICA**, Limón, 3 km SSE Cahuita, 9°43′N 82°50′W, 70 m, 24.xii.1983, P.S. Ward 6530-3. One worker deposited in MCZC. – Paratypes. Three workers, one queen from the same series as the holotype. One queen deposited in MCZC, one worker each deposited in CASC, MIZA, MZSP.

6.5.13. *unistimulosa* species group

Worker diagnosis. Compound eye dorsolaterally placed on head, eye subglobulose and prominent, OI > 0.24 (except *L. peruana*); hypostomal lobe well developed, usually visible in full-face view of head (short in *L. amazonica*, *L. peruana*, and *L. punctaticeps*); 2–6, sometimes more, stout setae present on clypeal apex, median clypeal lobe reduced, not wider than maximum scape width, with narrow lateral lamella; mandible slender and elongate; labrum with scattered denticles on anterior face; PF 4,4; suture between antennal sclerite and tentorial pit well impressed; cephalic dorsum with pubescence (except *L. amazonica*); scape surpasses posterior cephalic margin by at least one-third its length; funicular segments subcylindrical, each segment slightly widening apicad, third antennal segment elongate; mesonotum either as long as wide, or longer than wide in dorsal view; propleuron mostly striate to rugulose (mostly shining in *L. amazonica* and *L. peruana*) metanotal groove well impressed, not scrobiculate; metapleural-propodeal suture present; mesosomal sculpture mostly striate to costulate, with sparse smooth and shining areas, pubescence lacking; propodeal dorsum transversely striate (tending to smooth in *L. amazonica* and *L. peruana*), propodeum unarmed; petiolar apex with a posteriorly directed tooth or lobe (except *L. peruana*) either sharply pointed or blunt; petiolar posterior margin sinuous in lateral view, with brief dorsal concavity and longer ventral convexity; petiolar sides convex in anterior view; constriction between abdominal segments III and IV modest; body with abundant standing hairs, appressed pubescence only on cephalic dorsum, occasionally on mesosomal dorsum, none on petiole nor gaster; apex of protibia lacking setae; apex of mesotibia with 1 external seta; apex of metatibia with a single seta (se-

tae not discernible in *L. amazonica*); metacoxal dorsum without posterobasal swelling.

Included species. *L. amazonica*, *L. bohlsi*, *L. gatu*, *L. paraense*, *L. peruana*, *L. pubiceps* complex, *L. punctaticeps*, *L. unistimulosa*.

Comments. The members of this group are found mostly in South America, with some representatives in Central America and a species complex widespread in the Caribbean. They are all medium sized *Leptogenys*, even the smallest species: *L. amazonica* and *L. peruana*. Some of the more widespread species for the genus are in this group such as *L. unistimulosa*, found throughout northern South America southwards into Bolivia and Brasil, and the Caribbean-centered *pubiceps* complex of species. Reproduction is most probably through egg-laying workers as no morphologically distinct queens have been found to date amongst the species of this group.

Possible apomorphies. This group shares with its postulated sister species, the *arcuata* group, reduced clypeal lobes; presence of clypeal setae; slender, arched mandibles; and large hypostomal lobes. All species have a posterior facing lobe or point on the node apex, a trait only shared with the *ingens* group. The distinctive apomorphy is the sinusoidal posterior margin of the petiolar node when seen in lateral view, no other New World species outside of this group show the trait.

6.5.13.1. *Leptogenys amazonica* Borgmeier (Fig. 68)

Leptogenys (*Leptogenys*) *amazonica* Borgmeier, 1930: 25, pl. III fig. 10, pl. IV figs. 11, 12. Holotype worker: Brazil, Amazonas, Teffé, 1921, Cat. No. 2526 (Tastevin) (IBSP) [examined].

Diagnosis. Head mostly smooth and shining in full-face view; mandible arched and well separated from clypeus, mostly semi-parallel, weakly widening apicad; mesonotum longer than wide, propodeal dorsum transversely striate; node longer than wide in dorsal view, posterior apex with a brief and bluntly pointed, dorsoposteriorly pointing spine.

Worker. Metrics (n = 4) HL 1.21–1.27; HW 0.96–0.99; ML 0.76–0.83; EL 0.28–0.30; SL 1.37–1.42; PW 0.78–0.81; WL 2.13–2.18; PH 0.83–0.89; PL 0.63–0.66; DPW 0.43–0.48 mm. CI 0.76–0.81; MI 0.77–0.87; OI 0.28–0.32; SI 1.41–1.47; LPI 0.00–1.40; DPI 0.65–0.73.

Head longer than wide in full-face view, wider anterad than posterad, lateral margin broadly convex, posterior margin medially straight to broadly convex, vertexal carina visible; compound eye convex, covering about one-third of lateral cephalic margin; median clypeal lobe modest, apex oval, shorter than maximum scape width, laterally surrounded by narrow strip of translucent cuticle, apex with 3–4 setae. Lateral lobe low, convex, base of median lobe forms almost perpendicular angle with lateral lobe. Cephalic dorsal and ventral surfaces mostly smooth and shining; clypeus with weak oblique striae. Scape surpasses posterior cephalic border by about one-third its length, funicular segments longer than wide, fourth antennal segment longer than three-fourths length of third segment. Mandible elongate, arched and widely separated from clypeus; mostly semi-parallel in cephalic full-face view, modestly widening apicad; hypostomal tooth not visible in cephalic full-face view.

Promesonotal margin forms convexity in lateral view, propodeal dorsal margin forms another, very broad, convexity in lateral view; metanotal groove well impressed; propodeal declivitous margin convex, curving continously from dorsal margin, unarmed. Pronotum mostly smooth and shining, with variable amount of posterolateral longitudinal striae; mesopleuron rugulose towards dorsum, medially smooth and shining with posteroventral striae. Metapleuron and lateral propodeal face obliquely to transversely striate, metapleural-propodeal suture well impressed, broad and scrobiculate; anteroventral margin of mesopleuron bordered by low crest that forms minute triangular lobe anterad. Mesometapleural suture well impressed, pronotal dorsum and mesonotum mostly smooth and shining, mesonotum longer than wide in dorsal view; propodeal dorsum and declivity transversely striate, spiracle elongate.

Petiole with brief vertical anterior margin in lateral view, curving onto long and broadly convex dorsal margin, highest posterad, and ending in short, straight, bluntly pointed tooth; posterior petiolar margin sinuous in lateral view, concave below tooth, then convex. Ventral petiolar process shaped as rounded lobe, lateral face with longitudinal striae; node elongate in dorsal view, anterior margin slightly more than half width of posterior margin, petiolar tooth parallel-sided. Gaster smooth and shining, constriction between abdominal segments III and IV modest. Body with no applied pubescence, with sparse erect to suberect hairs. Head, mandibles, antennae, legs, and gaster colored ferruginous to orange; mesosoma and petiole ferruginous brown.

Queen, male. Unknown.

Comments. Borgmeier (1930) considered this species close to *L. bohlsi*, though he did not explicitly state why and simply mentioned several characters useful for separating the two. This author agrees with Borgmeier's statement since both species are considered within the same species group, though *L. amazonica* might be closer to *L. punctaticeps* on account of the weakly developed hypostomal teeth, elongate head shape, mandibles with widening apex, and elongate petiolar node, all characters shared by both species. The holotype has a handwritten label by Borgmeier and bears the number 2526. It is in fine shape save a missing metatarsus. The find in eastern Ecuador of this species is a significant range extension for the species. The Yasuni specimen was taken on the ground in an open disturbed area, and the Chiruisla specimens were found beneath the leaf petiole of a palm (J.M. Vieira, pers. comm.).

Material studied. Ecuador. Orellana: Yasuni Scientific Station, 0°40′32″S 76°21′19″W, 250 m, 8.ix.2002, J. Vieira, 1w QCAZ;

Chiruisla, 0°36′50″S 75°52′35″W, 220 m, 5.xi.2005, J. Vieira, 1w QCAZ, 1w MIZA, 1w MZSP; Gualaquiza, [3°24′S 78°33″W], [800 m], 29.x.1932, W. von Hagen, 5w MCZC.

6.5.13.2. *Leptogenys bohlsi* Emery (Fig. 69)

Leptogenys bohlsi Emery, 1896b: 627. Syntype workers: Paraguay (J. Bohls) (MCSN) [examined].

Leptogenys bohlsi st. *weiseri* Santschi, 1925: 153, fig. 1. Syntype workers: Argentina, Santa Fe, Fives Lille (Weiser) (MHNG) [examined] **n.syn.**

Diagnosis. Eyes large and bulging, occupying one-third of cephalic lateral margin; hypostomal tooth triangular and almost as long as basal mandibular width; scape surpasses posterior cephalic margin by one-fourth to one-third its length; mandible arched, slender and elongate, of uniform width; head, mesosoma, and petiole black, gaster brown; petiolar node with apical tooth usually tapering to blunt point.

Worker. Metrics (n = 10): HL 1.21–1.35; HW 1.04–1.18; ML 0.78–0.91; EL 0.28–0.41; SL 1.27–1.48; PW 0.78–0.86; WL 2.07–2.37; PH 0.96–1.06; PL 0.58–0.66; DPW 0.51–0.61 mm. CI 0.85–0.88; MI 0.76–0.80; OI 0.25–0.32; SI 1.20–1.30; LPI 0.00–1.70; DPI 0.80–0.96.

Head longer than wide in full-face view, posterior margin convex, lateral margin broadly convex, wider anterad than posterad, weakly divergent anterad; eyes large occupying over fourth of lateral cephalic margin, vertexal carina visible; clypeus converges to bluntly triangular median lobe with 3–4 apical setae, more sometimes present. Clypeus with parallel converging striae; hypostomal teeth distinctly visible, triangular; cephalic dorsum ranging from mostly smooth and shining to rugulose-punctate; mandible slender, well separated from median clypeus and semi-parallel, only slightly widening towards apex, dorsum smooth and shining, masticatory border edentate except for pre-apical tooth and apical tooth. Deep sulcus present posterad of frontal lobes, extending to mid eye height. Cephalic dorsum punctuate to rugulose-punctate, punctae separated by distance equal their diameter, sparser posterad. Scape surpasses posterior cephalic border by one-fourth to one-third its length; first and third funicular segments each more than half length of second segment. Scape smooth to variolate, with abundant punctulae, appressed pubescence and decumbent pilosity.

Mesosoma with deep and abrupt metanotal groove in lateral view. Dorsal pronotal margin very broadly convex with metanotum ranging from not notably differentiated to distinct; dorsal propodeal margin broadly convex to straight, separated from declivity by blunt angle. Pronotal dorsum mostly smooth with scattered punctae, and low arching striae, both attenuated posterad. Lateral propodeum with longitudinal strigulae; mesometapleuron and most of lateral propodeal face with parallel oblique strigulae, becoming smooth dorsad. Mesometapleural suture broad and shallow; metapleural-propodeal suture weakly impressed. Mesopleural carina thickest anterad, gradually becoming finer ventrad; propodeal spiracle elongate, opening posterolaterally directed. Declivity with transverse strigulae, without lobes or teeth; propodeal dorsum with low transverse strigulae, more impressed anterad than posterad. Metanotal groove with few striae, not scrobiculate.

Petiole with convex anterior margin in lateral view, curving to straight dorsal margin that ends in blunt to acutely pointed tooth that projects beyond posterior margin almost one-fourth node length, tooth forms approximate 30 degree angle with longitudinal axis. Posterior margin not sinuate but slightly convex; sides with longitudinal to oblique striae; posterior face flat and sharply separated from lateral margin. Node longer than wide in dorsal view, with posterior tooth abruptly projecting from posterior margin; anterior face and anterodorsal median strip of node tends to smooth. Gaster smooth and shining; anterior postpetiolar margin convex in lateral view, broadly convex anterad, more curved dorsad. Mesosoma, node, and gaster with abundant decumbent, and semi-erect hairs; cephalic dorsum with appressed pilosity. Head, mesosoma, and node black; gaster, mandibles, antennae, and legs brown.

Queen, male. Unknown.

Comments. The type series in Genova consists of 2 workers glued on their sides on cardboard, one specimen above the other on the same pin. The label reads: Paraguay, Bohls; Typus; Bohlsi n sp; MCSN. Compared with *L. unistimulosa*, the head is weakly anteriorly divergent in *L. bohlsi*. The scape can be much longer in *L. unistimulosa*, but in *L. bohlsi* the scape surpasses the posterior cephalic margin by one-third to one-fourth its length, whilst in *L. unistimulosa* this distance is one-half the scape length. The petiolar tooth is usually bluntly pointed in *L. bohsli*, but specimens with acutely pointed nodes are not infrequent. The ocular malar margin is usually convex but not bulging as in *L. unistimulosa*. Other aspects taken into account for separating the two species can be consulted in the discussion for *L. unistimulosa*. The Goiás specimens have a narrowed head but conserve an acutely pointed petiolar spine. The Fazenda Sta. Blanca series is smaller and has almost semiparallel lateral cephalic margins, with punctuation, no rugulae on the head, and the scape surpasses the posterior cephalic border by less than one-fourth its length. The Cuiaba samples are from a nest taken in campo cerrado close to a stream under bark near the base of a rotten stump. SANTSCHI (1925) separated *L. weiseri* from *L. bohlsi* on account of lacking lateral clypeal lobes. The median clypeal lobe in *L. weiseri* type series is comparatively broader and does not meet the rest of the clypeus at an angle as in *L. bohlsi*. This diagnostic character is rendered useless by a nest series from São Paulo with individuals showing both clypeal shapes. LENKO (1966) observed workers of this species preying upon isopods.

Material studied. ARGENTINA. **Santa Fe**: Villa Guillermina, norte da Provincia, N. Kusnezov, 2w MZSP, 3w MCZC; Five Lille, Weiser 3871, 2w MZSP. – BRAZIL. **Amazonas**: Manaus, 11.vi.1971, 1w MZSP. **Goias**: Campinas, Schwarzmaier, 2m 9w MZSP; Niquelândia, 14°01′S 48°18′W, 24.ix.–6.x.1995, Silvestre, Dietz, Brandão, 1w MZSP; Jatal, Fazenda Aceiro, 1.xi.1962, Exp. Dep. Zool. 2459, 8w 2m MZSP. **Mato Grosso**: Corumba, Faz. Sta. Blanca, 10.xii.1960, K. Lenko 973, 8w MZSP; Corumba, Serra do Urucum, 2.xii.1960, K. Lenko 931, 1w MZSP; Cuiaba, 5 km N Av. Perimetral, 19.ii.1985, J. Trager 639, 2w MZSP. **São Paulo**: Castilho, Rio Paraná, 27.xi.1964, Exp. Dept. Zool., K. Lenko 3356, 12w MZSP, 11w LACM, 8w MCZC.

6.5.13.3. *Leptogenys gatu* n.sp. (Fig. 70)

Diagnosis. Elongate head, wider anterad than posterad; hypostomal teeth prominent, curving anterad beneath head; mandible sharply bent at base, rest straight, widening apicad; petiolar node longer than wide in dorsal view with brief blunt posterior lobe.

Worker. Metrics, holotype (paratypes, n = 6): HL 1.65 (1.62–1.82); HW 1.45 (1.42–1.52); ML 1.15 (1.04–1.28); EL 0.40 (0.37–0.44); SL 2.02 (1.82–2.29); PW 1.15 (1.11–1.28); WL 3.17 (2.97–3.37); PH 1.15 (1.15–1.28); PL 0.98 (0.84–1.04); DPW 0.71 (0.67–0.78) mm. CI 0.88 (0.83–0.90); MI 0.79 (0.74–0.84); OI 0.28 (0.26–0.30); SI 1.40 (1.29–1.58); LPI 1.17 (1.10–1.36); DPI 0.72 (0.65–0.84).

Head elongate in full-face view, wider anterad than posterad, laterad margin straight to weakly convex, forming continuous curvature with convex posterior margin, anterior clypeal margin with median lobe forming abrupt angle with lateral lobe; apex of median lobe with 8 or more setae. Eye length covers more than one-third lateral cephalic margin. Scape surpasses posterior cephalic border by over one-third its length; length of fourth antennal segment more than half the length of third antennal segment. Mandible mostly straight, sharply bent at base, weakly widening apicad, basal angle with or without a denticle. PF 4,4. Cephalic dorsum mostly rugulose punctuate, sculpture softening toward vertex; lateroventrally and ventrally smooth and shining; hypostomal tooth longer than greatest mandibular width, projecting anteroventrad, very prominent in full-face view.

Mesosoma with broadly convex pronotal margin in lateral view, mesonotum forms distinct convexity, propodeal margin forms weakly convex slope that descends to declivity, dorsal propodeal margin more than 2 × length of declivitous margin. Pronotal side longitudinally striate, discal area mostly smooth with shallow punctae; prosternum transversely striate, tending to smooth medially; mesopleuron with anterior strip of transverse striae, mesometapleura mostly transverse to obliquely striate-rugulose; lateral propodeal face transversely rugose. Mesosternum mostly smooth and shining; mesonotum mostly smooth; propodeal dorsum weakly striate to smooth; declivitous propodeal face transversely striate; spiracle elongate, almost slit-like.

Petiole in lateral view with convex to weakly convex anterior face that curves to posteriorly ascending dorsal margin that ends in blunt, overhanging lobe; posterior margin sinuous. Lateral face mostly with oblique striae, ventrally smooth; posterior face flattened, smooth and shining. Node elongate in dorsal view; gaster smooth and shining. Head, mesosoma, and petiole black; mandibles, legs, and gaster brown. Scape with sub-decumbent hairs and semi-erect pilosity; body with abundant semi-erect hairs.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the type locality, which is located in the vicinity of Lake Gatun.

Comments. The elongate head, large hypostomal tooth, and mandibular shape are very distinct hallmarks for this species. Some specimens were taken from leaf litter or pitfall traps. This species is called JTL-007 by LATTKE & LONGINO (2009) in the Ants of Costa Rica website. Longino reports observing a column in Corcovado National Park in which one worker carried isopod prey above the head.

Type material. Holotype worker. PANAMA, Canal Zone, Punta de los Chivos, W side Gatun Lake, 3 km SW Gatún, 100 m, 3.–9. vii.1979, W.L. Brown. One worker deposited in LACM, the top specimen of two point-mounted ants on a single pin. LACM Accession 142584. – Paratypes. Seven workers with the same data as the holotype. One worker is the bottom specimen on the pin that bears the holotype, the six other workers are deposited in MCZC.

Other material studied. COLOMBIA. **Valle**: Río San Juan, afl. Río Digua, ca. Queremal, 1300 m, 28.vii.1973, W.L. Brown Jr., 1w MCZC. – COSTA RICA. **Corcovado**: Península de Osa, Parque Nacional Corcovado, Sirena, 0–100 m, 8°28′N 83°35′W, 6.vii.1982, J. Longino 1300, 1w LACM. **Heredia**: La Selva, 9.iv.1974, Talbot & VanDevender, 1w LACM. **Limón**: Tortuguero, 5 m, 10°35′N 83°31′W, 22.vi.1988, J. Longino 2121, 1w LACM. – PANAMA. **Canal Zone**: Barro Colorado, 22.vi.1924, N. Banks, 1w LACM, 2w MCZC; same locality but 20.vii.1924, G.C. Wheeler 119, 3w LACM; same locality but 20.vii.1924, W.M. Wheeler 707, 3w MCZC. **San Blas**: Nusagandi, 10°19′N 84°43′W, 350 m, 1.iv.1994, D.M. Olson, 1w PSWC.

6.5.13.4. *Leptogenys paraense* n.sp. (Fig. 71)

Diagnosis. Eyes large and bulging, occupying one-third of cephalic lateral margin; hypostomal tooth almost as long as basal mandibular width; mandible elongate slightly sinusoidal, flattened, widening apicad; head, mesosoma, and petiole black; gaster ferruginous brown; petiolar node with an acutely pointed posterior spine.

Worker. Metrics, holotype (other specimens, n = 4): HL 1.75 (1.70–1.80); HW 1.85 (1.80–1.90); ML 1.45 (1.45–1.55); EL 0.55 (0.50–0.50); SL 2.40 (2.40–2.45); PW 1.25 (1.20–1.25); WL 3.40 (3.35–3.45); PH 1.55 (1.55–1.60); PL 1.00 (1.00–1.00); DPW 0.70 (0.70–0.75) mm. CI 1.06 (1.03–1.12); MI 0.78 (0.76–0.83); OI 0.30 (0.26–0.28); SI 1.30 (1.29–1.33); LPI 1.55 (1.55–1.60); DPI 0.70 (0.70–0.75).

Head in full-face view wider anterad than posterad, posterior margin convex, lateral margin broadly convex, almost straight, lateral cephalic margin interrupted by compound eye. Median clypeal lobe shaped as broad tri-

angular lobe, 4 setae on apex; lateral clypeal lobe rounded, not wider than one-third median clypeal width, gradually narrowing laterad. Clypeus posteriorly bordered by transverse sulcus running from antennal sclerite to just below eye. Cephalic dorsum mostly rugose; head ventrad of eyes strigulose. Scape surpassing posterior cephalic border by almost one-half its length, punctulate with decumbent pilosity and decumbent hairs; second and fourth antennal segments subequal in length, each two-thirds as long as length of third antennal segment. Mandibles elongate, and slender, slightly sinusoidal and crossing only at apex; flattened and widening apicad, becoming slender close to apex, apical half convex, dorsum smooth and shining with sparse punctulae; a small pre-apical denticle present. Hypostomal tooth shaped as curved triangular lobe, almost as long as basal mandibular width. PF: 4,4.

Mesosoma with broadly convex promesonotal margin in lateral view, mesonotum can form distinct convexity, separate from broadly convex propodeal margin. Propodeal declivity curved, with 3–6 transverse carinae, no teeth. Lateral pronotum longitudinally strigulose, pronotal dorsum strigulose-punctuate; strigae arching around pronotum; mesonotum transversely strigose; propodeal spiracle elongate, facing posteriorly. Metapleural-propodeal suture well-defined but shallow, mesometapleural suture well marked, scrobiculate. Ridge separates mesopleuron from mesosternum; mesosternal sculpture mostly effaced. Meso-, metapleuron and lateral propodeal face with oblique strigulae, colliculate microsculpturing present especially on meso- and metapleuron. Mesosternal lobe broadly triangular, metasternal lobe with rounded external margin, basal margin straight; lobe leans medially.

Petiole with convex anterior margin, and straight ascending dorsal margin in lateral view, both margins joined by convexity. Node apex with acutely sharp point that overhangs mostly convex posterior margin in lateral view. Node with anterior margin almost as wide as posterior margin in dorsal view, node length greater than width, excluding posterior spine. Node longitudinally strigose laterally; posterior face with transverse strigae. Postpetiole with vertical anterior margin that becomes convex dorsad in lateral view, constriction not strongly marked; gaster mostly smooth and shining with sparse piligerous punctae. Head, mesosoma, and node black; antennae, mandibles, and legs brown to dark brown; gaster ferruginous brown to brown. Body with abundant standing and decumbent hairs.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the Brazilian state of Pará, which contains the type locality.

Comments. *L. paraense* is very similar in appearance to *L. unistimulosa*, including the color pattern, but differs in the apically widening mandibles, and slightly larger average size. The striae on the posterior nodal face of *L. paraense* are more developed than in *L. unstimulosa* but the small specimen base makes this an uncertain diagnostic character.

Type material. Holotype worker. **BRAZIL**, Pará, Belém, Embrapa, 10.vii.1979, Bo28, J.O. Schmidt. One worker deposited in the LACM, the top specimen of two point-mounted workers on a single pin. – Paratypes. Three workers from the same series, also deposited in the LACM.

Other material studied. BRAZIL. **Pará**: Melgaço, Caxiaunã, ECFPn, II transecta, 01°44.9′01″S 51°29′15.44″W, 16.–18.vii. 2003, A. Harada, F. Fagundes, E. Ribeiro, R. Calisto, 1w MPEG.

6.5.13.5. *Leptogenys peruana* n.sp. (Fig. 72)

Diagnosis. Compound eye occupies not more than one-fourth of lateral cephalic margin in full-face view; mandible mostly straight in cephalic full-face view; basal margin gently convex, reaching greatest width two-thirds from base, tapering apicad; hypostomal tooth not visible in cephalic full-face view; propodeal dorsum mostly smooth and shining. Petiole half-dome shaped in lateral view; posterior margin sometimes with small blunt lobe that slightly overhangs posterior margin.

Worker. Metrics, holotype (paratypes, n = 2): HL 1.29 (1.16–1.27); HW 0.99 (0.91–0.96); ML 0.81 (0.76–0.81); EL 0.20 (0.18–0.20); SL 1.52 (1.32–1.47); PW 0.76 (0.68–0.71); WL 2.15 (2.15–2.15); PH 0.81 (0.81–0.81); PL 0.63 (0.58–0.63); DPW 0.43 (0.43–0.43) mm. CI 0.76 (0.76–0.78); MI 0.82 (0.83–0.84); OI 0.21 (0.19–0.21); SI 1.54 (1.44–1.53); LPI 1.28 (0.00–1.28); DPI 0.68 (0.68–0.74).

Head slightly elongate in full-face view, posterior border convex, curving onto straight lateral margin; head wider anterad than posterad; anterior clypeal margin laterally concave, lateral lobe long and broadly convex, median lobe forms broad triangle with blunt apex, 3–4 apical setae present. Diameter of compound eye not more than one-fourth length of lateral cephalic margin; eye convex, placed slightly dorsally, away from cephalic lateral margin. Scape surpassing posterior cephalic border by less than one-half its length; second antennal segment half as long as third; fourth antennal segment more than half the length of third; all antennal segments longer than broad. Mandible mostly straight in cephalic full-face view; basal margin gently convex, reaching greatest width two-thirds from base, tapering apicad; mandibular dorsum smooth and shining with sparse punctulae; masticatory margin slightly concave, separated from basal margin by corner. Cephalic dorsum mostly smooth and shining, with sparse piligerous punctulae; clypeus with transverse striae along anterior half. Gap between mandibular dorsal margin and clypeus at least half mandibular basal width, mandible almost touches lateral clypeal lobe in cephalic full-face view. External surface of labium and maxilla mostly smooth. Cephalic ventrum mostly smooth and shining. Hypostomal tooth brief, not projecting ventrad nor visible in anterior cephalic view.

Mesosoma with two dorsal convexities in lateral view, each formed by promesonotum and propodeal dorsum respectively; promesonotal dorsal margin broadly convex, almost straight, ascending until mid-mesonotal

length; posterior half of mesonotum drops at an angle to metanotal groove; propodeal dorsum broadly convex, curving or separated by blunt angle onto straight declivity. Ventral pronotal groove weakly-impressed; propleuron and most of mesosomal sides mostly smooth and shining; metapleuron and ventral lateral propodeum with weak striae; propodeal dorsum mostly smooth and shining; bulla striate; mesometapleural suture well impressed, scrobiculate, forming ridge elevated above metapleuron. Metapleural-propodeal suture well impressed posterad as broad ridge, becoming weak along anterior one-fourth; metathoracic spiracular prominence rounded and convex; propodeal spiracle oval and facing posteriorly. Ventral mesonotal carina bends dorsally, almost at right angle before fading away at mid-width. Mesonotum longer than wide in dorsal view; propodeum unarmed, declivity with 4–5 transverse striae.

Petiole half-dome shaped in lateral view, with convex anterodorsal margin reaching summit just anterad of mostly vertical, slightly sinuate posterior margin; posterior margin sometimes with small blunt lobe that slightly overhangs posterior margin. Node mostly smooth ventrad, with longitudinal coarse striae dorsad; petiole longer than wide in dorsal view, anterior margin convex and more than half the width of posterior margin; posterior face smooth and shining. Gaster smooth and shining with sparse punctulae; pygidium broadly convex in lateral view, without median carina. Body with abundant erect to suberect hairs; scape with decumbent hairs and sub-decumbent pubescence; thorax and gaster with no or sparse pubescence. Procoxa smooth and shining in lateral view. Antennae, clypeus, coxae, and femora brown; mandibles and tibiae ferruginous brown; head, thorax, and most of gaster black.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the country of the type locality: Peru.

Comments. Within the *unstimulosa* group this species differs from the typical due to the proportionally smaller eyes, smoothened exoskeleton, and a reduced or missing petiolar apical lobe or tooth. The basal funicular segments have a slighter narrower base than the apex. The smoothened sculpturing and small size makes this species superficially resemble *L. amazonica*, but it is easy to separate on account of the more elongate petiolar node and the distinct apical tooth.

Type material. Holotype worker. **Peru**, 40 miles W Cusco, 4.iii.1951, subtropical cyn, E. Ross, M. Bacher, deposited in the CASC. – Paratypes. Two workers with the same data as the holotype, each deposited in the CASC. Both paratype workers are missing their gasters.

6.5.13.6. *Leptogenys pubiceps* complex (Fig. 73)

Leptogenys pubiceps Emery, 1890a: 62. Holotype worker: Venezuela, La Guaira (MCSN) [examined].

Leptogenys pubiceps var. *vincentensis* Forel, 1901b: 328. Syntype workers: Antilles, St. Vincent (MHNG, MCSN) [examined].

Leptogenys mucronata var. *columbica* Forel, 1901b: 328. Syntype workers: Colombia, Sierra Nevada de Santa Marta, Narancho (A. Forel) (MHNG) [examined].

Leptogenys pubiceps st. *cubaensis* Santschi, 1930: 76. Syntype workers: Cuba, Habana, Almandares (M.L. Jaume) (NHMB) [examined].

Leptogenys mucronata Forel, 1893: 360. Syntype workers: Antilles, St. Vincent, Richmond Valley, 800 ft, 13.xi.[no year given], shady damp place near the river, under log (H.H. Smith) (MHNG) [examined].

Diagnosis. Slender, slightly arched mandibles of uniform width; eye large, convex, occupying more than one-fourth lateral cephalic margin. Hypostomal tooth varies from clearly visible to just showing apex in cephalic full-face view; second antennal segment two-thirds length of third. Apex of petiolar node with blunt projection ranging from crest to tooth, generally overhanging posterior margin in lateral view, posterior margin sinuate.

Worker. Metrics (n = 9): HL 1.28–1.55; HW 1.21–1.42; ML 0.88–1.15; EL 0.30–0.40; SL 1.35–1.72; PW 0.84–1.01; WL 2.19–2.63; PH 1.01–1.15; PL 0.67–0.78; DPW 0.54–0.78 mm. CI 0.84–0.95; MI 0.70–0.84; OI 0.24–0.29; SI 1.08–1.32; LPI 1.45–1.63; DPI 0.73–1.05.

Head as long as wide or wider than long in full-face view; lateral margins semi-parallel to wider anterad than posterad, lateral margin slightly arched to straight, posterior margin convex to broadly convex. Eye large, convex, occupying more than one-fourth of lateral cephalic margin. Clypeus with transverse striae laterad, becoming longitudinal medially; anterior clypeal margins converge to brief anteromedian lobe, lobe shorter than basal scape width, ending in 3–4 setae. Hypostomal tooth varies from clearly visible to just showing apex in cephalic full-face view. Mandible elongate and slender, slightly arched, of uniform width, with single apical tooth, single preapical denticle usually present; mandibular dorsum usually smooth and shining, sometimes with fine longitudinal striae. Scape extends one-third its length beyond cephalic posterior border; second antennal segment two-thirds length of third. Cephalic dorsum punctulate, ranging from dense to sparse; dorsal surface of labrum mostly smooth and shining with scattered low tubercles; PF: 4,4.

Mesosoma with convex dorsal promesonotal margin separated by metanotal groove from convex propodeal margin in lateral view; promesonotal convexity ranging from very convex to broadly convex; propodeal dorsal margin broadly convex, separated by blunt angle from declivitous margin, declivitous margin one-third the length of dorsal margin; mesonotum sometimes forming third convexity. Mesosomal sculpturing mostly transversely rugulose with smooth areas along lateroventral pronotum and mesosomal dorsum; propodeal spiracle ellipsoid; metapleural-propodeal suture broad, with transverse crests, widest posterad; mesometapleural suture well impressed; propodeum without teeth or prominent lobes or crests.

Petiolar node in lateral view subquadrate, with more or less continuously curved anterodorsal margin; anterior margin usually shorter than dorsal margin, dorsal margin inclined at varying angles relative to longitudinal axis of petiole; apex of node with blunt projection ranging from crest to tooth, generally overhanging posterior margin in lateral view, posterior margin sinuate; sides of node with oblique rugosity; posterior face separated from sides by sharp margins, tending to flat with fine transverse rugulae; node slightly longer than wide in dorsal view. Subpetiolar process forms convex lobe in lateral view; as wide as sternite in ventral view, posterior face deeply concave, laterally bound by thin cuticle. Anterior margin of abdominal segment III mostly vertical in lateral view. Gaster smooth and shining with scattered piligerous punctulae. Body has abundant erect and semi-erect hairs; scape and cephalic dorsum with appressed pilosity. Body black; legs, antennae and mandibles brown to dark brown; clypeus black to dark brown.

Queen, male. Unknown.

Comments. Some members of this species complex could be confused with *L. arcuata* on account of similar Gestalt, both sharing the same general shape and with overlapping ranges in the Guianas and some of the Lesser Antilles. *L. arcuata* is smaller and lacks the presence of the crest or tooth on the petiolar apex and has the posterior petiolar margin usually straight to weakly sinuate in lateral view, a margin that is always strongly sinuate in the *pubiceps* complex. The third antennal segment is more than twice longer than wide in the *pubiceps* complex, whilst it is less than twice its apical width in *L. arcuata*. *L. arcuata* also has the eyes apparently more laterally placed on the head, a trait that resembles some *L. pubiceps* populations. The propodeal declivity in *L. arcuata* tends to be flat and separated from the lateral propodeal face by a relatively sharp margin, this in contrast with the blunt, curved margin which prevails in *L. pubiceps*.

This species complex has a distribution range restricted to the Caribbean Basin. It is found on the mainland from Heredia and Limon Provinces of Costa Rica to northern Colombia, the northern slopes of the Venezuelan Andes, the Venezuelan Coastal Range and Trinidad. It is found on both the Greater and Lesser Antilles with no records from the Bahamas nor southern Florida. Perhaps reflecting the complicated geological history of the Caribbean, this complex has a bewildering array of morphological diversity that challenges analysis. Variations in overall size, scape length, head shape, mandibular width, color, and development of the apical petiolar process will distinguish individual populations, yet when all series are taken into account there is enough crossing of characters from one population to the next to throw any sense of order into disarray. The shape of the node apex permits rough separation of two trends within this complex: one has the petiolar node topped by a very modest posterior crest, whilst the other has a distinct blunt tooth on the node apex.

The crest is a posterior flattened projection that varies from thinly laminate in northeastern Venezuelan specimens, to more thickened further west, but not swollen medially to form a bulge that could be defined as a tooth or tubercle. *Leptogenys pubiceps*, *L. vincentensis*, and *L. cubaensis* are forms with a crested node. FOREL (1901b: 328) described *L. vincentensis* by contrasting it with *Leptogenys* specimens he calls *L. pubiceps* collected by himself in the Sierra Nevada foothills of Magdalena, Colombia. He cites the following differences of the insular species from the Colombian specimens: smaller eyes, with a diameter that does not reach the anterior cephalic margin, a very short and obtuse median clypeal lobe, ferruginous legs and scape, convex posterior cephalic border, and a poorly develop petiolar tooth and different node shape. From these contrasts and the fact that all *L. pubiceps* complex samples known from the Sierra Nevada area correspond to the toothed node forms, it seem obvious what he is calling *L. pubiceps* is most certainly *L. columbica*. SANTSCHI (1930: 76) describes *L. cubaensis* without providing any information on how it differs from *L. pubiceps*. Samples from northeast Venezuela, Hispaniola, Cuba, Virgin Islands, St. Vincent, and Puerto Rico correspond to this form. Most of these have the head longer than broad except for the series from the Serranía de San Luis (Northcentral Venezuela) which tend to be broad. The specimens from Cuba and Hispaniola are slightly smaller in than the rest of the studied material. The angle separating the posterior petiolar face from the lateral face is blunt in specimens from Puerto Rico and St. Vincent compared with samples from other sites.

The color and petiolar shape of the *L. pubiceps* holotype resembles more that of specimens from St. Augustine, Trinidad than from the Venezuelan Cordillera de la Costa. The St. Augustine specimens have broader heads, subquadrate mesonotum, scape surpassing the posterior cephalic margin by one-fourth its length, and ferruginous appendages. The petiolar node lacks the sulcus and has a very modest crest. Specimens collected nearest to the type locality, such as Los Caracas or Naiguatá, differ in the darker coloration, subrectangular mesonotum, scape surpassing the head by one-third its length, and the petiolar shape which has a shallow pre-apical sulcus and posterodorsally directed thin crest.

L. mucronata and *L. columbica* are forms with a toothed node. The MHNG syntypes consist of 2 pins, each with three point-mounted workers. FOREL (1901b: 328) separates *L. columbica* from *L. mucronata* on account of the convex posterior cephalic margin with a clearly visible vertexal carina when seen in full-face view. He also discerned the more abrupt petiolar tooth in dorsal view that contrasts with the gradually tapering tooth of *L. mucronata*, and the transversely striate pronotum of *L. columbica* that differs from the more smooth pronotum of *L. mucronata*. Both, the shape of the posterior cephalic margin and visibility of the vertexal carina hinge upon the angle of observation, so

these two characters are not reliable. Other useful differences are the visibility of the hypostomal teeth in *L. mucronata*, its mandibles are not as arched and the head tends to be broader anterad when compared with *L. columbica*. Samples from Grenada, Jamaica, St. Vincent, Trinidad, northern Colombia, northwestern Venezuela, Panama, and Costa Rica have a definite blunt point on the node apex. Specimens from Magdalena, Colombia and a single specimen from Tovar, Mérida, Venezuela have the head distinctly wider anterad than posterad, with the series from the Sierra de San Luis, Venezuela only slightly wider anterad than posterad. All other material has parallel-sided lateral cephalic margins, with the Arima Valley (Trinidad) specimens having the head broader than long. The mandibles are usually quite slender but in specimens from Trinidad they are noticeably thicker and have fine longitudinal irregular striae. The Costa Rica specimens are rather homogenous and quite distinct on account of their broad head and particularly massive mandibles. Lattke & Longino (2009) cite the Costa Rican population-species as JTL-002 (cf. *punctaticeps*) in the Ants of Costa Rica website. The series from Arima, Trinidad are also quite distinct due to their broad head, thick mandibles (not a as thick as the Costa Rican samples) and large size, the largest of the complex. Two specimens from Bolivar, Colombia are smaller in size, have a flattened mesosomal dorsal margin in lateral view, relatively short scapes, and longer second funicular segment compared with most other specimens.

The crested node specimens have the head with subparallel lateral margins in dorsal view, usually longer than broad and relatively narrow mandibles, whilst the toothed specimens will vary in mandible thickness, and some will have the head wider anterad than posterad. The toothed node specimens tend to have the eyes more dorsolaterally situated than the crested node specimens, this being especially obvious in the Arima and Costa Rican series. The two forms are sympatric on Trinidad, and St. Vincent. The differences in size and sculpture support assuming they are different species. Some specimens from Cuba have an intermediate shape that can not be sorted into these two categories, and have been labeled as *L. pubiceps* complex.

It is tempting to synonymize *L. columbica* with *L. mucronata*, and consider *L. cubaensis* and *L. vincentensis* synonyms of *L. pubiceps*, as it is also tempting to describe the Costa Rican and the Arima, Trinidad populations as distinct species. Nevertheless the degree of subjectivity involved in such decisions would be great, since arguments could be made for recognizing the species status of several other populations. While such action could give the illusion of order, it would also hide the obviously complex situations of many of these populations, a reflection of their reproductive history, paleogeography, sea level changes, vicariance and dispersal. The only obvious conclusion is that this species complex should eventually be object of a thorough revision, but more material from many localities is needed before there is any hope of obtaining better resolution. The fact that queens are wingless make it particularly interesting for studies of Caribbean biogeography. Care should be exercised since some patterns could be confounded by human mediated population dispersions due to the movement of agricultural products such as cocoa and coffee seedlings, banana rootstock, and even barrels of soil.

These ants have been collected in numerous habitats that range from dry forests to humid and cloud forests, lowland and montane, besides coffee plantations. They have been found beneath rotten logs, and in leaf litter. The usual reaction of the ants upon disturbance to the nest is to rapidly flee and hide amongst the leaf litter.

Material studied. Colombia. **Bolívar**: Zambrano, Hacienda Monterey, 21.iv.1994, F. Fernández, 1w IAvH; Hacienda Monterey, 9°45′N 74°49′W, 10 m, 9.ix.1993, F. Fernández, 2w IAvH. **Guajira**: Río Don Diego, 25–50 m, 18.vi.1976, W.L. Brown, C. Kugler, 1w MCZC; Quebrada Guacoche, nr. Don Diego, 10 m, 22.vii.1976, W.L. Brown, C. Kugler, 1w MCZC; Serranía de Macuira, 6–8 km S Nazareth, 70–200 m, 13.vi.1976, W.L. Brown, C. Kugler, 1w MCZC; Parque Tayrona, Pueblito, 360 m, 10.xi.1976, C. Kugler, 6w MCZC, 2w LACM; same locality but 16.xi.1977, C. Kugler, 5w MIZA. **Magdalena**: Bahía de Guiaraca, Parque Nacional Tayrona, 20 km NE Sta Marta, 11°20′N 74°07′W, 26.vii.1985, H.-G. Müller, 1w PSWC; same locality but vi.1985, H.-G. Müller, 2w PSWC; Villa Culebra nr. Bonda, 10 km E Santa Marta, 11°14′N 74°07′W, xi.–xii.1985, H.-G. Müller, 5w PSWC; Bahía de Cinto, P.N. Tayrona, 30 km E Santa Marta, 11°20′N 74°04′W, iv.1985, H.-G. Müller 4w PSWC. – **Costa Rica**. **Heredia**: La Selva, 24.iii.1988, M. Moffet, S. Cover CR100, 2w MCZC, 2w WPMC; La Selva, 26.iii.1988, S. Cover CR160, 4w MCZC; La Selva, 10.–16.iii.1987, E.O. Wilson, W.L. Brown, 2w MCZC; La Selva, 10°26′N 84°01′W, 100 m, 3.iii.1989, 1w INBIO; La Selva, 4.ii.1974, Talbot, Vandevender, 9w LACM; La Selva, 10°26′N 84°00′W, 50 m, 21.ix.1991, J. Longino 3129, 2w LACM. **Limón**: Tortuguero, 10°35′N 83°31′W, 5 m, 22.vi.1988, J. Longino 2123, 1w LACM; Río Toro Amarillo, ca. Guapiles, 25.ii.–9.iii.1966, W.L. Brown, 2w MCZC. – **Cuba**. **Habana**: La Havane, P. Serre, 5w MZSP; Havana, 28.xi.1927, W.F. Buren, 1w LACM; Havana Wood, Havana, 28.xi.1947, [W.F. Buren?], 1w LACM; Habana, Almendores, Juan [illegible], 7w NHMB. **Santiago**: Playa Juragua, xi.1978, L.B. Zayas, 1w LACM. **Unprecise locality**: Los Llanos and vicinity, Eastern [Qtr?], 16.–20.vii.1936, 1000–2000 ft, P.J. Darlington, 3w LACM, 3w MCZC. – **Dominican Republic**. Puerto Plata, 25.v.1995, M.L. de Andrade, 4w NHMB, 2w MIZA. – **Granada**. 25.viii.[19]10, C.T. Brues, 3w MCZC. – **Haiti**. Grande Rivière, [W.M.] Mann, 6w LACM. – **Jamaica**. Newton, 3000 ft, i.1912, C.T. Brues, 3w LACM, 3w MCZC. – **Panama**. **Panama**: Cerro Campana, 800–950 m, vii.1979, W.L. Brown, 2w MCZC. – **Puerto Rico**. **Arecibo**: Arecibo, 25.ix.1984, J.A. Torres 169, 3w LACM; Arecibo, 19.iv.1989, J.A. Torres 559, 3w LACM; W of Ponce, N of Rt. 2, TG-1848, 15.ii.1988, T. Gush, 8w MCZC; Bosque Estatal Guanica, 17.84°N 66.86°W, 23.vi.1997, M. Canals, 2m LACM; Sabana Seca, 27.vii.1950, W.F. Buren, 2w 1m LACM. – **Saint Vincent**. **No locality**: Forel, 2w MHNG; 1w MCSN. – **Trinidad**. **Arima**: Arima Valley, Blanchisuesse Rd. km10, 1450 ft, 22.v.1988, S.P. Cover T-150, 6w MCZC, 2w WPMC; Mount Tucuchart, iv.1929, Darlington, 2w MCZC; St. Augustine, iv.1929, Darlington, 1w MCZC; St. Augustine, 1.xi.1934, N. Weber, 1w MCZC; Asa Wright Nature Centre, 10°43′N 61°17.9′W, 350 m, 13.iv.2004, B. Fisher, J. Lattke 2874, 2w MIZA. **No locality**: N. Weber 95, 1w MCZC. – **Venezuela**. **Falcón**: Valle de Curimagua, [Serranía de San Luis], 900 m, 28.iii.1983, J. Lattke 291, 10w MIZA; Cerro Misión, Finca Rita, 36,7 km W Chichiriviche de la Costa, 10.8835°N 68.6115°W, 300 m, 27.vi.2008, J. Lattke 3152, 12w MIZA. **Mérida**: La Azulita, Campo Elías, 29.vi.1979, R.W. Brooks, 5w UCDC, 1w MIZA; Tovar, 100 m, 25.vi.1989, S. & J. Peck, 1w MIZA. **Miranda**: Naiguatá, Parque Nacional El

Avila, 800 m, 3.v.1991, A. Mayhé, 2w CUSB, 2w MIZA. **Distrito Federal**: Los Caracas, 27.xii.1991, Edgard Palacio, 1w IAvH, 1w MCZC. **Zulia**: El Tukuko, 450 m, vii.1991, J. Lattke, 5w MIZA. – **VIRGIN ISLANDS**. St.Thomas, Magen's Bay Arboretum, 1.i.1993, VIBFP, 3w LACM.

6.5.13.7. *Leptogenys punctaticeps* Emery (Fig. 74)

Leptogenys punctaticeps Emery, 1890a: 62. Holotype worker: Costa Rica, Jiménez (M.A. Alfaro) (MCSN) [examined].
Leptogenys (*Lobopelta*) *ambigua* Santschi, 1931: 267, figs. 2, 3. Syntype workers: Panama, France Field, 20.vi.1930 (A. Bierig) (MHNG) [examined] **n.syn.**

Diagnosis. Eyes large, covering more than one-third of lateral cephalic margin; mandible slender, parallel sided in full-face view; metanotal groove well impressed; propodeum unarmed; petiolar node elongate, ending in apical lobe; posterior margin of node sinuous.
Worker. Metrics (n = 7): HL 1.38–1.62; HW 1.01–1.11; ML 0.81–0.91; EL 0.30–0.40; SL 1.62–1.85; PW 0.84–0.94; WL 2.26–2.56; PH 0.74–0.91; PL 0.71–0.84; DPW 0.47–0.54 mm. CI 0.63–0.77; MI 0.80–0.84; OI 0.29–0.38; SI 1.58–1.67; LPI 1.05–1.13; DPI 0.60–0.67.

Head elongate in full-face view, posterior border straight to very broadly convex, curving onto straight lateral margin; head wider anterad than posterad; anterior clypeal margin laterally concave, forming rounded convex corner laterad of median lobe, median lobe triangular with rounded apex, 3–5 setae present on apex. Compound eye large and convex, diameter occupies at least one-third of lateral cephalic margin. Scape surpassing posterior cephalic border by almost one-half its length, second antennal segment half as long as third, fourth antennal segment more than half the length of third; all antennal segments longer than broad. Mandibles curved at base, mostly straight in cephalic full-face view; basal and external margins sub-parallel, very gradually widening apicad; mandibular dorsum smooth and shining with sparse punctulae; masticatory margin concave, separated from basal margin by corner. Cephalic dorsum mostly striate-punctate, striae diverging posterad; posterad sculpture becomes smoother, posterolaterally punctate. Head with gap between mandibular dorsal margin and clypeus at least half mandibular width in lateral view. External surface of labium and maxillae mostly smooth, maxilla with median convexity and peripheral sulcus. Cephalic ventrum mostly smooth and shining. Hypostomal tooth brief, not projecting ventrad nor visible in anterior cephalic view.

Mesosoma in lateral view with three dorsal convexities formed by pronotum, mesonotum and propodeal dorsum respectively; propodeal dorsum broadly convex, curving onto straight declivity; promesonotal suture impressed; metanotal groove deeply impressed. Ventral pronotal groove well impressed, propleuron and most of pronotal sides smooth and shining, mesometapleuron and propodeal sides with oblique parallel striae; mesometapleural suture well impressed, forming ridge with mesopleuron elevated above metapleuron. Metapleural-propodeal suture broad and crenulate, becoming weak along anterior one-fourth; metathoracic spiracular prominence rounded and convex; propodeal spiracle oval and facing posterolaterally. Anterior pronotal margin with transverse striae that curve around posterad, sculpture weakening posterad; mesonotum with weak rugulae; propodeal dorsum with weak transverse striae, declivity transversely porcate and flat, rounding onto lateral surface, no teeth or lobes.

Petiole in lateral view subquadrate, with vertical margin one-third to one-half height of posterior margin, curving onto broadly convex dorsal margin, posterior margin sinuate with brief, rounded apical point that barely overhangs concave sector. Laterally mostly smooth ventrad with longitudinal, coarse striae dorsad. Petiole longer than wide in dorsal view, with anterior margin more than half the width of posterior margin; posterior face smooth and shining, slightly sunken. Gaster smooth and shining with sparse punctulae; pygidium mostly straight to very broadly curved in lateral view, without median carina. Body with abundant decumbent hairs; scape with subdecumbent hairs and pubescence; thorax and gaster with none or sparse pubescence. Procoxa in lateral view smooth and shining, no seta on protibial apex. Antennae, mandibles, and legs dark brown; gastral apex ferruginous brown; head, thorax and most of gaster black.
Queen, male. Not studied.
Comments. SANTSCHI (1931) did not state why he considered *L. ambigua* should be a distinct species, though he mentions it as close to *L. imperatrix* and *L. famelica*. A comparison of the types of *L. ambigua* and *L. punctaticeps* revealed nothing that could be used to differentiate between the two forms. The favored habitats for this species seem to be lowland forest, including open forest. According to the label the BCI specimens were taken with an isopod. In a number of collections *L. gatu* was labeled as *L. ambigua*, or *L. punctaticeps* but *L. gatu* is easily separated on account of the large hypostomal teeth and the sharp basal curvature of the mandible. Longino (LATTKE & LONGINO 2009) reports observing a column of 39 workers moving along a trail in Sirena, Corcovado National Park, Costa Rica, carrying pupae and large larvae, and one worker was lacking its gaster. Such a situation could be the consequence of an army ant raid. *L. punctaticeps* has been reported from Cuba by PORTUONDO & FERNÁNDEZ (2004: 133) but this is unlikely, and perhaps their specimens are *L. pubiceps* complex members.

Material studied. COLOMBIA. **Antioquia**: Municipio Frontinos, P.N.N. Orquídeas, Norte Cabana, Venados, 900 m, 6.iv.1996, E. Palacios, 1w IAvH. **Chocó**: P.N.N. Utría, 6°01′01″N 77°20′55″W, Ensenada, M. Baena, 15.vi.1993, 2w IAvH; Río Sucio, La Balsa, 7°32′26″W 77°20′16″W, 1.x.1994, L. Mendoza, 2w IAvH. – **COSTA RICA**. **Heredia**: Est. Biol. La Selva, 50–150 m, 10°26′N 84°01′W, vii.1992, J. Longino 3198-s, 1w INBIO; same locality but vii.1993, 93-RVC-07, 1w INBIO. **Limón**: Los Diamantes,

7.–12.iv.1964, F.S. Truxal, 6w LACM; Zent, 13.viii.1924, G.C. Wheeler, 8w MZSP. **Puntarenas**: Osa Peninsula, C. Helado, 17 km NE Rincón, 8°45′30″N 83°25′00″W, 24.vi.1997, R. Anderson 18689, 1w WPMC; Sirena, Osa Peninsula, 8.28°N 83.35°W, 50 m, 9.iii.1982, J. Longino 1100, 1w INBIO; Osa Peninsula, Cabo Helado, 17 km NE Rincón, 8°46′N 83°25′W, 24.vi.1997, R. Anderson 18689, 1w WPMC. – **Panama**. **Bocas del Toro**: Changuinola, 7.viii.1924, G.C. Wheeler, 7w MZSP. **Panama**: Barro Colorado, 6.iii.1946, T.C. Schneirla, 2w LACM; Barro Colorado, 1938, N.A. Weber 1146, 2w MCZC; Barro Colorado, 16.vii.1976, S. Levings, 3w MCZC; Cerro Campana, 800–950 m, 17.i.1960, G.B. Fairchild, W.L. Brown B-81, 1w MCZC.

6.5.13.8. *Leptogenys unistimulosa* Roger (Fig. 75)

Leptogenys unistimulosa Roger, 1863a: 175. Type: Brazil [not examined].

Leptogenys unistimulosa var. *trinidadensis* Forel, 1901b: 328. Syntype workers: Trinidad (M. Ulrich) (MHNG) [examined] **n.syn.**

Leptogenys unistimulosa var. *bahiana* Santschi, 1929: 416. Holotype worker: Brazil, Bahia (Reichensperger) (MHNB) [examined] **n.syn.**

Diagnosis. Eye large and bulging, occupying one-third of cephalic lateral margin; hypostomal tooth triangular and almost as long as basal mandibular width; scape surpasses posterior cephalic margin by one-half its length; mandible arched, slender and elongate, of uniform width; head, mesosoma, and petiole black, gaster ferruginous brown; petiolar node with an acutely pointed posterior spine.

Worker. Metrics (n = 10): HL 1.31–1.72; HW 1.18–1.82; ML 1.01–1.58; EL 0.34–0.51; SL 1.55–2.29; PW 0.84–1.18; WL 2.36–3.27; PH 0.98–1.48; PL 0.71–0.98; DPW 0.57–0.71 mm. CI 0.90–1.08; MI 0.79–0.87; OI 0.26–0.34; SI 1.26–1.37; LPI 1.38–1.69; DPI 0.68–0.77.

Head wider anterad than posterad in full-face view, lateral margin broadly convex, almost straight, lateral cephalic margin interrupted by compound eye; posterior margin broadly convex, almost straight, usually forming continuous curve with lateral margins. Median clypeal lobe shaped as broadly triangular to rounded lobe, shorter than scape width, forms angle at base with rest of clypeus, 5–2 setae on apex; lateral clypeal lobe narrow and broadly convex, gradually expanding towards median lobe. Clypeus obliquely to transversely strigose, posteriorly bordered by transverse sulcus running from antennal sclerite to just below eye. Cephalic dorsum strigose to rugose; anterior third usually strigose; posterior two-thirds usually rugulose. Scape punctulate, surpassing posterior cephalic border by almost one-half its length; second and fourth antennal segments subequal in length, each two-thirds as long as length of third antennal segment. Mandibles elongate and slender, arched and crossing only at apex, dorsal surface smooth and shining with sparse punctulae; sometimes with small pre-apical denticle; masticatory margin concave, not longer than maximum scape width. PF: 4,4. Cephalic ventrum with low longitudinal strigulae along posterior half, the rest mostly smooth with low arching strigulae. Hypostomal tooth triangular, almost as long as basal mandibular width.

Mesosoma with broadly convex dorsal pronotal margin in lateral view, mesonotum forms distinct convexity, separate from broadly convex propodeal margin. Propodeal declivity curved, with 3–6 transverse carinae, no teeth. Lateral pronotum longitudinally strigulose, pronotal dorsum strigulose-punctuate; strigae arching around pronotum; mesonotum transversely strigose; propodeal spiracle elongate, facing posteriorly. Metapleural-propodeal suture mostly effaced except around spiracle, mesometapleural suture well marked, scrobiculate. Ridge separates mesopleuron from mesosternum; mesosternal sculpture mostly effaced. Meso-, metapleuron and lateral propodeal face with oblique strigulae. Propleuron mostly transversely striate anterad and rugulose to strigose posterad; mesosternal lobe broadly triangular, metasternal lobe with rounded external margin, basal margin straight; lobe leans medially.

Petiole with convex anterior margin, and straight ascending dorsal margin in lateral view, both margins joined by convexity; apex of node with acutely sharp point that overhangs mostly convex posterior margin in lateral view; node with anterior margin almost as wide as posterior margin in dorsal view, node length greater than width, excluding posterior spine. Node longitudinally strigose laterally; posterior face with transverse strigae laterally, sculpture effaced to varying degrees on discal area. Postpetiole with vertical anterior margin that becomes convex dorsad in lateral view, constriction not strongly marked; gaster mostly smooth and shining with sparse piligerous punctae. Pygidium without longitudinal crest. Head, mesosoma, and node black; antennae, mandibles, and legs brown to dark brown; gaster ferruginous brown to brown. Body with abundant standing and decumbent hairs.

Queen. Unknown.

Male. Not studied.

Comments. Unfortunately it was not possible to find the *L. unistimulosa* Roger types, though the description (Roger 1863a: 175) mentions the acutely pointed petiolar node, a trait of the species determined here as *L. unistimulosa*, but also of *L. bohlsi* as well. Even though the color pattern he describes seems to correspond more to coloration found in samples of *L. bohlsi* from São Paulo, some *L. unistimulosa* specimens can be similar. Stronger support for considering the present species as equivalent to Roger's *L. unistimulosa* is the specimen length of 9.5 mm he describes, a size more like *L. unistimulosa* than *L. bohlsi*, which averages less than 8 mm. *L. bohlsi* is very similar in appearance to *L. unistimulosa*, including the color pattern, but on average *L. bohlsi* is smaller in size than *L. unistimulosa* and the apex of its petiolar spine is usually blunt, and less commonly acutely pointed though it is of similar length in proportion to the body. The scape in *L. bohlsi* surpasses the posterior cephalic margin by one-third to one-fourth of its length and the lateral cephalic margins are more

parallel to each other, not as divergent as in *L. unistimulosa*. The compound eye in *L. bohlsi* is somewhat smaller, occupying about a fourth of the lateral cephalic length, and not as bulging. Given this conclusion as to the identity of *L. unistimulosa*, the forms *L. bahiana* and *L. trinidadensis* fall without difficulty into the present concept of *L. unistimulosa*.

This is one of the more widespread species of the genus, found throughout northern South American, and with the exception of some isolated specimens, it is not subject to marked morphological differentiation of populations, at least when compared with the situation in *L. pubiceps*. The head may vary in the degree of divergence of the lateral margins, giving some workers the appearance of having a very broad cephalic dorsum anterad, or others with a more slender cephalic dorsum. The ratio Posterior HW/Anterior HW can vary from 0.38 to 0.45. The hypostomal teeth are always quite visible in cephalic full-face view and fairly long, sometimes almost touching the mandible. The slope of the dorsal margin of the node may vary from 30–45° when seen laterally. The petiolar apical spine is always acutely pointed and overhangs the posterior margin of the node, varying a bit in length, and in dorsal view varying in width. The mesonotum can form a distinct convexity or can form a continuously curved margin in lateral view, along with the pronotum. None of the aforementioned differences appear to segregate into regional patterns, though a few specimens and series suggest at least some degree of differentiation in some populations. The Acre specimens appear to have a more slender mesosoma than usual, and more arched and slender mandibles. The Sergipe specimens are very dark coloured, including the gaster.

Observations in Venezuela indicate this species inhabits humid to deciduous forests, though the latter with a marked rainy season. Nests are situated within or beneath rotting trunks on the ground, and under stones as well. They flee rapidly upon discovery of the nest, the workers taking refuge beneath the leaf litter. Observations of nest middens, actively feeding larvae, and workers with prey in mandibles indicate this is an isopod predator. One prey item was determined as *Lygia* sp. (C. Schmidt det.). *L. unistimulosa* can be locally common, and such sites seem to coincide with localities having an elevated presence of isopods. Complementary to this are observations by MILL (1982) of *L. unistimulosa* preying upon *Termes fatalis* Linnaeus workers captured by the ants in the termite nest galleries. Dozens of specimens from different nest series, besides individually collected ants, have revealed none that could be determined as a queen using the usual morphological characters. It is very probable that egg laying workers are the mode of reproduction for this species.

Material studied. BOLIVIA. **Beni**: Ivon Beni, 6w MCZC; Río Colorado, ix.1921, Mulford Biological Expedition, 3w MCZC. **Sta. Cruz**: 11 km NE Aserradero Moira, 180 m, 14°29′S 61°08′W, P.S. Ward 12167-2, 1w PSWC. – **BRAZIL**. **Acre**: Cruz do Sul, 12.i.–23.ii.1983, F.H. Caetano, 7w MZSP. **Amazonas**: Humaitá, Banhiera, 15.iv.1975, J.P. da Silva 11942, 3w MZSP; Manaus, 11.vi.1971, 1w MZSP. **Ceará**: Baturite, 2w MCZC, 1w MZSP. **Goiás**: Jatai, Fazenda Aceiro, 1.xi.1962, 1w 1m MCZC; same locality but ii.1972, F.M. Oliveira, 9m MZSP. **Maranhão**: Estreito, Fazenda Itaueiras, 6°32′S 47°22′W, 7.–13.i.2005, R. Silva, R. Silvestre, 3w 1m MZSP. **Mato Grosso**: Alto do Céu, 8 km NW Fazenda Buriti, Chap do Guimarães, 10.xi.1986, Brandão y Caetano, 1w MZSP; SINOP MT, 12°31′S 55°37′W, x.1974, Alv. & Roppa, 3m MZSP. **Pará**: Fazenda Taperinha, Santarem, xi.1968, Exp. Perm. Amaz., 4w MZSP; Bentiza, 13.viii.1962, K. Lenko, 1w MZSP; Belém, Reserva Guamá, 25.xi.1966, APEG 392, 6w MZSP; loc. cit., 17.xi.1966, APEG 374, 2w MZSP. **Pernambuco**: Tapera, 1733, B. Pickel, 4w 2m MZSP; Recife, 1938, L. Lima Castro, 1w MZSP; Caruaru, v.1972, J. Lima, 2m MZSP. **Sergipe**: Sta. Luzia do Itanhy, Crasto, 11°23′S 37°25′W, 29.vii.–3.viii.2001, Silva, R, Brandão, 5w MZSP; Porto Seguro, E Pau Brasil, 16°23′S 39°11′W, [coordinates do not correspond to Sergipe], 16.vi.2000, J. Santos, 2w MZSP; Areia Branca, EE Serra de Itabaiana, 10°46′S 37°20′W, 19.–25.v.2003, R. Silva, B. Dietz, 2w MZSP. – **COLOMBIA**. **Cundinamarca**: Farallones de Medina, vi.1996, G. Fagua, 1w IAvH; Quebrada Chirihara, km 81 Bogotá–Villavicencio, 1400 m, 25.vi.1976, W.L. & D.E. Brown, 1w MCZC. **Meta**: Bosque Bavaria, 550 m, 31.xi.1996, E. Palacio, 2w IAvH; P.N.N. La Macarena, 4.xii.1991, E Palacio, 1w IAvH; P.N.N. La Macarena, La Curia, 580 m, 4.vii.1991, E Palacio, 1w MCZC. **Norte Santander**: P.N.N. Tamá, Alto de Herrera, Vereda Diamante, 7°07′N 72°13′W, 1000 m, 22.ix.1999, E. González, 2w IAvH. – **ECUADOR. Morona**: Santiago, Los Tayos, 3.vii.1976, Tjjte. de Vries, 1w MZSP. **Napo**: Limoncocha, 00°24′S 76°36′W, 2.vii.1972, C.W. Rettenmeyer 4729, 2w MZSP; Limoncocha, 280 m, 14.vii.1973, L. Morales 96, 4w MZSP. **Sucumbíos**: Garzacocha Anangu, 175 km ESE Coca, 19.viii.1997, T.R. Walla T9710, 3w LACM. – **FRENCH GUIANA**. 10 km W Sinnamary, 15.i.1995, A. Dejean 17079, 6w WPMC; 35 km W Sinnamary, xii.1992, A. Dejean, 9w LACM. – **GUIANA**. Dunoon, 27.viii.1914, F.M. Gaige 626, 2w MCZC. – **PERU**. **No locality**: northern Peru, 1900 m, Socata, W. Weyrauch, 2w MZSP. – **TRINIDAD & TOBAGO**. **Arima**: Simla, [10°41′N 61°17′W, 350 m], 18.xii.1965, H. Markl, 2w 1m MCZC; Arima Valley, Aripo Ridge, 1800–2100 ft, 18.v.1988, S.P. Cover, 6w MCZC; Asa Wright Nature Centre, 10°43′N 61°17.9′W, 350 m, 13.iv.2004, B. Fisher, J. Lattke 2873, 2w MIZA. – **VENEZUELA**. **Aragua**: PN Henri Pittier, Valle de Santa María, viii.2003, J. Lattke, 1w MIZA. **Bolívar**: 10 km S El Dorado; 6°43′N 61°38′W, 200 m, 17.vii.–7.viii.1986, B. Gill, 1w MIZA; Akurimán, [4°36′N 61°07′W], [P.] Anduze, xi.1940, 1w MCZC; Campamento Río Grande, 8°07′N 61°42′W, 250 m, 9.viii.1986, J. Lattke, 1w MIZA; Río Tawadú, Nichare Field Station, 6°26′N 64°53′W, 200 m, 9.ii.1996, D.M. Olson, 1w PSWC; Valle del Abismo, 4°24′N 61°36′W, 200 m, x.1985, K. Jaffé, 1w MIZA. **Carabobo**: Canoabo, Palmichal, 900 m, 18.iii.2004, J.L. García, 2w MIZA; Canoabo, Palmichal, 850 m, 29.iv.1992, J.L. García, 1w MIZA. **Falcón**: Cerro Los Caracoles, 27 km E Sta. Cruz de Bucaral; 10°52′N 69°02′W, 950 m, 5.ix.2002, J. Lattke 2495, 8w 2m MIZA; same locality but 5.ix.2002, J. Lattke 2496, 8w MIZA; same locality but 5.ix.2002, J. Lattke 2515, 10w MIZA; Cerro Misión, Finca Rita, 36,7 km W Chichiriviche de la Costa, 10.8835°N 68.6115°W, 300 m, 28.vi.2008, J. Lattke 3168, 12w MIZA. **Sucre**: Via Sábana de Piedra – Santa María, 17.xii.1980, J. Lattke 153, 20w MIZA; Las Melenas, 10°41′N 62°37′W, 800 m, 12.v.1993, J. Lattke 1483, 8w MIZA; San Pedro, 10°41′N 61°57′W, 400 m, 19.x.1992, 1w MIZA. **Táchira**: Las Cuevas, Uribante Caparo, Las Cuevas, 500 m, 29.viii.1988, J. Lattke 1213, 2w MIZA, 6w USBC.

6.5.14. *wheeleri* species group

Worker diagnosis. Compound eye dorsolaterally placed on head, diameter several times greater than maximum scape width, circumocular sulcus well impressed; sulcus between basal antennal sclerite and tentorial pit well impressed; clypeal median lobe bordered by narrow translucent lamella, lacking setae on apex, not longer than maximum width of scape; mandible slender, tends

to falcate or subtriangular, none triangular, basal sulcus well impressed; anterior face of labrum with scattered low piligerous tubercles; PF: 4,3. Third antennal segment noticeably longer than rest of basal funicular segments, remaining funicular segments of uniform diameter, without marked constriction between each antennomere; integument densely shagreened or punctulae, opaque; no standing hairs on dorsum of head, mesosoma and abdominal segments I–IV, appressed pubescence present throughout body. Metanotal groove distinctly impressed, deep to moderate, not scrobiculate; propodeal spiracle facing posterad; propodeal declivity unarmed; metapleural-propodeal suture shallow; petiole with convex lateral margins in transverse cross-section; subpetiolar process anteriorly place, triangular or lobe like in lateral view, with convex posterior face. Apex of protibia lacking setae; apex of mesotibia with 1–2 external setae (none in *L. maya*); apex of metatibia with 1 external seta (none in *L. maya*). Constriction between abdominal segments III and IV modest, metacoxal dorsum without basal swelling.

Included species. *L. ixta*, *L. maya*, *L. quirozi*, *L. wheeleri*.

Comments. This group is found from Mexico to Central America and is very easy to distinguish on account of the opaque pruinose integument that lacks standing hairs and the slender falcate or semifalcate mandibles. They superficially resemble species of the African *maxillosa* group, which has at least one tramp member in the American Tropics (see "Comments" for the *maxillosa* group for differences between the two groups) Males examined in *L. wheeleri*, *L. maya*. The examined males share a prominent shelf formed by the pronotal posterior margin and anterior mesonotal margin visible in lateral view. Ergatoid queens are known for this group.

Possible apomorphies. The densely shagreened and opaque integument, lack of standing hairs on the dorsum of the head, mesosoma, and abdomen are found in no other New World species.

6.5.14.1. *Leptogenys ixta* n.sp. (Fig. 76)

Diagnosis. Mandible elongate, and relatively straight, becoming wider apicad; mandibular basal angle angular; median clypeal lobe extends apicad as prominent lobe, forming almost perpendicular angle at its base with each lateral lobe.

Worker. Metrics, holotype (paratypes, n = 2): HL 1.48 (1.38–1.45); HW 1.18 (1.04–1.18); ML 0.94 (0.88–0.94); EL 0.30 (0.30–0.34); SL 1.52 (1.48–1.48); PW 0.91 (0.88–0.88); WL 2.36 (2.22–2.26); PH 0.88 (0.91–0.94); PL 0.67 (0.61–0.67); DPW 0.71 (0.67–0.71) mm. CI 0.80 (0.72–0.85); MI 0.80 (0.74–0.90); OI 0.26 (0.26–0.32); SI 1.29 (1.26–1.42); LPI 1.30 (1.40–1.50); DPI 1.05 (1.05–1.11).

Head slightly elongate in full-face view, wider anterad than posterad; posterior margin broadly convex, vertexal carina visible; lateral cephalic margin very broadly convex, almost straight; lateral clypeal lobe extends from mandibular insertion to beneath median clypeal lobe, lobe broadly convex lateral, more convex mesad; median clypeal lobe triangular, apex rounded, with translucent margins. Clypeus striate; compound eye placed laterodorsally, slightly flattened, diameter approximately one-fourth that of lateral cephalic margin. Scape surpasses posterior cephalic border by over one-third its length; second and fourth antennal segments each more than half the length of third segment; funicular segments subcylindrical, with little or no constriction between each one. Mandible elongate, subfalcate, becoming wider apicad; dorsum shining, with fine parallel strigulae; masticatory margin edentate, does not shut tight against clypeus, leaving gap between clypeus proper greater than half the basal mandibular width; PF: 4,3.

Mesosoma with promesonotum and propodeum forming two separate, broad convexities in lateral view; mesopleuron elongate; anteroventral mesopleural carina thick, widest anterad, forms low angular lobe before anteroventral corner, anterior mesopleuron with brief shallow sulcus; mesometapleural suture well impressed; metapleural propodeal suture broad and shallow, deeper posterad than anterad; propodeal spiracle oval, facing posteriorly. Mesonotum wider than long in dorsal view; propodeum unarmed, declivitous face flat, transversely striate, striae coarser posterad.

Petiole subquadrate in lateral view, anterior margin slightly convex, dorsal margin straight, posterior margin vertical to weakly convex; subpetiolar tooth shaped as hooked lobe. Node subquadrate in dorsal view, slightly wider anterad than posterad; anterior margin broadly convex, posterior margin straight. Body and coxae, densely punctulate with a rough and opaque aspect, punctae finer and more spaced on posterior half of fourth abdominal tergite and posterad; apical gastral segments shine; hypopygidium with longitudinal smooth strip. Body lacks standing pilosity, except for scattered hairs on ventral side; body, antennae, and legs with abundant appressed pubescence. Antennae, clypeus, mandibles, legs, and fifth abdominal segment brown; apical abdominal segments ferruginous; head, mesosoma, and most of gaster brown-grey.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from that of the type locality: Ixtapan de la Sal.

Comments. On account of the similar size and mandibles that expand apicad, this species may be easily confused with *L. quirozi*. Please refer to the "Comments" for *L. quirozi* for characters that will help in separating the two species. One outstanding biological character for this species is the altitude of the type locality, over 1800 m. Ponerines are not particularly abundant, nor diverse, at such an altitude, indicating that it may be a specialist in montane habitats such as *Pachycondyla carbonaria* (F. Smith) is in the northern Andes. A worker

in the MCZC is labelled as a Cotype (1-3, 20496) and considered as *L. wheeleri*, but there is no determination label on the pin with the ant and it clearly is not *L. wheeleri*, but *L. ixta*. DEJEAN & EVRAERTS (1997) studied the predatory behavior of this species and other *Leptogenys*.

Type material. Holotype worker. **MEXICO**, D.F., Ixtapan de La Sal, 1829 m, 2.xi.1976, E.S. Ross. Deposited in CASC. – Paratypes. Two workers with the same locality data as the holotype. Both deposited in CASC.

Other material studied. **MEXICO**. **Morelos**: Cuernavaca, 27.xii. 1900, 1w MCZC.

6.5.14.2. *Leptogenys maya* n.sp. (Fig. 77)

Diagnosis. Head in full-face view widest anterad with slightly bulging oculo-malar margin; hypostomal teeth visible. Mesosomal dorsal margin in lateral view divided into two convexities by well-developed metanotal groove. Node slightly broader than long in dorsal view, widest at mid-length; lateral margin convex, posterior margin straight, anterior margin medially straight, laterally convex.

Worker. Metrics, holotype (paratypes, n = 5): HL 2.10 (1.95–2.10); HW 2.00 (2.00–2.10); ML 1.60 (1.50–1.70); EL 0.55 (0.45–0.55); SL 2.70 (2.65–2.75); PW 1.40 (1.35–1.45); WL 3.75 (3.60–3.80); PH 1.40 (1.35–1.45); PL 1.00 (1.00–1.15); DPW 1.20 (1.05–1.20) mm. CI 0.95 (0.98–1.05); MI 0.80 (0.75–0.85); OI 0.28 (0.21–0.27); SI 1.35 (1.26–1.38); LPI 1.40 (1.17–1.40); DPI 1.20 (0.91–1.20).

Head roughly as long as broad in full-face view with widest distance anterad, lateral and posterior margins form diverging arch, ocular malar space with anterior convexity. Anterior clypeal margin with low, inconspicuous lateral lobes; median lobe broadly triangular, bordered by a translucent lamella. Scape surpasses posterior cephalic border by at least half its length, third antennal segment 5 × longer than wide, fourth antennal segment more than half the length of third segment. Eye convex, ocular diameter more than one-third length of lateral cephalic margin in cephalic full-face view. Mandible weakly arched, gradually widens apicad; separated from clypeal margin by at least its basal width, dorsal surface finely striolate; hypostomal teeth small but distinctly visible. Cephalic dorsum densely punctulate, opaque, some arched striae present next to antennal sclerite; clypeus with transverse to oblique striae, striae widest anterad. Cephalic ventral surface with median convexity, convexity as well as anteroventral cephalic margin with diminished sculpturing, shining; hypostomal margin smooth and shining; PF: 4,3.

Mesosoma with dorsal margin in lateral view divided into a broad convexity formed by promesonotum, and sharper convexity formed by propodeum, metanotal groove deeply impressed. Mesopleuron rectangular, anteroventral carina slightly wider anterad than posterad, small depression present between anterior apex of anteroventral carinae and metathoracic spiracle. Mesonotum subquadrate in dorsal view, only slightly wider than long (W/L 0.81). Propleuron densely punctulate with transverse striae medially. Mesometapleural suture well impressed, metapleural-propodeal suture obsolete, propodeal spiracle elongate, facing postero-laterad.

Petiole subrectangular in lateral view, anterior margin straight, anterodorsal margin slightly overhanging its base, dorsal margin convex, posterior margin straight to slightly concave. Node slightly broader than long in dorsal view, widest at mid-length; lateral margin convex, posterior margin straight, anterior margin medially straight, laterally convex. Node with convex lateral face in vertical section; posterior face slightly concave. Body densely punctulate and opaque, punctulae thin away along posterior tergite of abdominal segment IV, and posterior tergites; pygidium with median longitudinal smooth and shining strip; bulla smoothened and shining; legs punctulae and shining. Body with short appressed pubescence and no standing hairs, save sporadic hairs on ventral body surface. Body dark grey; clypeus, mandibles, antennae, gastral apex, and legs dark brown.

Queen. Metrics: HL 1.85; HW 1.85; ML 1.40; EL 0.50; SL 2.40; PW 1.30; WL 3.35; PH 1.50; PL 1.00; DPW 1.10 mm. CI 1.00; MI 0.76; OI 0.27; SI 1.30; LPI 1.50; DPI 1.10. Queen differences from the worker are the usual.

Male. Metrics: HL 1.10; HW 1.40; ML 0.30; EL 0.60; SL 0.35; PW 1.20; WL 3.10; PH 0.85; PL 0.60; DPW 0.65 mm. CI 1.27; MI 0.21; OI 0.43; SI 0.25; LPI 1.42; DPI 1.08. Clypeus in cephalic full-face view with prominent median longitudinal blunt ridge, laterally falling back; mostly punctate. Punctae on head sparsely distributed between ocelli and antenna, median ocellus bordered by anterior smooth and shining strip. Width of median ocellus more than distance between each posterior ocellus. Mesosoma mostly punctate and shining. Pronotum in lateral view forms a posterodorsal angle, from which the convex scutum abruptly emerges, gaster mostly smooth and shining with blue iridescence. Pronotum in oblique dorsal view with posterior strip of ventrally sloped cuticle that recedes to meet anterior margin of scutum.

Derivatio nominis. The species name alludes to the Mayan people, as this species is found in the same land once occupied by the Mayan Empire.

Comments. This is the largest species of the *wheeleri* group and one of the largest species of the genus in the Americas. Besides their smaller size, the other *wheeleri* group members have a fairly continuous dorsal mesosomal margin when seen in lateral perspective, all lacking the deep metanotal groove of *L. maya*. No other *wheeleri* group species have visible hypostomal teeth when the head is in full-face view. The 1985 Quintana Roo series all bear labels associating them with the bromeliad *Aechmea bracteata*. These ants, collected by A. Dejean, are vouchers of studies he carried out on ants

associated with epiphtyes (Dejean et al. 1995; Dejean & Olmsted 1997). In Dejean et al. (1995: 68, table 4) an undescribed species of *Leptogenys* is mentioned as being found in dry, post fruited ramets of *A. bracteata*. *L. maya* would apparently be the species mentioned as *Leptogenys* n.sp. The pin bearing the holotype has a label placed by the late R. Snelling identifying it as a new species.

Type material. Holotype worker. **Mexico**, Quintana Roo, Reserva Sian Ka'an, 10.v.1985, A. Dejean, One worker deposited in the LACM. – Paratypes. Same series as holotype: 9w, 2m deposited in the LACM.

Other material studied. Belize. Orange Walk, Rio Bravo Conservation Area, vic. La Milpa Stn, 23.iii.1998, L.R. Davis Jr. 290398-1, 3w LRDC. – **Mexico**. **Quintana Roo**: Reserva Sian Ka'an, 10.v.1985, C3, A. Dejean, 35w 1q LACM; Reserva Sian Ka'an, 10.v.1986, C1, A. Dejean, 16w 3m MCZC; Reserva Sian Ka'an, 10.v.1986, C2, A. Dejean, 1w LACM; Reserva Sian Ka'an, 10.v.1986, A. Dejean, 3w 1m MCZC.

6.5.14.3. *Leptogenys quirozi* n.sp. (Fig. 78)

Diagnosis. Mandible elongate, widening apicad, basal angle convex, not angular; median clypeal lobe evenly convex, not prominent; angle between base of median lobe and lateral lobe obtuse.

Worker. Metrics, holotype (paratypes, n = 4): HL 1.55 (1.55–1.62); HW 1.31 (1.28–1.35); ML 0.71 (1.01–1.04); EL 0.30 (0.30–0.34); SL 1.69 (1.62–1.72); PW 1.01 (1.01–1.04); WL 2.59 (2.43–2.66); PH 0.98 (0.94–1.08); PL 0.74 (0.74–0.81); DPW 0.74 (0.74–0.81) mm. CI 0.85 (0.79–0.83); MI 0.54 (0.75–0.79); OI 0.23 (0.24–0.26); SI 1.28 (1.23–1.34); LPI 1.32 (1.26–1.33); DPI 1.00 (0.96–1.05).

Head sub-rectangular in full-face view, posterior and lateral margins weakly convex, lateral margins weakly diverging anterad. Eye diameter occupies slightly under one-third lateral cephalic margin; anterior clypeal margin converges evenly towards median apex, median lobe bordered by translucent strip, strip separated from translucent lateral lobe, lateral lobe widest anterad. Scape surpasses posterior cephalic border by more than one-third its length, length of fourth antennal segment slightly more than one-half of third antennal segment. Mandible subtriangular, basal margin separated from clypeus at base by distance less than half its basal width in cephalic full-face view; mandible expands apicad, apical two-thirds of basal margin convex; basal angle rounded, masticatory margin mostly concave; hypostomal tooth not visible in dorsal cephalic view. Mandibular dorsum mostly smooth and shining with weak longitudinal striolae. Cephalic dorsum densely punctulate, each punctulae flat bottomed, punctulose-rugulose towards clypeus; clypeusr ugulose-punctate.

Mesosoma with dorsal margin divided by metanotal groove in lateral view into broadly convex promesonotal margin, and more curved propodeal margin; dorsal and declivitous margins form continuous convexity. Mesopleuron rectangular, anteroventral margin with low carina that widens anterad; mesometapleural suture well impressed, metapleural-propodeal suture weakly impressed; propodeal spiracle elongate-oval, posterolaterally facing; mesonotum rectangular, broader than long in dorsal view. Node in lateral view subquadrate, anterior margin mostly vertical, posterior margin weakly sinuate; anterior margin lower than posterior margin.

Petiole roughly as broad as long in dorsal view, slightly wider posterad than anterad; anterior margin convex in lateral view, posterior margin mostly straight; lateral margin straight to weakly convex. Integument of body and coxae mostly opaque, densely punctulate; dorsal and lateral sides without standing hairs, except towards gastral apex. Head, thorax, and most of gaster grayish-black, clypeus dark brown; antennae, mandibles, and gastral apex brown.

Queen. Metrics: HL 1.62; HW 1.31; ML 1.08; EL 0.34; SL 1.65; PW 1.04; WL 2.53; PH 1.08; PL 0.71; DPW 0.88 mm. CI 0.81; MI 0.82; OI 0.26; SI 1.26; LPI 1.52; DPI 1.24. Ergatoid with the usual differences from the worker. The petiolar node as compared with the worker is noticeably wider posterad than anterad in dorsal view. The gaster of the queen is quite larger than the worker. Three punctures on the posterior frons suggest vestigial ocelli.

Male. Unknown.

Derivatio nominis. The species name is a patronym that alludes to the collector of these ants, Luis Quiroz Robledo.

Comments. This species has most expanded mandible of the *wheeleri* group, approximating a subtriangular form. It can be easily confused with *L. ixta* because of the similar size and mandibles that expand apicad. When closed the mandibles of *L. quirozi* do not leave a space between their basal margin and the opposing lateral clypeal margin. The median clypeal lobe is distinctly separated from the lateral lobes in both species, but in *L. ixta* the median lobe extends anterad such that its base forms almost perpendicular angles with the lateral lobes, while the median lobe in *L. quirozi* is broadly convex, not as prominent and forms an obtuse angle at its juncture with each lateral lobe. The mandibular basal angle is convex and not angular as in *L. ixta*, and *L. quirozi* is on average larger than *L. ixta*. In *L. ixta* the cuticle is rougher and its anterior mesopleuron has a brief sulcus that runs parallel to the longitudinal axis of the mesoplueron, and between the mesonotum and anteroventral mesopleural carina. Such a sulcus is lacking in *L. quirozi*. The convex outline of the propodeum in lateral view, a usual trait of queens for the genus, is not as noticeable in this species because the workers also have a convex propodeal outline. One label in the type series mentions the ants being found in a log. The type locality, Portillo del Rayo, is located at 15°59′N 96°31′W, and is approximately 1500 m above sea level. The other locality is more commonly spelled Acahuizotla, and has elevations 600–650 m.

Type material. Holotype worker. **MEXICO**, Oaxaca, Portillo del Rayo, 30.ii.89, L. Quiroz coll. Deposited in IEXA. – Paratypes. With the same locality data: 6w 1q deposited in IEXA, 1w WPMC, 1w MCZC, 1w MIZA.

Other material studied. MEXICO. **Guerrero**: Acahuitzotla, [17°23′N 99°27′W], 12.viii.1991, L. Quiroz, 1w IEXA.

6.5.14.4. *Leptogenys wheeleri* Forel (Fig. 79)

Leptogenys wheeleri Forel, 1901a: 123. Holotype worker: Mexico, Morelos, Cuernavaca (W.M. Wheeler) (MHNG) [examined].

Diagnosis. Eyes weakly convex; mandible parallel-sided, basal margin with weak convexity close to base; median clypeal lobe projects abruptly from anterior margin of lateral clypeal lobes, meeting at almost perpendicular angle.

Worker. Metrics (n = 5): HL 1.28–1.62; HW 1.15–1.58; ML 0.91–1.25; EL 0.34–0.4; SL 1.25–1.75; PW 0.84–1.08; WL 2.06–2.63; PH 0.81–1.01; PL 0.61–0.84; DPW 0.64–0.78 mm. CI 0.87–1; MI 0.75–1; OI 0.25–1; SI 1.03–1.18; LPI 1.2–1.33; DPI 0.92–1.06.

Head subquadrate in full-face view, lateral cephalic margin broadly convex, posterior margin broadly convex; head wider anterad than posterad; eye large, broadly convex, occupies one-third of lateral cephalic margin. Median clypeal lobe broadly triangular, apex bordered by translucent lamella; lateral lobe poorly developed. Scape surpasses posterior cephalic border by close to one-third its length; length of third antennal segment twice its width; length of fourth antennomere only slightly more than its width; length of third segment almost twice that of fourth. Mandible arched and slender, widely separated from clypeus, external and basal margins subparallel in cephalic full-face view, dorsum shining, mostly with fine striolae, becoming smooth at apex; PF: 4,3.

Mesosoma with dorsal margin roughly convex in lateral view; pronotal margin mostly broadly convex except for brief concave anterior section; promesonotal suture and metanotal groove weakly impressed; mesonotum weakly convex in lateral view; propodeal dorsal margin mostly convex, declivitous margin straight to slightly concave. Declivitous and dorsal propodeal margins meet through blunt obtuse angle in lateral view. Mesometapleural suture well impressed; mesopleuron with carina along anteroventral margin, carina widest anterad; metapleural-propodeal suture barely impressed; propodeal spiracle elongate, facing posterad; brief sulcus extends from spiracle to bulla. Mesonotal width in dorsal view almost twice its length; propodeal declivitous face mostly flat.

Petiole subquadrate in lateral view, anterior margin vertical up to two-thirds node height, then sharply convex, dorsal margin broadly convex with brief posterior depression; posterior margin weakly sinuate, mostly straight to slightly concave dorsad, with weak convexity ventrad; posterior face slightly concave. Subpetiolar process shaped as broad lobe. Node subquadrate in dorsal view, slightly wider posterad than anterad. Gastral constriction well developed. Procoxa mostly rugulose in lateral view. Body densely punctulate, giving cuticle a shagreened appearance. Punctulae on head, mesosoma, and petiole separated by ridge, forming a reticule; punctulae on gaster more spaced, separated by distances from 0.5 to 1 diameter. Sculpture of head coarser anterad of eyes than on rest of head. Body with short appressed pubescence, standing hairs absent except on gastral apex and sparse hairs on ventral area. Body grey brown to light brown, mandibles ferruginous brown to brown, antennae grey-brown; legs yellow-brown to ferruginous brown.

Queen. Metrics: HL 1.27; HW 1.11; ML 0.83; EL 0.30; SL 1.27; PW 0.83; WL 2.00; PH 0.89; PL 0.56; DPW 0.73 mm CI 0.88; MI 0.75; OI 0.27; SI 1.14; LPI 1.59; DPI 1.32. As worker, but with broader petiole in dorsal view, and dorsal propodeal margin more convex in lateral view.

Male (not previously described)**.** Metrics: HL 0.83; HW 0.96; ML 0.23; EL 0.56; SL 0.28; PW 1.04; WL 2.07; PH 0.43; PL 0.28; DPW 0.35 mm CI 1.15; MI 0.24; OI 0.58; SI 0.29; LPI 1.55; DPI 1.27. Distance separating median ocellus from lateral ocelli less than width of median ocellus; cephalic dorsum mostly smooth and shining with punctulae, punctulae denser on clypeus, clypeus divided by transverse suture into anterior and posterior sections. Mesonotum receded from pronotum in lateral view by distance equal to maximum width of profemur, forming step. Mesosoma mostly smooth and shining with sparse to dense punctae; punctae denser on posterior scutum; metapleuron rugulose; gaster with blue iridescence. Body with abundant decumbent hairs, longer than on worker, longest hairs on ventral portion of mesosoma and gaster. Body brown; mandibles, pronotum, and legs, beige; propodeum slightly lighter brown than rest of mesosoma.

Comments. The MNHG type specimen appears to be the only specimen, at least in the MHNG and has a label with Forel's handwriting explicitly stating "typus". The series from Reserva Sian Ka'an are associated with the bromeliad *Aechmea bracteata*, with nests found in dry ramets (DEJEAN 1997). The series from Veracruz is from evergreen forest, and one worker is point-mounted along with an isopod. The specimens at hand suggest a clinal difference in size with the northernmost species as the largest. DEJEAN & EVRAERTS (1997) studied the predatory behavior of several *Leptogenys* species, suspecting *L. wheeleri* may attract its isopod prey into the nest by chemical means.

Material studied. MEXICO. **Morelos**: Cuernavaca, xii.27.1900, 1w MCZC. **Quintana Roo**: Reserva Sian Ka'an, A4, Sabana, km11, 3.–4.vi.1986, A. Dejean coll., 14w 2m LACM; Reserva Sian Ka'an, B1, 15.xi.1986, A. Dejean coll., 2w 1q MCZC. **Veracruz**: Las Hamacas, 17 km N Santiago Tuxtla, 26.–28.viii.1953, E.O. Wilson 354, 6w 1q MCZC. – **PANAMA**. Swan Island, 19.iv. 1913, G. Nelson, 1w LACM.

6.5.15. *Incertae sedis* species

6.5.15.1. *Leptogenys australis* (Emery) (Fig. 80)

Lobopelta australis Emery, 1888: 693. Holotype worker: Argentina, La Plata (C. Spegazzini) (MCSN) [examined].
Leptogenys (*Lobopelta*) *australis* (Emery). Combination by Emery 1911: 105.
Leptogenys (*Lobopelta*) *hanseni* Borgmeier, 1930: 31, pl. IV figs. 16, 23, 24, 27, 28. Syntype workers: Brazil, Rio Grande do Sul, Parecy Novo, 7.x.1927, under a stone (A. Hansen) (MZSP, IBSP) [examined] **n.syn.**

Diagnosis. Eye relatively flat, laterally situated at mid-length of lateral cephalic margin; mesonotum with curved anterior and posterior margins; metanotal groove scrobiculate, propodeal declivity transversely striate.
Worker. Metrics (n = 2): HL 0.94–0.94; HW 0.58–0.61; ML 0.40–0.46; EL 0.10–0.13; SL 0.03–0.78; PW 0.53–0.56; WL 1.32–1.37; PH 0.53–0.53; PL 0.53–0.56; DPW 0.38–0.38 mm. CI 0.62–0.65; MI 0.70–0.75; OI 0.17–0.21; SI 0.04–1.35; LPI 0.95–1.00; DPI 0.68–0.71.

Head rectangular in full-face view, lateral margins parallel, straight; posterior margin straight, vertexal carina visible; head width greatest behind eyes; eye relatively flat, lens of each ommatidium fusing with each other, laterally situated at mid-length of lateral cephalic margin; median clypeal process abruptly protrudes anterad, about as long as broad, basally slightly converging then at mid-length tapering to pointed tip. Front of head smooth and shining. Mandible with sinuate basal margin, convex basad and concave apicad; apical half of convexity with row of stiff hairs; chewing margin brief, edentate with blunt apical tooth; dorsum smooth and shining, not expanded apicad into triangular shape. Scape surpasses posterior cephalic border by 2 apical widths, smooth and shining, with abundant semi-erect airs, funicular segments I–III about same size, apical widths of each segment more than half their respective lengths.

Mesosoma with broadly convex promesonotal margin in lateral view; metanotal groove shallow but distinctly impressed, scrobiculate; dorsal propodeal margin mostly weakly convex to straight, convex towards declivity, tooth bluntly triangular. Mesosoma mostly mostly smooth and shining, some striae present on mesopleuron, and ventral metapleuron. Meso-metapleural suture well impressed, scrobiculate; anteroventral mesopleural carina well developed dorsally, becoming progressively narrower ventrad. Propodeal spiracle rounded to oval, posteriorly facing. Mesonotal dorsal surface convex, wider than long in dorsal view. Propodeal declivity with transverse striae on anterior half, and smooth posterad of teeth. No metapleural-propodeal suture visible.

Petiole in lateral view with vertical anterior and posterior margins, posterior margin about half the height of posterior margin; dorsal margin highest posterad, about as long as posterior margin, with slope most of distance of posterior convexity. Node smooth and shining, posterior face flat and with sharp curves separating it from sides. Node in dorsal view shaped as elongate trapezoid, anterior margin broadly convex, more than two-thirds the width of posterior margin, sides almost straight. Anterior postpetiolar margin vertical. Body light brown, legs, antenna, mandibles ferruginous. Gaster smooth and shining, constriction between abdominal segments III and IV well marked. Scant pilosity observed on examined specimens.
Queen, male. Unknown.
Comments. In the MCSN collection a single worker, obliquely glued to a carton, was examined. It is apparently the only specimen examined by Emery and is consequently considered the holotype even though Emery did not designate it as such. One of the measured specimens lacks both antennae. The syntypes of *L. hanseni* in MZSP correspond to *L. australis*. *L. hanseni* has the propodeal spiracle slightly ovoid, and the mesonotum a bit more ovoid (not as transverse) than in *L. australis* but such differences exist amongst conspecifics in other *Leptogenys*. Borgmeier (1930) did not consider *L. australis* when discussing other *Leptogenys* close to *L. hanseni*. Another syntype of *L. hanseni* deposited in the IBSP was also examined. The IBSP specimen is cleaner than the MZSP specimens. The specimens from Cerro Animas were found under a stone. Vittar & Cuezzo (2008) report the presence of *L. australis* in Santa Fe Province.

Material studied. **Argentina**. **Buenos Aires**: La Plata, Spegazzini, 1w MCSN. – **Brazil**. **Rio Grande do Sul**: Parecy Novo, Hansen leg., No. Borgmeier Coll. 3616, 2w MZSP, 1w IBSP. – **Uruguay**. **Maldonado**: Cerro de las Animas, Pablo R. San Martin, 19.iv.1953, 2w FCUR.

6.5.15.2. *Leptogenys ciliata* n.sp. (Fig. 81)

Diagnosis. Head elongate in full-face view, wider anterad than posterad, lateral margin convex; eye laterodorsally placed on head, small; scape surpasses posterior cephalic border by over one-third its length, basal funicular segments subcylindrical; frontal carinae longitudinally striate, striae extending posterad in full-face view to same level as posterior ocular margin; petiolar node subrectangular in lateral view, longer than high, height of anterior margin less than one-third posterior margin, anterodorsal margin continuously convex.
Worker. Metrics, holotype (paratype): HL 1.72 (1.69); HW 1.18 (1.18); ML 0.94 (0.98); EL 0.20 (0.24); SL 1.31 (1.28); PW 1.04 (1.04); WL 2.80 (2.76); PH 1.08 (1.01); PL 1.08 (1.01); DPW 0.64 (0.61) mm. CI 0.69 (0.70); MI 0.80 (0.83); OI 0.17 (0.20); SI 1.11 (1.09); LPI 1.00 (1.00); DPI 0.59 (0.60).

Head elongate in full-face view, wider anterad than posterad, lateral margin convex, posterior margin straight to weakly concave; median clypeal lobe triangular, apex bluntly rounded and translucent, lateral lobe

weakly developed, not projecting anterad but forming continuous profile with median lobe. Eye laterodorsally placed on head, relatively small, just slightly longer than maximum scape width; eye closer to cephalic midlength than to mandibular insertion. Scape surpassing posterior cephalic border by distance over one-third its length, basal funicular segments subcylindrical, slightly wider apicad than basad; second antennal segment at least 3 × longer than apical width, length of third antennal segment 2.6–2.8 × more than apical width, length of fourth antennal segment over twice apical width; third antennal segment longer than second or fourth. Scape with dense subdecumbent pubescence and abundant subdecumbent hairs. Mandible elongate, gradually expanding apicad; basal margin broadly convex, 5–6 stout hairs present along basal margin next to median clypeal lobe; masticatory margin edentate, broadly concave; basal and masticatory margins separated by blunt angle; external margin broadly concave basad, broadly convex apicad. Head mostly smooth and shining except for numerous scattered piligerous punctulae which become denser and more impressed posterad, frontal carinae longitudinally striate, striae extending posterad in full-face view to same level as posterior ocular margin. Clypeus with longitudinal striae medially. Cephalic ventral surface smooth and shining except for scattered, broad, shallow punctae; hypostomal corner developed as triangular lobe, not visible in dorsal cephalic view.

Mesosoma with well-developed metanotal groove in lateral view; most of pronotal margin continuously convex; mesonotal margin relatively straight, propodeal margin mostly broadly convex with minor irregularities, declivitous margin broadly convex with jagged aspect due to transverse striae on declivitous face; very modest lateral lobe present. Pronotum, propleura, and lateral propodeal face mostly smooth and shining with scattered piligerous punctulae; mesopleuron with arching striae anterad, striae weakest medially, well-developed striae present posterad; posteroventral corner, directly dorsad of mesocoxa, with coarse rugulae sculpturing. Mesometapleural suture well developed, scrobiculate; metapleural-propodeal suture absent; metapleuron mostly longitudinally striate, striae weakest dorsad, strongest ventrad, anteroventral margin punctate-striate. Propodeal spiracle broadly oval, facing posterolaterad, bordered ventrally by ledge.

Petiolar node subrectangular in lateral view, longer than high, height of anterior margin less than one-third posterior margin, anterodorsal margin continuously convex, node highest posterad, posterior margin straight to weakly convex. Node elongate in dorsal view, widest posterad, posterior margin straight, lateral margin straight to weakly convex, anterior margin broadly convex, its width more than half the width of posterior margin. Node mostly smooth and shining with scattered piligerous punctae, punctures densest on anterodorsal surface. Subpetiolar process shaped as lobe with convex anteroventral margin and short, mostly vertical posterior margin. Cross-section of node at mid-length V-shaped. Abdominal segment III with continuously convex anterodorsal margin in lateral view, constriction between segments III and IV well marked. Gaster mostly smooth and shining with scattered, piligerous punctulae. Body with abundant subdecumbent pilosity. Body dark brown; clypeus and scape brown; funiculus, legs, and gastral apex ferruginous brown. Pro- and metatibial apices lacking setae, mesotibial apex with single seta laterad.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the abundant pilosity of the body of this ant. It is derived from the Latin for eyelash, *cilium*.

Comments. The types are point-mounted and both on the same pin. The holotype is the top specimen and the basal part of is point has been stain red. The ants were captured in montane rain forest as they foraged.

Type material. Holotype worker. **ECUADOR**, Pichincha, Maquipucuna, 5 km ESE Namegal, 17.viii.1991, 1700 m, 0°07′N 78° 38′W, P.S. Ward 11509. Deposited in MCZC. – Paratype: One worker on the same pin as the holotype. Deposited in MCZC.

6.5.15.3. *Leptogenys cracens* n.sp. (Fig. 82)

Diagnosis. Head elongate in full-face view; compound eye small, not more than 3 ommatidia in length, distance from ocular midpoint to mandibular insertion greater than that from eye to mid-distance of lateral cephalic margin, mandible subtriangular, basal margin with convex lobe basad, row of 4 setae present next to base of median lobe; petiole pedunculate in lateral view, peduncle half as long as node length; node subquadrate; constriction between abdominal segments III and IV strongly marked, with longitudinal striae.

Worker. Metrics, holotype: HL 1.12; HW 0.68; ML 0.52; EL 0.08; SL 1.30; PW 0.60; WL 1.70; PH 0.66; PL 0.80; DPW 0.40 mm. CI 0.61; MI 0.76; OI 0.12; SI 1.91; LPI 0.83; DPI 0.50.

Head elongate in full-face view, wider anterad than posterad, lateral cephalic margin mostly straight to weakly convex, posterior margin weakly convex, vertexal carina well developed, narrow, visible along all of posterior cephalic margin; median clypeal lobe slender, basal lateral margin concave, apex pointed, without setae, with 2 preapical long hairs; lateral clypeal lobe narrow, projecting little anterad. Compound eye small, not more than 3 ommatidia in length, placed laterally on head, distance from ocular midpoint to mandibular insertion greater than that from eye to mid-distance of lateral cephalic margin, eye in dorsal cephalic view weakly convex. Cephalic dorsum mostly smooth and shining except for scattered piligerous punctulae. Scape surpasses posterior cephalic border by over one-third its length, lengths of antennal segments II & IV more than twice respective apical widths, each segment wider apicad than basad, lengths of segments II & IV each more than half that of segment III, length of segment III 3 ×

its apical width. Scape mostly smooth and shining with scattered punctae, no appressed pubescence, with subdecumbent hairs. Mandible subtriangular, basal margin convex with row of 4 setae next to base of median lobe, each seta originating on mandibular dorsum, close to basal margin; masticatory margin edentate except for apical tooth, mandibular dorsum mostly smooth and shining except for scattered piligerous punctae, lateral margin convex.

Mesosoma with broad and well-impressed metanotal groove in lateral view, mesosoma appearing constricted at groove; promesonotal margin continously convex, dorsal propodeal margin weakly convex, more than 2 × length of declivitous margin, declivitous margin broadly convex, propodeal tooth triangular, pointed. Mesosomal side mostly smooth and shining except for irregular imbrications on posterior metapleuron, anteroventral margin of mesopleuron and ventral area with fine striate, mesometapleural suture well impressed, scrobiculate; metapleural-propodeal suture absent, mesopleuron subrectangular, propodeal spiracle broadly elliptical, facing posterolaterad. Mesonotum subuadrate, metanotal suture scrobiculate.

Petiole with anterior peduncle half as long as node length; node in lateral view subquadrate, anterior margin straight, slightly under half length of posterior margin; node highest just posterad of mid-length; dorsal margin broadly convex anterad, more convex posterad; posterior margin straight, inclined. Subpetiolar process subrectangular, posterior margin longer than anterior margin. Node in dorsal view longer than wide, anterior margin convex, width of anterior margin more than half the width of posterior margin, lateral margin broadly convex. Cross-section of node V-shaped, with convex lateral margins.

Anterior margin of abdominal segment III convex in lateral view, with anterior margin overhanging base, dorsal margin convex, constriction between abdominal segments III and IV strongly marked, longitudinally striate on both tergite and sternite, gaster widening posterad of constriction before narrowing again; stridulitrum present on pretergite of abdominal segment IV. Gaster mostly smooth and shining with scattered piligerous punctae and punctulae. Procoxa in lateral view with sparse transverse strigae; tibiae without apical setae; legs relatively long. Head and body without pubescence, only scattered pilosity. Body mostly brown; mandibles, antennae, legs and gastral apex ferruginous brown.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the slender and strikingly gorgeous aspect of the ant. It is Latin for graceful.

Comments. A very singular species on account of the pedunculate petiole (the only New World species with such a petiole), mandibular structure, slender clypeal lobe and the strong constrictions at the metanotal groove as well as between abdominal segments III and IV. Valle Nacional is located at 17°46′N 96°18′W, and a cursory exploration on a map of points roughly 6 km north of Valle Nacional show altitudes of 300–900 m.

Type material. Holotype worker. **Mexico**, Oaxaca, Grutas de Monteflor, 6 km N Valle Nacional, 28.xii.1973, J. Reddell, D. & M. McKenzie, S. Murphy leg. One worker deposited in the LACM.

6.5.15.4. *Leptogenys foveonates* n.sp. (Fig. 83)

Diagnosis. Head elongate in full-face view, wider anterad than posterad; compound eye small, placed laterally on head, not more than 6 ommatidia in length; oculomalar distance greater than eye length; mesonotum almost 3 × wider than long in dorsal view; abdominal segments III and IV punctate.

Worker. Metrics, holotype (Colombian specimen): HL 0.96 (0.98); HW 0.64 (0.68); ML 0.46 (0.50); EL 0.08 (0.06); SL 0.84 (0.80); PW 0.56 (0.58); WL 1.40 (1.40); PH 0.54 (0.60); PL 0.54 (0.58); DPW 0.38 (0.42) mm. CI 0.67 (0.69); MI 0.72 (0.74); OI 0.13 (0.09); SI 1.31 (1.18); LPI 1.00 (1.03); DPI 0.70 (0.72).

Head elongate in full-face view, wider anterad than posterad, lateral and posterior cephalic margins mostly straight, vertexal carina well developed, visible along all of posterior cephalic margin; median clypeal lobe broadly triangular with relatively wide, translucent lateral lamella, apex mostly blunt except for small denticle. Lateral clypeal lobe narrow, little projecting, width mostly uniform, compound eye small, placed laterally on head, not more than 6 ommatidia in length, individual ommatidia not so distinct, oculomalar distance greater than eye length, eye in dorsal cephalic view with anterior ocular margin closer to median cephalic axis than posterior margin, cephalic width anterad of eyes appears narrower than posterad of eyes. Cephalic dorsum mostly smooth and shining except for scattered piligerous punctulae. Scape surpasses posterior cephalic border by one apical width, basal funicular segments longer than wide, each segment wider apicad than basad, segments II and III of same length, both twice as long as apical width, segment IV not as elongate. Scape mostly smooth and shining with scattered punctae. Mandible elongate, parallel sided, basal margin broadly convex with some stiff hairs present opposite median lobe; masticatory margin edentate except for apical tooth, mandibular dorsum mostly smooth and shining except for scattered piligerous punctae.

Mesosoma with broad and well-impressed metanotal groove in lateral view, pronotal margin continously convex, dorsal propodeal margin broadly convex, more than twice the length of declivitous margin, declivitous margin straight, propodeal tooth triangular, bluntly pointed. Mesosomal side mostly smooth and shining except for weak rugulae on posterior metapleuron, mesometapleural suture well impressed, scrobiculate; metapleural-propodeal suture absent, mesopleuron subrectangular, propodeal spiracle broadly elliptical, facing posterola-

terad. Ventral metapleural margin with lobe-like process that projects anterad, not touching mesopleuron, defining cavity at ventral end of mesometapleural suture. Mesonotum almost 3 × wider than long in dorsal view, metanotal groove scrobiculate.

Petiole in lateral view subquadrate; anterior margin vertical, half the length of posterior margin; node highest posterad; dorsal margin convex; posterior margin straight, inclined. Subpetiolar process shaped as rounded lobe with small anterobasal notch. Node in dorsal view longer than wide, anterior margin convex, width of anterior margin more than half the width of posterior margin. Cross-section of node V-shaped, with straight lateral margins. Anterior margin of abdominal segment III broadly convex in lateral view, dorsal margin convex, constriction between abdominal segments III and IV well marked. Gaster mostly smooth and shining, dorsum of tergite III punctae with each depression deeply impressed anterad and shallow posterad, punctae closer spaced anterad than posterad. Fourth abdominal tergite with more and wider punctae than third tergite. Same pattern repeated on sides of abdominal tergites III and IV, but with less punctae. Abdominal sternite IV more punctate than III. Sting impressive. Pro- and metatibia without apical setae, apex of mesotibia with single seta. Legs relatively long. Head and body without pubescence, only scattered pilosity. Head, mesosoma, petiole and most of gaster brown, mandibles, antennae, legs and gastral apex ferruginous.

Queen, male. Unknown.

Derivatio nominis. The species name is derived from the Latin for pit, *fovea*, and *nates*, for hips, and alludes to the multiple rounded depressions on the gaster of this species.

Comments. Even though it is described from a single specimen the ant is quite distinct on several accounts, not the least of which is the punctuate gaster, a rare sculpture for the New World members of the genus. The type locality is cloud forest with trails that range in altitude from 1100 to 1400 m. Girardot is the Municipality which once contained the Rancho Grande field station, but now the station is part of the Mario Briceño Irragory Municipality. A second specimen, from the IAvH collection, of a closely related species was studied but not described as it is lacks locality data save an altitude (1000 m) and some labels with codes. Fernando Fernández (Instituto de Ciencias Naturales, Universidad Nacional, Bogotá) kindly went through his field books and found data matching the codes on the specimen which indicate it probably is from Magdalena, Sierra Nevada de Santa Marta, 1992, perhaps close to San Pedro de la Sierra.

The size of the Colombian specimen is comparable but it is dark brown. The Colombian specimen has denser punctation on the abdomen, and has punctae where the Rancho Grande specimen does not: the cephalic ventral face as well as the mesosomal and petiolar dorsum. The punctae on the petiolar node and gaster are large, dense and elongate, giving the impression of sulci. The node is shaped differently in lateral view, with a concave posterior margin, and more elongate aspect, the subpetiolar process is also different. The metanotal groove is not as deeply impressed thus the whole mesosomal surface appears uniformly convex. More noticeably, the node is laterally rounded and not V-shaped as in the Venezuelan specimen, and the compound eye appears as a single large ommatidium. In *L. foveonates* the ommatidia are relatively indistinct and appear to be covered over by a single large lens. The Colombian specimen most probably represents another species but given the similarities and the scant material it is best to wait until more specimens can be gathered. These are probably rare ants since several intensive leaf litter sifting campaigns in the forests close to the Rancho Grande station and on the northern slopes of the national park have failed to recover any additional specimens of this species.

Type material. Holotype worker. **VENEZUELA**, Aragua, Girardot, [Parque Nacional Henri Pittier], Rancho Grande, 14.viii.1979, R.W. Brooks, A.A. Grigarick, J. McLauglin #13, R.O. Schuster leg. One worker deposited in the UCDC.

6.5.15.5. *Leptogenys linearis* (F. Smith) (Fig. 84)

Ponera linearis F. Smith, 1858: 96. Syntype workers: Brazil, Amazonas, Santarem (H.R. Bates) (BMNH) [examined].
Lobopelta linearis (F. Smith). Combination by ROGER 1863b: 24.
Leptogenys (*Lobopelta*) *linearis* (F. Smith). Combination by EMERY 1911: 106.
Leptogenys (*Lobopelta*) *dasygyna* Wheeler, 1923: 8, fig. 3. Syntype workers and queens: Guiana (= British Guiana), Kartabo, 20.vii.1920, nest in rotten log, Cat. No. 3–5, 20504 (W.M. Wheeler) (MCZC) [examined] **n.syn.**

Diagnosis. Head mostly smooth and shining dorsad with abundant piligerous punctulae and appressed pubescence; eye dorsolaterally situated on head, occupying close to one-third lateral cephalic margin, broadly convex; mandibular dorsum with fine longitudinal strigulae and blunt tooth between internal and masticatory margins; mesosternum with two prominent lobes anterad of mesocoxae.

Worker. Metrics (n = 5): HL 0.51–0.53, HW 0.35–0.36, ML 0.23–0.25, ED 0.50–0.54, SL 0.10–0.11, WL 0.76–0.81, PH 0.25–0.28, PNL 0.24–0.25, PNW 0.19–0.21 mm. CI 0.67–0.69, MI 0.63–0.69, SI 1.46–1.50, OI 0.29–0.31, NI 0.79–0.88.

Head weakly rectangular in full-face view, lateral margin weakly convex, posterior margin straight to weakly concave; median clypeal lobe broadly triangular, apex rounded, with 2–3 apical setae, clypeus mostly striate, except for smoother median area; lateral lobe weakly developed. Head mostly smooth and shining dorsad with abundant piligerous punctulae and appressed pubescence; frontal carinae extend posterad close to mid-height of eye. Eye dorsolaterally situated on head, occupying close to one-third lateral cephalic margin, broadly convex, closer to lateral cephalic midlength than to mandibular insertion. Ventral face of head

mostly smooth and shining with sparse punctae, pubescence lacking. Scape surpasses posterior cephalic border by over one-fourth its length, scape densely punctulate with abundant decumbent pilosity and scattered subdecumbent hairs. Funicular segments elongate, wider apicad than basad; apical width of third antennal segment under half its length; antennal segments II–IV similar in length, III longer than II and IV. Mandible elongate in cephalic full-face view, basal and external margins subparallel; basal margin mostly broadly convex, masticatory margin weakly concave, blunt basal tooth present. Dorsum mostly striate with scattered punctae, smooth apicad; PF: 4,4.

Mesosoma with dorsal margin forming single broad convexity in lateral view, declivitous propodeal margin broadly convex, curving onto weakly convex declivitous margin with jagged aspect towards tooth. Metanotal groove weakly impressed. Pronotum mostly smooth and shining with abundant piligerous punctulae, punctulae more dispersed on discal area; propleuron mostly smooth and shining; mesopleuron elongate, rectangular with rugulose anepisternum and katepisternum with transverse striae most developed ventrad; metapleuron with transverse striae anterad and posterad, median area smoothened; mesometapleural suture well impressed, scrobiculate; metapleural-propodeal suture developed as ridge that extends anterad variable distance from propodeal spiracle; propodeal declivity with transverse striae anterad of teeth, smooth posterad of teeth; propodeum close to spiracle striate; spiracle elongate, facing posterolaterlly with broad sulcus that extends briefly posterad to bulla. Mesonotum wider than long in dorsal view, mesosomal dorsum mostly smooth and shining with abundant punctulae which become sparse close to declivity. Mesosternum with two prominent lobes anterad of mesocoxae.

Petiolar node subquadrate in lateral view, anterior margin vertical, shorter than arched posterior margin, dorsal margin convex, highest posterad. Node subtriangular in dorsal view, width of anterior margin less than half width of posterior margin, lateral margin weakly concave. Node mostly smooth and shining with abundant punctae on dorsum, petiolar sides can be weakly convex in some specimens, or straight ventrad but weakly convex dorsad on the sides; anteroventral process shaped as rectangle with posterior end wider than anterior end in lateral view. Anterior postpetiolar margin weakly convex in lateral view, mostly vertical or anterodorsal margin weakly overhanging basal margin; dorsal postpetiolar margin weakly convex, constriction between abdominal segments III and IV weak; gaster smooth and shining with sparse punctulae. Abundant appressed pubescence present on head and most of mesosoma except for posterior propodeum. Gaster with sparse fine decumbent pubscence and scattered suberect hairs, mostly posterad. Body mostly black with blue opalescence; mandible, clypeus, antennae, legs, and gastral apex brown to dark brown. Metacoxal dorsum with weak posterobasal swelling; tibiae without apical setae.

Queen, male. Unknown.

Comments. Towards the end of this revision I was alerted by Barry Bolton that the worker syntypes of *L. linearis* were in the BMNH. Fortunately it was possible to examine a worker and determine without a doubt that it is the senior synonym of *L. dasygyna*. The following information was supplied by B. Bolton: "The BMNH has three syntypes (2 workers and 1 male). These are each mounted to card by a slender pin through the mesosoma, and the card itself has a stout pin run through one end. Data label has "Santarem, 54/63", which in the BMNH Accessions Register reads "1854, no. 63 (11 Oct.). Brazil, Santarem on the Amazon. Purchased from Stevens, collected by Mr Bates, Alta de Chai, nr. Santarem." A blue card rectangle on each pin states "165". A further syntype male is in UM, Oxford. This has been remounted in the past by removal of the narrow pin through the mesosoma and then gummed flat onto a square of card, with back of head damaged. On the underside of the card is inscribed, "Braz. Santarem", and on the upper side the number "165". Also on the pin are three labels, the uppermost of which is a rectangle of blue card (also present on the three BMNH syntypes). The second states "*Ponera linearis* Smith", and the third "Smith Coll. Form. 96." These 4 specimens appear to constitute the entire syntype series.

This species inhabits mostly mesic to occasional dry forests of the Amazon watershed, with nests found in rotting logs on the ground (Wheeler 1923). The common trend in this genus towards smooth and shining sculpture and loss of pubescence is not reflected in this species. The phylogenetic analysis suggests this species is the sister taxon to the rest of the New World *Leptogenys*.

Material studied. **Colombia**. **Amazonas**: P.N.N. Amacayacú, Matamata, 03°23′S 70°06′W, 150 m, 25.–27.xi.2000, A. Parente, 1w IAvH. **Caquetá**: Puerto Solano, P.N.N. Serranía de Chiribiquete, Río Sararamano, 0°10′47″N 72°37′24″W, 250 m, 7.iv.2000, E. González, 5w IAvH. – **Guiana**. Kartabo, vii.–viii.1920, 3w MCZC (*L. dasygyna* syntypes). – **Brazil**. **Mato Grosso**: Cuiaba, 5 km W Av. Perimetral, old highway to Cui, J. Trager, 26.ii.1985, 4w MZSP. **Pará**: Melgaço, Caxiuanã, 1°46′53″S 51°35′31″W, 30.vii.–1.viii.2003, 1w MPEG. **Tocantins**: Palmeirante, 10.–15.xii.2001, 7°52′25.3″S 47°57′07,4″W, Albuquerque & Silva, 6w MZSP. – **Peru**. **Loreto**: Ramón Castillo, 5 km NW Leticia, 23.ii.1972, S. & J. Peck, 1w MCZC. – **Surinam**. Vank, viii.1959, 32-xviia-3, I.v.d. Drift, 1w MZSP.

6.5.15.6. *Leptogenys panops* n.sp. (Fig. 85)

Diagnosis. Mandible slender and elongate, slightly arched, almost as long head; eye dorsolaterally placed on head, large and prominent; median clypeal lobe shaped as blunt triangle with 3 straight median setae on apex, and two curved lateral setae; mesosoma, including propodeal dorsum mostly smooth and shining, petiolar node triangular in lateral view, mostly smooth and shining.

Worker. Metrics, holotype: HL 2.05; HW 1.6; ML 1.45; EL 0.55; SL 3.45; PW 1.30; WL 4.20; PH 1.20; PL 1.15; DPW 0.70 mm. CI 0.78; MI 0.91; OI 0.34; SI 2.16; LPI 1.04; DPI 0.61.

Head in full-face view elongate, wider anterad than posterad, posterior margin broadly convex, almost straight; formed by vertexal carina; lateral margins broadly convex. Compound eye dorsolaterally placed, center of eye situated anterad of lateral cephalic margin mid-length; large and convex, diameter less than one-fourth length of lateral cephalic margin, anterolateral clypeal margin evenly converging medially, bending at rounded angle next to clypeal lobe. Median clypeal lobe shaped as blunt triangle with 3 straight median setae on apex, and two curved lateral setae. Cephalic dorsum mostly smooth and shining with sparse punctulae, ventral side with sparse punctae; clypeus with oblique to transverse striae. Scape surpasses posterior cephalic border by half its length, mostly smooth with decumbent pilosity and decumbent hairs; third antennal segment as long as fourth and fifth segments combined, second segment less than half length of third segment. Mandible elongate and slender, slightly arched, mostly parallel-sided, slightly widening apicad, masticatory margin edentate except for single pre-apical denticle; mandibular dorsum smooth with sparse punctae; lateral sulcus present. PF: 4,4.

Mesosoma with promesonotal margin forming single convexity in lateral view; metanotal groove broad and shallow; propodeal dorsal margin very broadly convex, declivity convex with transverse carinae declivity forming jagged margin in lateral view. Lateral mesosoma mostly smooth and shining; mesometapleural suture well impressed, ventrally scrobiculate; mesopleuron meets mesosternum through rounded margin, anteroventral katepisternum with brief transverse crest; mesonotum extends partly laterad; anepisternum extends partly dorsally. Metapleural propodeal suture mostly effaced, traces discernible in vicinity of spiracle; propodeal spiracle elongate, slit-like, opening faces posterolaterally. Propodeal declivity with anterior transverse crest at spiracular height; smaller crests present anterad of main crest; posterad with smooth concavity surrounding petiolar insertion. Mesonotum longer than wide in dorsal view.

Petiole triangular in lateral view, anterior face longer than posterior face, apex blunt; anterior and posterior margins both broadly convex; node smooth and shining with piligerous punctae; posterior face slightly convex, without punctae; pygidium with longitudinal crest. Node elongate in dorsal view with anterior margin not more than half the width of posterior margin; cross-section of node at mid-length convex. Procoxa laterally smooth and shining; protibia with short pre-apical seta on external side between apex and insertion of strigil; apex of fourth protarsal segment with two pairs of setae; mesotibial apex with two setae on opposing sides; metatibial apex with single seta. Head, mesosoma, and node black with blue iridescence; gaster dark brown; mandibles, antennae, and legs dark brown; body lacks pubescence, sparse standing hairs present.

Queen, male. Unknown.

Derivatio nominis. The species name is Greek for "large-eyed" and alludes to its prominent and large compound eyes.

Comments. This is a very spectacular species within the genus on account of its relatively large size, blue iridescence, and the strikingly large eyes that tend to face forward on the head. This large species could be taken for *L. famelica* at first sight but the triangular mandibles besides the sculpted head and propodeum of *L. famelica* quickly separate the two. It shares a number of characters (presence of clypeal setae, mandibular shape, well-developed hypostomal tooth, head shape, large anteroventral eyes, weak gastral constriction, amongst others) with *unistimulosa* group species that suggest a close relation, but *L. panops* is different in the presence of a foretibial seta (unique amongst New World species for this character), no point on the node apex, and the general smooth and shining sculpture. The phylogenetic analysis suggests this species may be the sister taxon to the *unistimulosa* and *arcuata* groups. The type locality is located at 5°21′N 41°00′W.

Type material. Holotype worker. **FRENCH GUIANA**, Petit Saut, v.1997, Cyril. Deposited in CEPEC, Ref. no. 1212.

6.5.15.7. *Leptogenys tama* n.sp. (Fig. 86)

Diagnosis. Body mostly brown with abdominal segments III and IV back; eye convex, occupies less than one-fourth of lateral cephalic margin, situated laterally, closer to mandibular insertion than mid-length of lateral cephalic margin; petiole relatively dome-shaped in lateral view, highest point posterad; abdominal segments III and IV with abundant piligerous punctae that extend posterad as brief sulci, sulci densest dorsoanterad.

Worker. Metrics, holotype: HL 1.52; HW 1.04; ML 0.81; EL 0.20; SL 1.85; PW 0.88; WL 2.53; PH 1.01; PL 0.88; DPW 0.54 mm. CI 0.69; MI 0.77; OI 0.19; SI 1.77; LPI 1.15; DPI 0.62.

Head elongate in full-face view, wider anterad than posterad; lateral cephalic margin weakly convex; posterior cephalic margin weakly convex; median clypeal process triangular with laminate margins, apex rounded with 3 short setae; lateral clypeal lobe partially translucent, with convex curves. Eye convex, occupies less than one-fourth of lateral cephalic margin, situated laterally, closer to mandibular insertion than mid-length of lateral cephalic margin. Cephalic dorsum mostly smooth and shining with abundant punctulae, and scattered piligerous punctae; clypeus mostly smooth with low oblique to longitudinal striae; head ventral surface smooth and shining with scattered punctae; hypostomal tooth well developed, not visible in full-face view. Scape

smooth with piligerous punctulae, with abundant decumbent to suberect hairs, scape extends beyond posterior cephalic margin by almost half its length; third antennal segment 3 × longer than apical width, length of second antennal segment over half length of third segment; fourth antennal segment over half length of third segment, funicular segments subcylindrical, slightly wider apicad than basad. Mandible elongate, subparallel margins, weakly widening apicad, basal margin broadly convex curving continuously to masticatory margin, masticatory margin edentate; dorsal mandibular surface mostly smooth with weak parallel striae abundant on basal half.

Mesosoma with deep metanotal groove separating convex promesonotal margin in lateral view from broadly convex dorsal propodeal margin; declivitous margin forms continuous curve with dorsal margin, propodeal tooth triangular, bluntly pointed, overhanging rest of declivitous margin. Mesosomal sculpture mostly smooth and shining with sparse piligerous punctulae; mesometapleural suture scrobiculate; metapleural-propodeal suture lacking; propodeal spiracle not elevated, oval, oriented posterolaterally; mesopleuron mostly smooth with transverse striae anterodorsad and posteroventrad, anteroventral carina forms angular lobe anterad, incomplete ventrad; mesosternum mostly smooth and shining; metapleuron with sparse transverse striae posteroventrad; declivitous propodeal face smooth and shining with broad transverse sulcus ventrad of teeth; mesonotum broader than long in dorsal view, anterior margin convex.

Petiole relatively dome-shaped in lateral view, highest point posterad; anterior margin weakly convex and over half length of posterior margin; posterior margin mostly straight to weakly convex. Transverse section of node at mid-length has convex lateral outline. Subpetiolar process curved anterad, angular posterad, posterad in lateral view. Node longer than wide in dorsal view, anterior margin convex; lateral margin broadly convex, posterior margin broadly convex, width of anterior margin more than half that of posterior margin. Node smooth and shining except for oblique striae posteroventrad; posterior face not sharply separated from lateral face. Anterior margin of third abdominal segment weakly convex in lateral view, dorsal margin convex; constriction between segments III and IV very well developed, scrobiculate all around; abdominal segments III and IV with abundant piligerous punctae that extend posterad as brief sulci, sulci densest dorsoanterad, not extending beyond anterior half of lateral abdominal segment IV; pygidium with dorsomedian blunt crest posterad. Procoxae smooth and shining in lateral view; apices of pro- and metatibiae lacking setae, mesotibial apex with single anterior seta. Cephalic dorsum with subdecumbent pilosity, and scattered suberect hairs; mesosoma with no pilosity, only scattered suberect fine hairs; abundant standing hairs on gaster. Most of body brown, legs ferruginous brown, abdominal segments III and IV black. Apex of pro- and metatibia without setae; mesotibial apex with single external seta.

Queen, male. Unknown.

Derivatio nominis. The species name alludes to the name of the National Park in which the single specimen of his unique species was taken.

Comments. The holotype was collected in the mountains separating Colombia and Venezuela, known as Serranía de Motilones in Colombia, and Serranía de Perijá in Venezuela. Tamá National Park crosses both sides of the border and is a wonderful area with a rich biological diversity (Manara 1988) barely sampled because of difficulties such as smugglers, guerrillas, drug runners, and bandits. The vegetation on the Venezuelan side of the mountain range is better preserved than the Colombian part.

Type material. Holotype worker. **Colombia**, Norte de Santander, P.N.N. Tamá, Alto de Herrera, Vda. El Diamante, 07°07′N 72°13′W, 1250 m, ix.1999, E. González. Deposited in IAvH.

Fig. 4. *Leptogenys antillana* [*antillana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178832.

Fig. 5. *Leptogenys reggae* [*antillana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178797.

Fig. 6. *Leptogenys arcuata* [*arcuata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178794.

Fig. 7. *Leptogenys donisthorpei* [*arcuata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178791.

Fig. 8. *Leptogenys montuosa* [*arcuata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178790.

Fig. 9. *Leptogenys santacruzi* [*arcuata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178793.

Fig. 10. *Leptogenys crudelis* [*crudelis* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217019.

Fig. 11. *Leptogenys iheringi* [*crudelis* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217014.

Fig. 12. *Leptogenys vogeli* [*crudelis* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217009.

Fig. 13. *Leptogenys bifida* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178778.

Fig. 14. *Leptogenys chamela* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178783.

Fig. 15. *Leptogenys elongata* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0104737.

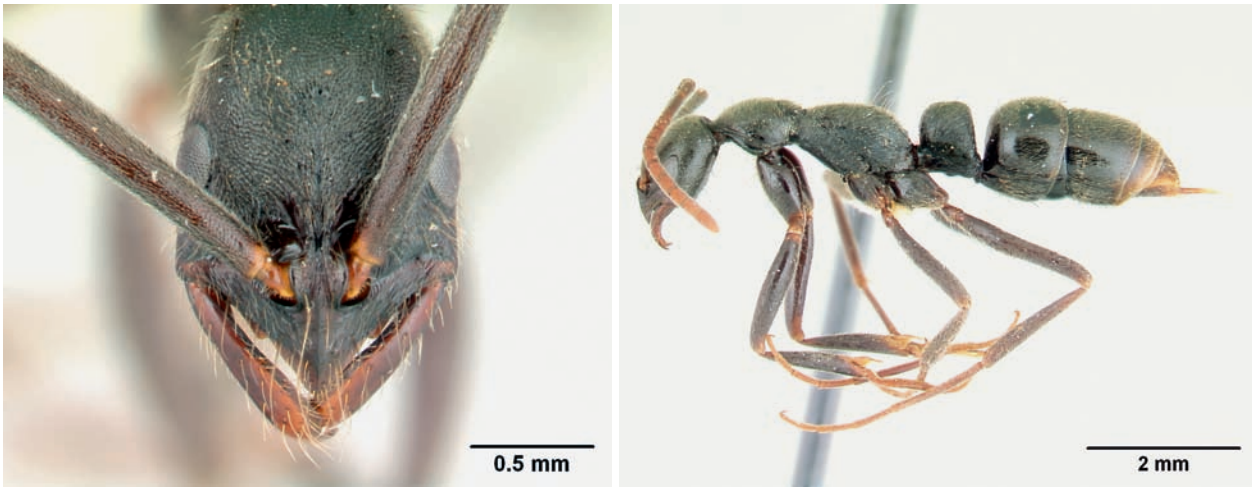

Fig. 16. *Leptogenys foraminosa* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. LACM specimen code LACM ENT 142593.

Fig. 17. *Leptogenys honduriana* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217004.

Fig. 18. *Leptogenys manni* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0104002.

Fig. 19. *Leptogenys oaxaca* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178779.

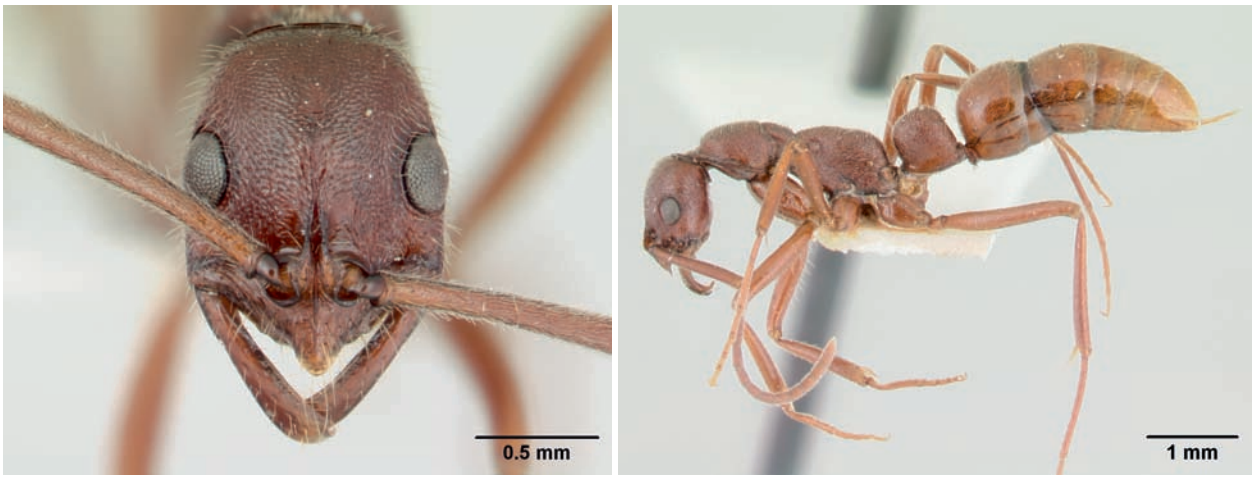

Fig. 20. *Leptogenys peninsularis* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178787.

Fig. 21. *Leptogenys sianka* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178788.

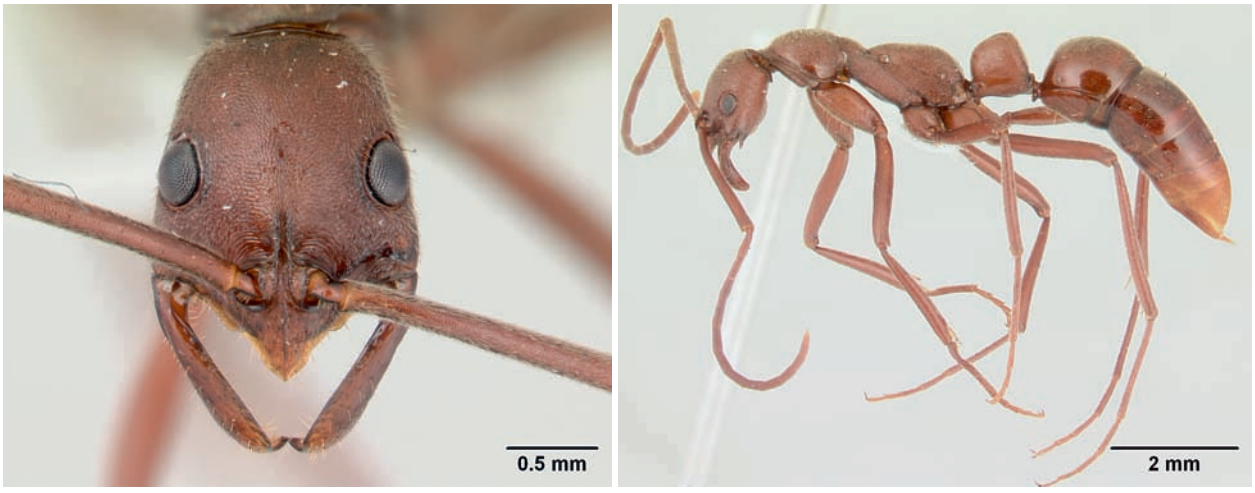

Fig. 22. *Leptogenys sonora* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178784.

Fig. 23. *Leptogenys volcanica* [*elongata* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178789.

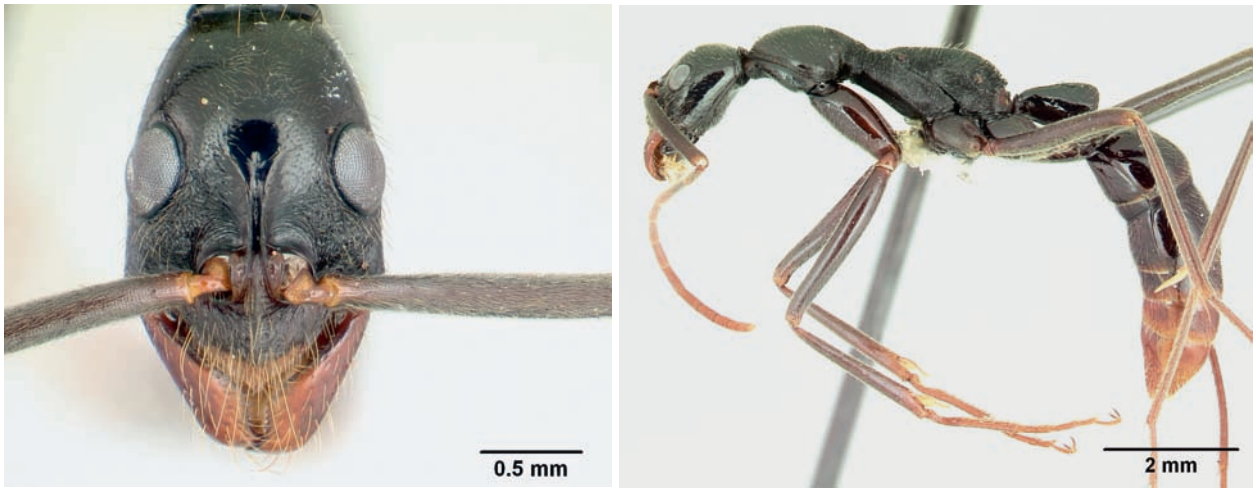

Fig. 24. *Leptogenys famelica* [*famelica* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178806.

Fig. 25. *Leptogenys phylloba* [*famelica* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT01217003.

Fig. 26. *Leptogenys pinna* [*famelica* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178799.

Fig. 27. *Leptogenys pittieri* [*famelica* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178800.

Fig. 28. *Leptogenys serrata* [*famelica* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178805.

Fig. 29. *Leptogenys carbonaria* [*ingens* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217022.

Fig. 30. *Leptogenys ingens* [*ingens* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178782.

Fig. 31. *Leptogenys socorda* [*ingens* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178780.

Fig. 32. *Leptogenys tiobil* [*ingens* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178781.

Fig. 33. *Leptogenys langi* [*langi* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178776.

Fig. 34. *Leptogenys mavaca* [*langi* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178826.

Fig. 35. *Leptogenys minima* [*langi* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217005.

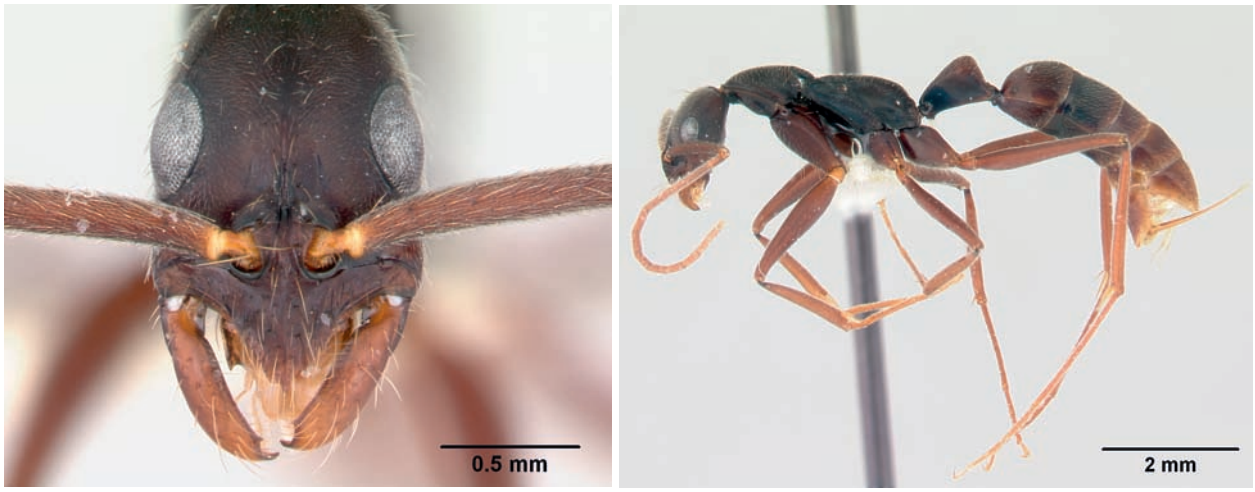

Fig. 36. *Leptogenys cuneata* [*luederwaldti* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178802.

Fig. 37. *Leptogenys gaigei* [*luederwaldti* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178804.

Fig. 38. *Leptogenys imperatrix* [*luederwaldti* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. INBIO specimen code INBIOCRI001283938.

Fig. 39. *Leptogenys linda* [*luederwaldti* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT01217013.

Fig. 40. *Leptogenys luederwaldti* [*luederwaldti* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178803.

Fig. 41. *Leptogenys pucuna* [*luederwaldti* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0428596.

Fig. 42. *Leptogenys maxillosa* [*maxillosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178809.

Fig. 43. *Leptogenys corniculans* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217021.

Fig. 44. *Leptogenys glabra* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0177017.

Fig. 45. *Leptogenys gorgona* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178807.

Fig. 46. *Leptogenys guianensis* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178828.

Fig. 47. *Leptogenys josephi* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178821.

Fig. 48. *Leptogenys melena* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178831.

Fig. 49. *Leptogenys pusilla* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178820.

Fig. 50. *Leptogenys quadrata* [pusilla group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178795.

Fig. 51. *Leptogenys rasila* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217007.

Fig. 52. *Leptogenys ritae* [*pusilla* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217016.

Fig. 53. *Leptogenys ritae* [*pusilla* group]. **A**. Full-face view of head of ergatoid queen with normal mandibles. **B**. Lateral view of body of ergatoid queen with normal mandibles. Antweb specimen code CASENT0178801.

Fig. 54. *Leptogenys ritae* [*pusilla* group]. **A**. Full-face view of head of ergatoid queen with hypertrophied mandibles. **B**. Lateral view of body of ergatoid queen with hypertrophied mandibles. Antweb specimen code CASENT0217006.

Fig. 55. *Leptogenys amu* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217024.

Fig. 56. *Leptogenys consanguinea* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178835.

Fig. 57. *Leptogenys deborae* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178798.

Fig. 58. *Leptogenys erugata* [*quiriguana* group]. **A**. Full-face view of queen head. **B**. Lateral view of queen body. Antweb specimen code CASENT0178715.

Fig. 59. *Leptogenys gagates* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217000.

Fig. 60. *Leptogenys kiche* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217012.

Fig. 61. *Leptogenys nigricans* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178796.

Fig. 62. *Leptogenys orchidioides* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT018830.

Fig. 63. *Leptogenys quiriguana* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178823.

Fig. 64. *Leptogenys yocota* [*quiriguana* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178822.

Fig. 65. *Leptogenys cordoba* [*rufa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178829.

Fig. 66. *Leptogenys rufa* [*rufa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178825.

Fig. 67. *Leptogenys toxeres* [*rufa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178827.

Fig. 68. *Leptogenys amazonica* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178836.

Fig. 69. *Leptogenys bohlsi* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0173510.

Fig. 70. *Leptogenys gatu* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178814.

Fig. 71. *Leptogenys paraense* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178816.

Fig. 72. *Leptogenys peruana* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178817.

Fig. 73. *Leptogenys pubiceps* complex [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT01217028.

Fig. 74. *Leptogenys punctaticeps* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178815.

Fig. 75. *Leptogenys unistimulosa* [*unistimulosa* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178818.

Fig. 76. *Leptogenys ixta* [*wheeleri* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178813.

Fig. 77. *Leptogenys maya* [*wheeleri* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178810.

Fig. 78. *Leptogenys quirozi* [*wheeleri* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178812.

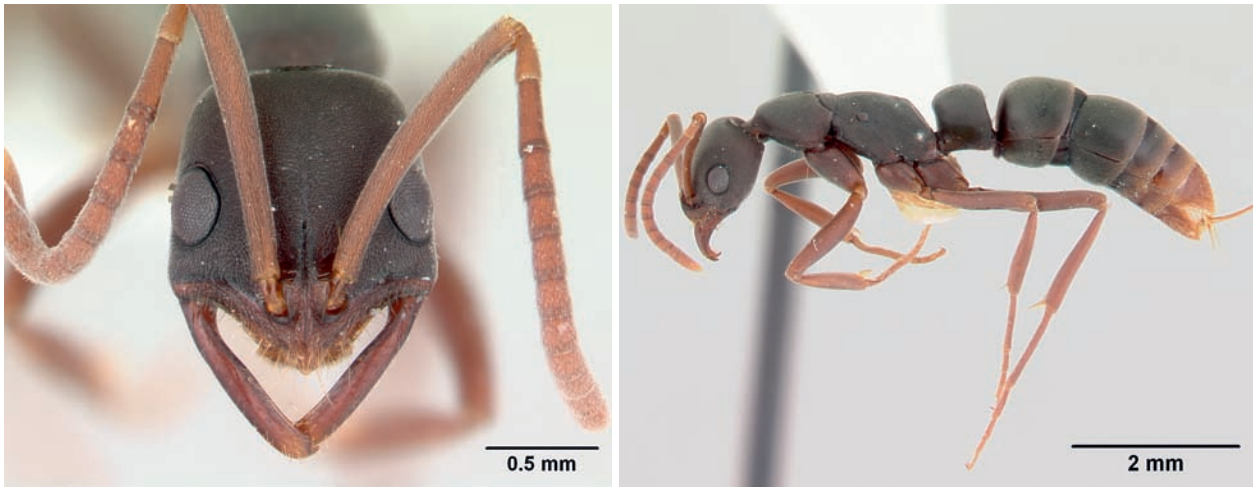

Fig. 79. *Leptogenys wheeleri* [*wheeleri* group]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178811.

Fig. 80. *Leptogenys australis* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178834.

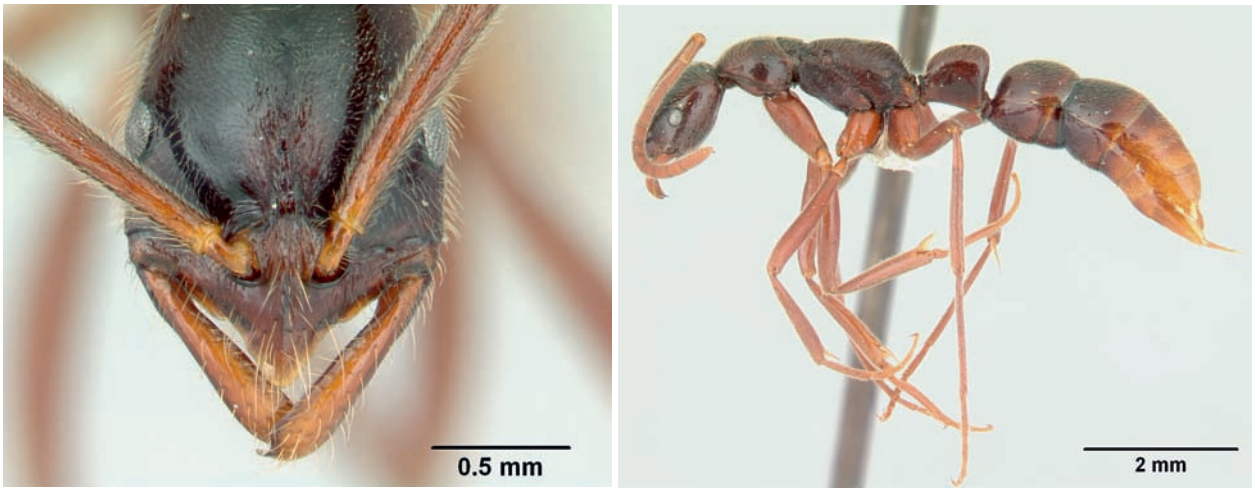

Fig. 81. *Leptogenys ciliata* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178808.

Fig. 82. *Leptogenys cracens* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT01217020.

Fig. 83. *Leptogenys foveonates* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178833.

Fig. 84. *Leptogenys linearis* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0178528.

Fig. 85. *Leptogenys panops* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217011.

Fig. 86. *Leptogenys tama* [*incertae sedis*]. **A**. Full-face view of worker head. **B**. Lateral view of worker body. Antweb specimen code CASENT0217010.

7. Acknowledgements

Dedication. Many years ago, when I was still in secondary school, I wrote to Dr. William L. Brown, Jr. asking for guidance. He bothered to answer. During the ensuing exchange of correspondence I once slipped into an envelope a single, unprotected specimen of an ant that stoked my imagination. Prof. Brown identified the bits and pieces he received as a *Leptogenys* and recommended I should collect around the Rancho Grande field station in the mountains close to Maracay, Venezuela. There I would find an undescribed species of *Leptogenys* nesting in earthen embankments along the trails. The shattered ant was a specimen of *L. ingens* and the undescribed species is now called *L. tiobil*. I dedicate this revision to Uncle Bill Brown. Thank you for your help, and for just being yourself. Never forget.

Persons. Donat Agosti, Gary Alpert, Maria de Andrade, Paula B. de Araujo, Quintin Arias, Tania Arias, Jahyny Benoit, Carlos R. Blanco, Vicente Blanco, Carlos R. Brandão, Stefan Cover, Natalie Dale-Skey Papilloud, Alain Dejean, Jacques Delabie, Hermes Escalona, Michele Esposito, Rodrigo Feitosa, Fernando Fernández, Brian Fisher, Juergen Gadau, Marco Gaiani, Roberto Guerrero, Ana Harada, Shannon Hartman, Henri Herrera, Bert Hölldobler, Rebecca Hurtado, Robert Johnson, Daniel Kronauer, Klaus Jaffé, John Longino, William MacKay, Antonio Mayhe, April Nobile, Antonio Pérez, Celeigher Piñango, Erin Prado, Aline Quadros, Miguel Riera, Edith Rodríguez, Ted Schulz, Roy Snelling (R.I.P.), Jeffrey Sosa, Lourdes Valladares (R.I.P.), Miguel Vázquez Bolaños, Juan Viera, Philip Ward, James Wetterer, Dominique Zimmermann. A special acknowledgement to B. Bolton, K.-D. Klass, and an anonymous reviewer for their painstaking revision of the manuscript, their corrections, comments, and suggestions exponentially improved it.

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