

**THE MEXICAN AND CENTRAL AMERICAN SPECIES OF
LOPHOSTIGMA MICKEL, INCLUDING A NEW SPECIES,
NEW DISTRIBUTION RECORDS, AND
TAXONOMIC NOTES FOR THE GENUS
(HYMENOPTERA: MUTILLIDAE)**

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Abstract.—We present taxonomic comments on the genus *Lophostigma* Mickel, and a key for the species from Mexico and Central America, including the new species, *L. grisselli* Cambra & Quintero from Mexico, the northernmost distribution record for this Neotropical genus. *Lophostigma lebasi* (Mickel), is synonymized with *L. cincta* (du Buysson). New distribution records are given for: *L. cincta* (du Buysson), Costa Rica and Ecuador; *L. subgracilis* (Cameron), Mexico, Guatemala and Costa Rica; *L. acanthophora* (Dalla Torre), Perú; *L. caenodonta* (Cameron), Brazil; and *L. cayennensis* (André), Venezuela and Brazil.

Key Words.—Insecta, Mutillidae, *Lophostigma*, key, *Lophomutilla*, Mexico, Central and South America, synonymy, taxonomy

The genus *Lophostigma* Mickel (1952) was established for nine sphaerophthalmine species, known only from females, distributed from the Province of Chiriquí (8°50' N), in the Republic of Panama, to the northern half of South America (above 10° S). Casal (1963) described an additional species, *L. seabrai* Casal, from Nova Teutonia, Santa Catarina, Brazil (27°03' S), disjunct from the rest. Females of *Lophostigma* range from 6 to 12 mm in length and are relatively rare in collections. Casal (1963) confirmed this when he remarked that he had seen only two specimens of *Lophostigma* out of some ten thousand specimens of Neotropical Sphaerophthalminae studied.

During a recent visit to the Natural History Museum, London, R.A.C. examined three specimens of *Lophostigma* from Mexico, and recognized two of them as belonging to an undescribed species. The new species, with the northernmost distributional record (21°15' N) for the genus, is here described and illustrated. In addition, we recently examined seven additional specimens of *Lophostigma* from Costa Rica and one from Mexico. The Costa Rican specimens helped us to understand and unravel the marked integumental color variations of *L. subgracilis* and *L. lebasi*.

We have diligently amassed 53 specimens of *Lophostigma* that permit us to present new distribution records for five species, discuss the affinities of the genus, intraspecific variation, and to provide a key to the three species known from Mexico and Central America: *grisselli*, *cincta* and *subgracilis*. We suspect synonymies of the following species: *L. seabrai* Casal, 1963 with *L. alopha* Mickel, 1952; *L. cayennensis* (André), 1906, with *L. iracunda* (Cresson), 1902 (see Taxonomic Notes).

Format for the description of the new species follows Mickel (1952). Two new

specific characters are used here: the outline of the thorax in lateral view (Figs. 3, 5), and the ratio of the distance from the hind margin of the eye to the posterior angle of genal carina (EMGC) to the greatest diameter of the eye (EGD), or EMGC/EGD (Fig. 6). Scanning electron microscopy was done with a JEOL model JSM-5300LV SEM.

Depository Abbreviations.—British Museum of Natural History BM (NH); U.S. Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM); Universidad Central de Venezuela, Maracay (IZAUCV); Snow Entomological Museum, University of Kansas (SMUK); Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil (INPA); Museo de Insectos, Universidad de Costa Rica, San Pedro (MIUCR); Instituto Nacional de Biodiversidad, Heredia, Costa Rica (INBio); Museo de Invertebrados "G.B. Fairchild", Universidad de Panama (MIUP).

Lophostigma grisselli Cambra and Quintero, NEW SPECIES
(Figs. 1–3, 7)

Types.—Holotype, female: MEXICO. N[orth] YUCATAN [State]: Temax, Gaurmer col., BM (NH) [P. Cameron Coll. 1914-110 / 43 / *Lophostigma* sp. CEM 1955]. The latter is C. E. Mickel's hand written det. label. Paratypes: same data as holotype, one female; deposited: MIUP; 8 mi E[ast] of Mérida, 28 Jun 1966, U. Kansas Mex. Exped., one female; deposited: Snow Entomological Museum, University of Kansas.

Description.—*Holotype female.*—Vertex with large yellow integumental spot; antennal tubercles, mandible and clypeus light brown-red, scape dark red, rest of head black. Thorax black, except for yellow propodeal spiracles. Abdomen black except sternum I and two distal segments red-brown; tergum II with two suboval-transverse postmedian yellow integumental spots, separated by a distance equal to one-third the width of a spot. Front, vertex and gena with deep, close punctures, not confluent. Antennal scrobes strongly carinate dorsally. Antennal tubercles smooth, set distinctly apart. Anterior margin of clypeus bituberculate in front of antennal sockets; mandible slender, edentate at tip and not toothed within. Distance from posterior eye margin to posterior angle of genal carina 0.93 times greatest diameter of eye. Gena carinate, carina not forming a tooth anteriorly, not extending to vertex posteriorly. Front, vertex and gena with sparse, pale pubescence; scape and clypeal fringe with sparse, fine pale pubescence. Thoracic dorsum distinctly convex in lateral view, with moderate, dense, but not confluent punctures. Propodeum with short anterodorsal mesal longitudinal carina, distinctly higher in middle. Anterolateral angles of pronotum defined by short, transverse carina; sides of pronotum with moderate, close punctures. Lateral margins of mesonotum with pair of small teeth; propodeum laterally with four sharp teeth. Sides of propodeum glabrous on anterior third, with strong, distinct, deep punctures on posterior two-thirds. Meso- and metapleura glabrous, micropunctate. Dorsum of thorax with sparse pale pubescence, and scattered long, erect pale hairs. Dorsum of propodeum with pale micropubescence and scattered, long erect pale hairs. Mesopleura, metapleura and sides of propodeum with sparse, inconspicuous, decumbent pale pubescence; posterior margin of mesopleura with row of long, erect pale hairs. Legs dark red, almost black, clothed with pale pubescence. Tibial spine on posterodistal internal angle slightly longer than the cylindrical process. Calcaria pale. Anterior face of tergum I with small, sparse punctures; dorsal face with moderate, dense punctures. Tergum II with anterolateral areas only slightly elevated, leaving a shallow depression in between, and crested with short, parallel, interrupted carinae; with moderate, dense contiguous punctures throughout. Terga III–V with fine, close punctures. Pygidial area glabrous. Sternum I with a short, longitudinal, median carina, higher anteriorly. Sternum II with moderate, close punctures. Sterna III–VI throughout with fine, close punctures. Tergum I with sparse, erect, appressed pale pubescence. Tergum II with a short anteromedian, longitudinal stripe of pale pubescence; posterior margin with short, dense, black pubescence, except for small subtriangular spot of pale pubescence at middle; remainder of tergum II

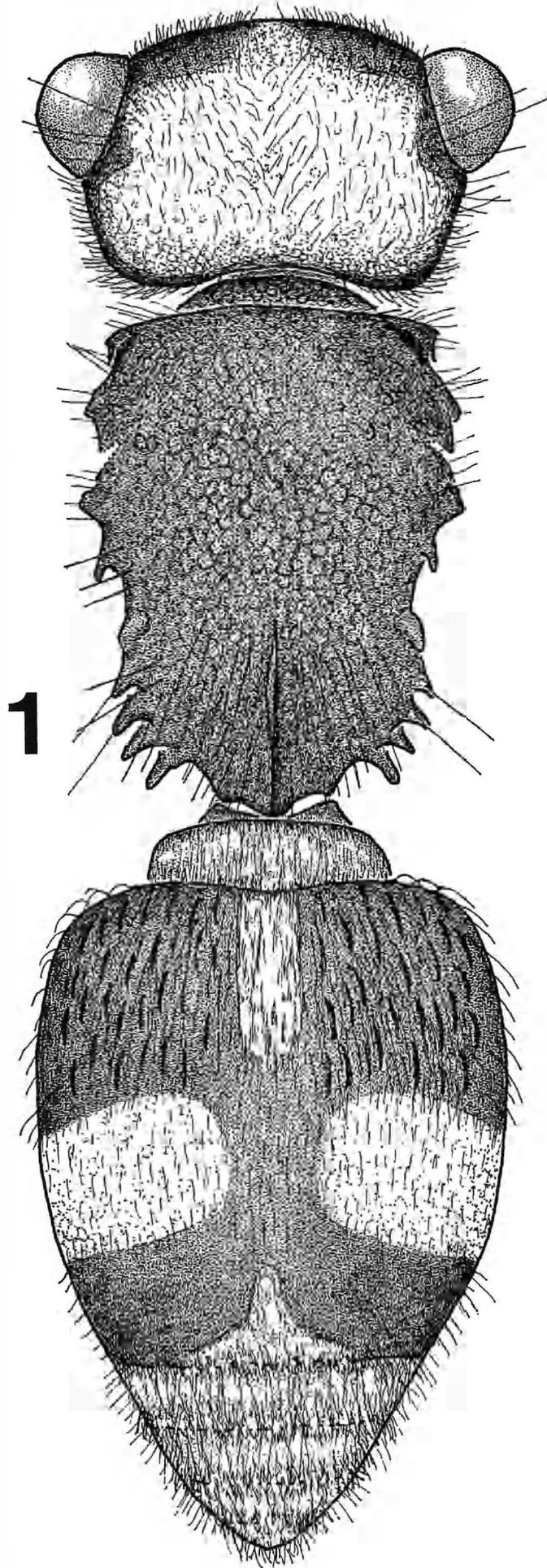
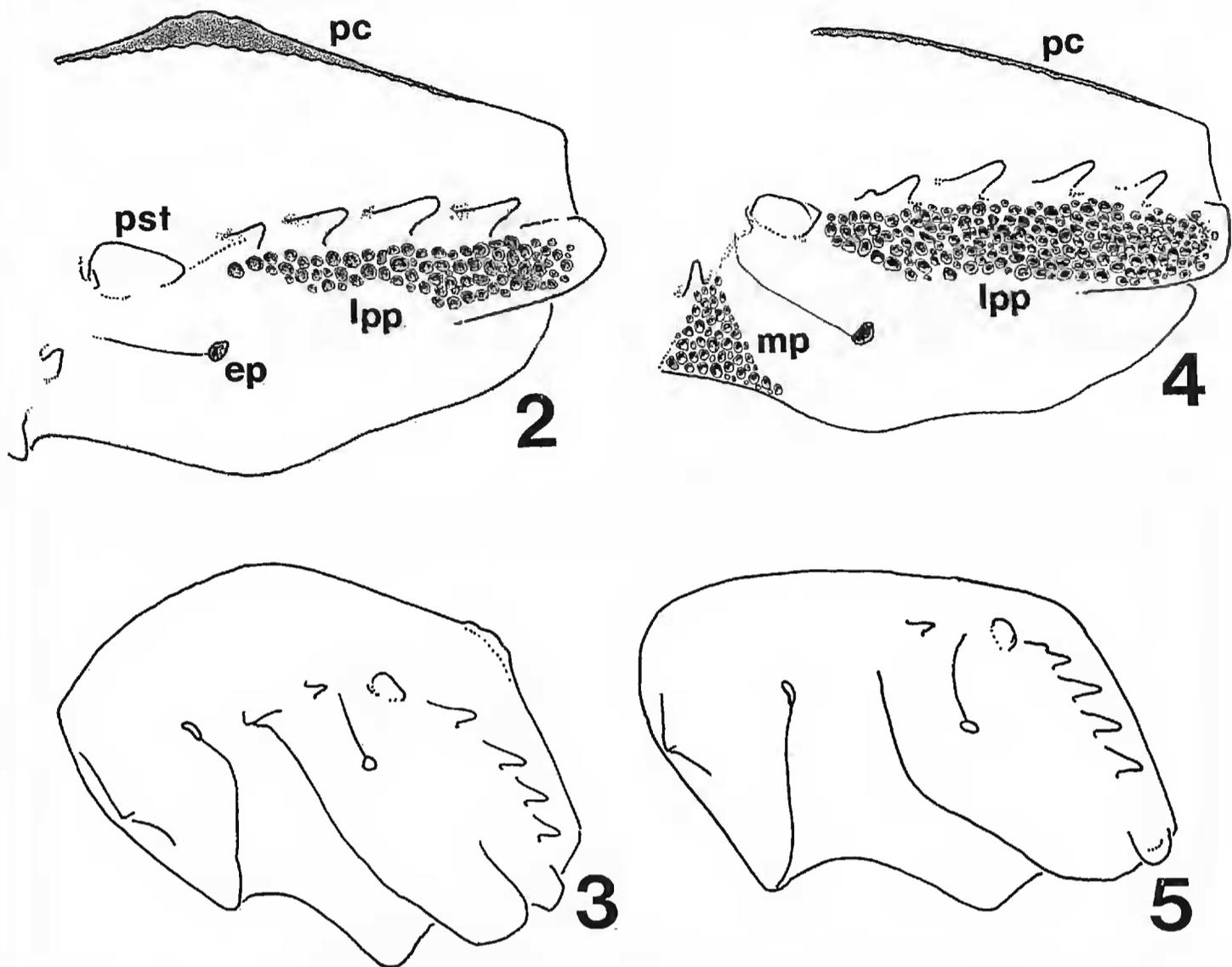


Figure 1. *Lophostigma grisselli*, NEW SPECIES. Dorsal habitus.

with sparse, erect and semierect pale hairs. Terga III–V clothed with dense, pale pubescence. Sterna covered with sparse pale hairs. Length: 8.6 mm.

Variation.—The paratype deposited at MIUP has the frons, gena, thorax, abdominal sterna II–IV, and legs dark red. These structures are black in the holotype and the other paratype.



Figures 2–3. *Lophostigma grisselli*, NEW SPECIES. Figure 2. Propodeum, lateral view. Figure 3. Thorax, lateral outline. Figures 4–5. *Lophostigma cincta* (du Buysson). Figure 4. Propodeum, lateral view. Figure 5. Thorax, lateral outline. Abbreviations: ep = endophragmal pit; lpp = lateral propodeal punctures; mp = mesopleural punctures; pc = propodeal carina; pst = propodeal spiracle, tubercle.

Diagnosis.—This species runs to *L. simoni*, from Venezuela, in the second part of couplet 4 of Mickel's key (1952). Both species have the dorsum and posterior face of propodeum with a pair of broad, lateral stripes of appressed pale pubescence. They can be separated as follows: *L. grisselli* has the propodeal side smooth on the anterior third while in *L. simoni* the side is deeply punctate; *L. grisselli* has an EMGC/EGD ratio of 0.92 ± 0.03 ($n = 3$), largest in the genus (0.81 in *L. acanthophora*, 0.59 in *L. simoni*); in lateral view the thorax of *L. grisselli* is convex dorsally while that of *L. simoni*, as other species of *Lophostigma* we have examined (specimens of *L. seabrai* and *L. iracunda* have not been seen) presents a flat dorsal thoracic surface. In addition, *L. grisselli* has a large yellow integumental spot on the vertex; in *L. simoni* the head is uniformly dark red but coloration is not a reliable character to separate species (see Taxonomic Notes).

Etymology.—Named in honor of our colleague and friend, Dr. E. Eric Grissell, Systematic Entomology Laboratory, U.S. Department of Agriculture, USNM.

Lophostigma cincta (du Buysson), 1892
(Figs. 4–6)

Mutilla cincta du Buysson 1892: 58: Type locality: VENEZUELA. CARABOBO STATE: San Esteban (Parque Nacional Miguel J. Sanz), M. E. Simon col.

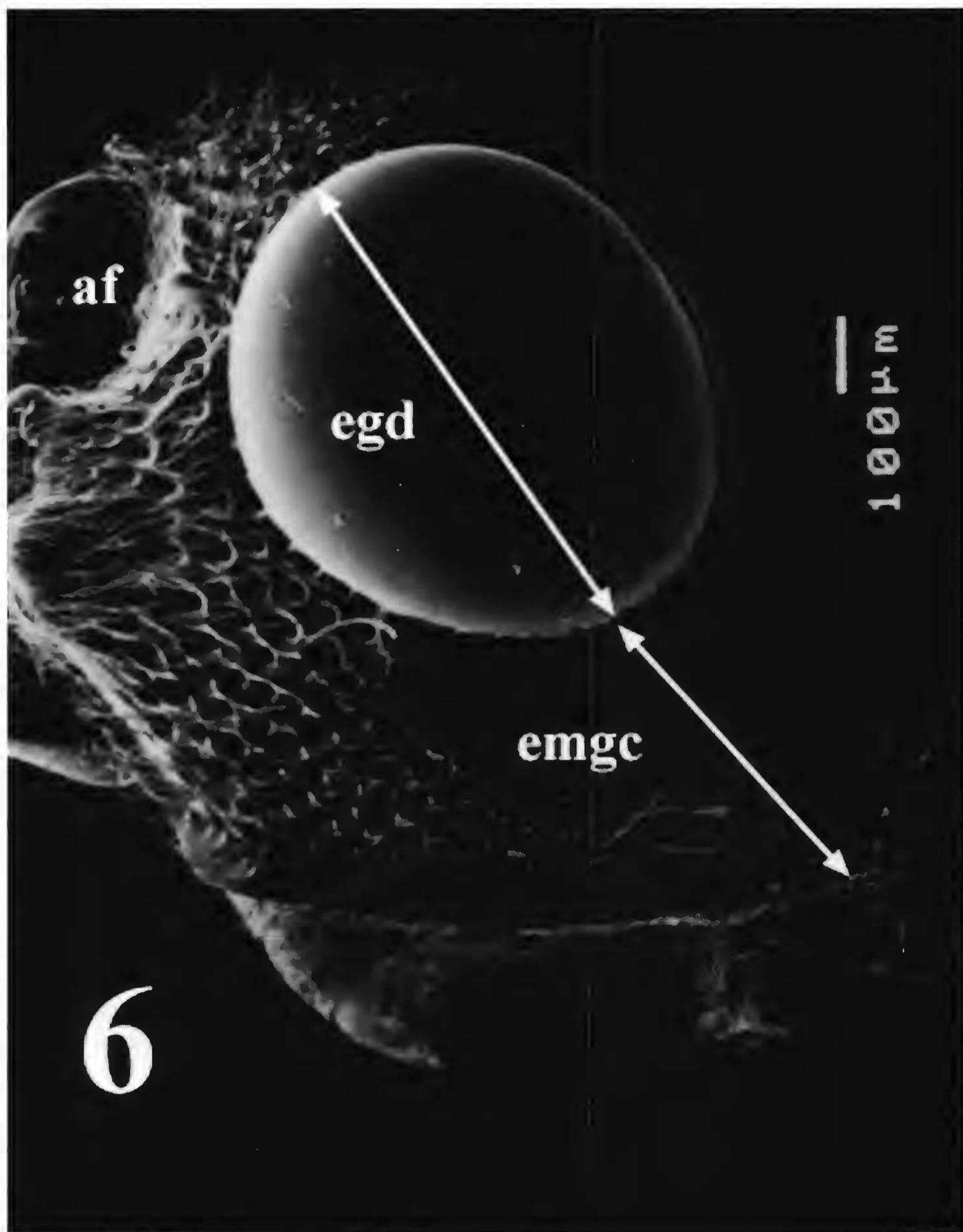


Figure 6. *Lophostigma cincta* (du Buysson). Head, lateral view. Abbreviations: af = antennal foramen left, egd = eye greatest diameter; emgc = distance from eye posterior margin to genal carina.

Holotype female deposited MNHN, Paris, examined; *Lophostigma cincta*: Mickel, 1952: 147 (in key).

Pseudomethoca lebasi Mickel 1937: 179–180. Type locality: COLOMBIA (no additional data). D. Lebas col. Holotype female deposited Spinola Collection No. 114, Torino, Italy; *Lophostigma lebasi*: Mickel 1952: 146–7 (in key, Pan-

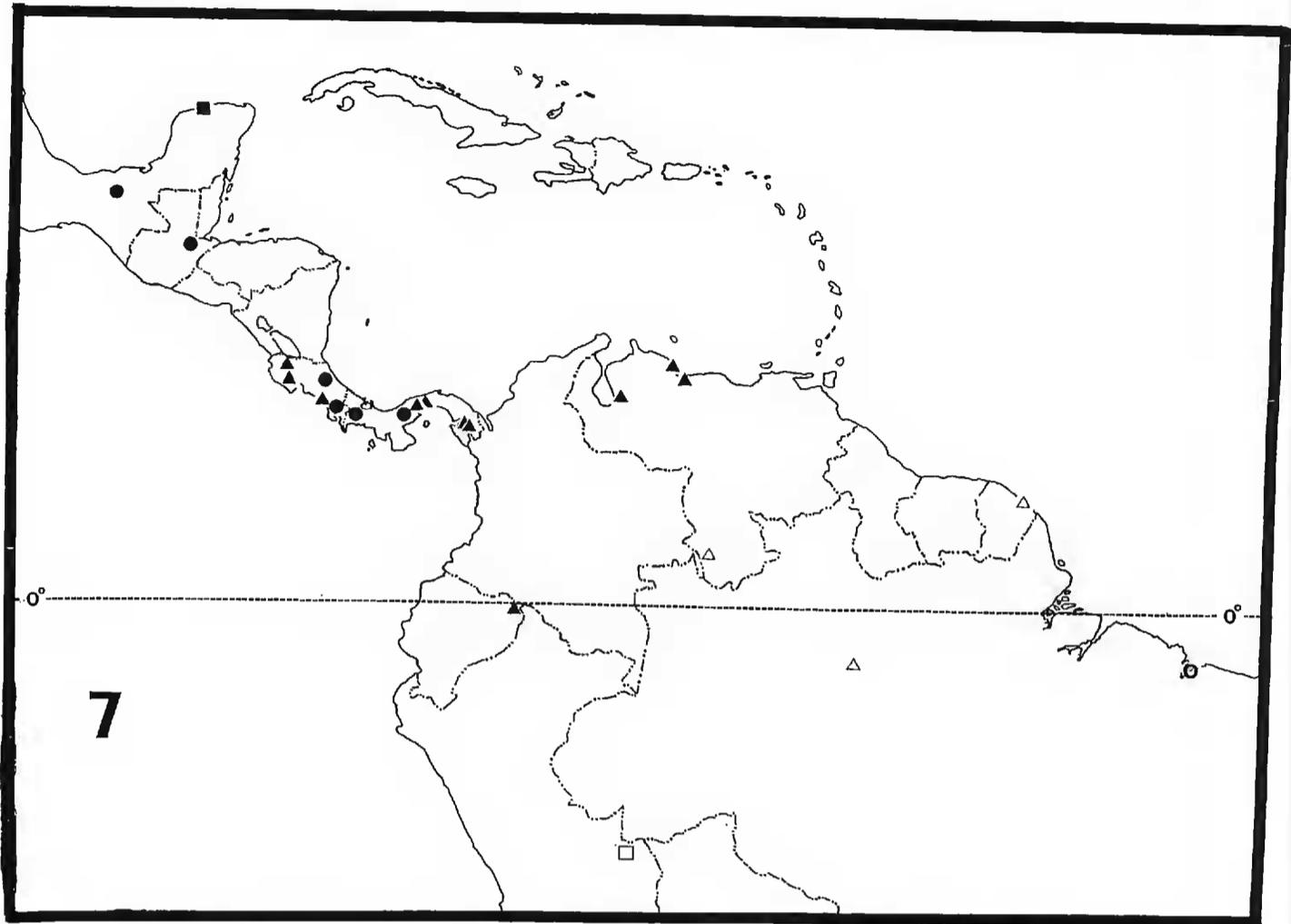


Figure 7. Distribution of species of *Lophostigma*. Solid symbols: *L. grisselli* (square), *L. cincta* (triangle), and *L. subgracilis* (circle). Open symbols: *L. cayennensis* (triangle), *L. acanthophora* (square), *L. caenodonta* (circle).

ama and Colombia); Cambra and Quintero 1992: 473 (six females, records for Panama). NEW SYNONYMY.

Notes on Synonymy.—The only recognized difference between *L. lebasi* and *L. cincta* was coloration of the vertex. In *lebasi* a large, yellow integumental spot is present, while in *cincta* this spot is entirely ferruginous (“tête jaune” of du Buysson’s original description changes to “vertex entirely ferruginous” in Mickel’s 1952 key). As indicated in Taxonomic Notes, color is not a reliable character to separate species in *Lophostigma* because of the large intraspecific variation. The 30 females examined from Panama have a yellow spot on the vertex but its size is quite variable. No specimens have been seen from Colombia, and the type remains the only specimen reported for that country. At the latitudinal extremes of the distributional range of *L. cincta* we found a marked reduction or absence of yellow spots on the vertex in six of the eight females examined outside of Panama. Of five specimens from Costa Rica, two have the vertex solid black, and one solid red. The Ecuadorian specimen has two very small yellow spots on the vertex.

Distribution.—Costa Rica, Panama, Colombia, Venezuela and Ecuador (Fig. 7).

Material Examined.—Specimens from Costa Rica and Ecuador represent new distribution records. COSTA RICA. *GUANACASTE PROVINCE*: Estación Maritza, 600 m, lado oeste Volcán Orosi, 27 Feb–10 Mar 1992, R. Vargas, 1 female (MIUP); Refugio Nacional Fauna Silvestre Rafael Lucas Rodríguez, Palo Verde, 10 m, Mar 1991, U. Chavarría, 1 female (INBio); *PUNTARENAS PROVINCE*:

Tres Ríos, 18 Apr 1940, A. Bierig, 1 female (MIUCR); Osa Península, 2.5 mi SW of Rincón (08°42' N, 83°29' W), 26 Feb 1967, C. Rettenmeyer, 1 female (SMUK); *SAN JOSE PROVINCE*: 3 km S of San Antonio de Escazú, 10–25 Dec 1987, W. Wcislo, 1 female (MIUP). ECUADOR. *NAPO PROVINCE*: Yuturi, 27 Feb 1990, S. Sandoval, 1 female (MIUP). PANAMA. *COCLE PROVINCE*: Valle de Antón, 13 Jul 1991, 27 Dec 1991, R. Contreras, 2 females (MIUP); *DARIEN PROVINCE*: El Real, 4 Feb 1993, R. Cambra, 1 female (MIUP); Cruce de Mono, Estación INRENARE, Parque Nacional Darién, 9–23 Feb 1993, R. Cambra, 8 females (MIUP); *PANAMA PROVINCE*: Summit Gardens, 9 Jan 1989, J. Bernal, 1 female (MIUP); Summit Gardens, 18 Dec 1994, D. Osorio, 1 female (MIUP); Capira, 17 May 1991, 18 May 1991, 17 Jan 1992, R. Contreras, 3 females (MIUP); Capira, La Julianita, Ollas Arriba, M. Castro, 31 Dec 1994, 2 females (MIUP); Potrero Río Perequeté, Chorrera Dist., 17 Jan 1992, R. Contreras, 2 females (MIUP); same loc, 7 Aug 1991, R. Contreras, 1 female (MIUP); same loc, 27 Feb 1991, R. Cambra, 1 female (MIUP); Llano Largo, Chorrera Dist., 8 Apr 1990, A. Mena, 1 female (MIUP). VENEZUELA. *FALCON STATE*: Yaracal, 30 Apr 1989, L. J. Joly, 1 female (IZAUCV); *BARINAS STATE*: Calderas, 1000 m, 8 May 1972, J. & B. Bechyne, 1 female (MIUP).

Lophostigma subgracilis (Cameron), 1895

Sphaerophthalma subgracilis Cameron 1895: 339–340. Type locality: PANAMA. Volcán de Chiriquí, 1220 m. Syntype females deposited BM (NH), examined; *Lophostigma subgracilis*: Mickel 1952: 146–147 (in key); Cambra & Quintero 1992: 473.

Color variation.—The Teapa female has a black head with a small yellow integumental spot on the vertex and a very thin, elongated spot of same color at base of second tergite, and the thorax black. Two females from El Copé, Panamá, have the anteromedian part of the second tergite and the head integument uniformly black ferruginous, one with ferruginous thorax and the other with thorax mostly black, except for lateral propodeum ferruginous. Two females from Costa Rica: one with head mostly yellow-ferruginous, thorax black-ferruginous; other female, yellow spot on vertex and rest of head black, thorax black.

Distribution.—Mexico, Guatemala, Costa Rica and Panama (Fig. 7). Five of the eight specimens studied (including the syntype) were collected on or near the Cordillera Central, at elevations between 800 to 1200 m (personal observation). On this evidence we recognize that *L. subgracilis* is the only species in the genus that occurs primarily at altitudes higher than 800 m.

Material Examined.—Specimens from Mexico, Guatemala and Costa Rica represent new distribution records. MEXICO. *TABASCO STATE*: Teapa, Feb (H.H.S.), 1 female BM (NH). GUATEMALA. *ALTA V[ERA] PAZ DEPARTMENT*: Cacao, Trece Aguas, Schearz and Barber, 1 female (USNM). COSTA RICA. *PUNTARENAS PROVINCE*: Golfo Dulce, 24 km west of Piedras Blancas, 200 m, Apr–May 1991, C. Hanson, 1 female (MIUCR); *CARTAGO PROVINCE*: Chitaria [alt. approx. 769 m], 17–20 Feb 1943, 1 female (MIUP). PANAMA. *COCLE PROVINCE*: El Copé, Div. Continental, 900 m, 21 Feb 1990, R. Cambra, 1 female (MIUP); same loc., 1–2 Sep. 1990, R. Cambra, 1 female (MIUP).

Lophostigma acanthophora (Dalla Torre), 1897

Mutilla spinifera Smith 1879: 213, nec Olivier 1811: 59. Type locality: BRAZIL. Pará. Holotype female deposited BM (NH), London, examined.

Mutilla acanthophora Dalla Torre 1897: 6, new name for *spinifera* Smith; *Lophostigma acanthophora*: Mickel 1952: 146 (in key).

Distribution.—This species was known previously only from the holotype from Brazil; Perú (Fig. 7).

Material Examined.—The specimen from Perú represents a new distribution record. PERU. MADRE DE DIOS DEPARTMENT: Reserva de Manu, Cocha Cashu, 27 Feb 1992, I. Bohorquez, 1 female (MIUP).

Lophostigma caenodonta (Cameron), 1912

Ephuta ? *caenodonta* Cameron 1912: 415. Type locality: GUYANA (no additional data). Holotype female deposited BM (NH), London, examined; *Lophostigma caenodonta*: Mickel 1952: 146–148 (in key, redescription of type).

Distribution.—Guyana and Brazil (Fig. 7).

Material Examined.—Specimens from Brazil represent new distribution records. BRAZIL. MARANHÃO STATE: Isla São Luis, Foresta Sacavem, 1 Oct 1992, R. Cambra, 1 female (MIUP); Isla São Luis, Foresta Sacavem, 1 Oct 1992, R. Cambra, 1 female (MIUP); Isla São Luis, Vila Maranhão, 29 Sep 1992, D. Quintero, 1 female (MIUP).

Lophostigma cayennensis (André), 1906

Ephuta cayennensis André 1906: 70–72. Type locality: FRENCH GUIANA. Cayenne. Holotype female deposited MNHN, Paris; *Lophostigma cayennensis*: Mickel 1952: 146 (in key).

Distribution.—French Guiana, Venezuela and Brazil (Fig. 7).

Material Examined.—The specimens from Venezuela and Brazil represent new distribution records. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Yavita, Pimichin, Apr 1952, Buchel, 1 female (MIUP). BRAZIL. AMAZONAS STATE: Manaus, 24 Jun 1977, A. P. Luna Dias, 1 female (INPA); same loc., 20 Jun 1977, 2 females (MIUP).

Three species of *Lophostigma* are now known from Venezuela: *L. cayennensis*, *L. simoni* and *L. cincta*.

TAXONOMIC NOTES ON *LOPHOSTIGMA*

The genus *Lophostigma* is closest to *Lophomutilla* Mickel, presenting a remarkable resemblance in most characters, except for the shape of the mandibles (distally tridentate in *Lophomutilla*, edentate in *Lophostigma*) and the first abdominal segment (nodose in *Lophomutilla*, disciform in *Lophostigma*). In addition, the following combination of characters, although not autapomorphies, permits the recognition of specimens of *Lophostigma*: a median longitudinal low carina on the propodeum; an anteromedian elongated short pale pubescent spot on the second abdominal tergum; and distinct parallel, longitudinal, interrupted carinae on each side of the anteromedian area of pale pubescence on the second abdominal tergum. The generic description by Mickel (1952) is quite thorough, but of the above generic characters, the first two were not mentioned by Mickel.

We have recently reported the sex association of *Paramutilla* Mickel, 1973 as the males of *Lophomutilla* Mickel, 1952 (Quintero & Cambra 1996). In this work, we expanded our previous generic key (Cambra & Quintero 1992) to include the mutillid taxa from South America. We expect that comparison of the males of *Lophostigma*, with those of *Lophomutilla* will provide additional characters valuable to separate both genera.

The two groups of species in Mickel's key (1952), were based on the degree of elevation of the anterolateral areas of the abdomen (strongly or inconspicuously elevated). We now recognize that *L. grisselli* and *L. seabrai*, which are found at the distributional limits of the genus, north and south respectively, are interme-

diate with respect to the elevation of the anterolateral areas, thus the two groups are not clearly defined.

The size of the integumental spots (one anteromedian and two transverse, postmedian) on the second abdominal tergum, and the coloration of the thorax are variable in *L. cayennensis*, *L. grisselli*, *L. subgracilis* and *L. cincta*, and thus, cannot be used to separate species. *Lophostigma cayennensis* is probably a junior synonym of *L. iracunda* (Cresson), 1902 (species known only from the holotype from Santarém, Brazil), because it has been separated only by differences in thoracic coloration and the size of the integumental spots on abdominal tergum two.

Casal (1963) erroneously considered the presence of the median longitudinal propodeal carina as the main difference between *L. seabrai* Casal and *L. alopha* Mickel (present in the former, from Brazil, and absent in the latter, from Guyana). However, the type of *L. alopha* has a faint carina, and the two species are otherwise indistinguishable. Thus, *L. seabrai* probably is a junior synonym of *L. alopha*.

KEY TO THE MEXICAN AND CENTRAL AMERICAN SPECIES OF
LOPHOSTIGMA (FEMALES ONLY)

1. Anterolateral area of second abdominal tergum slightly swollen, leaving a distinct, shallow medial depression (Fig. 1); median longitudinal carina on propodeum highest in the middle; in lateral view, outline of thoracic dorsum convex (Fig. 3); EMGC/EGD ratio: 0.92 (0.88 to 0.95)
.....*grisselli* NEW SPECIES
- Second abdominal tergum uniformly convex anteriorly, not swollen anterolaterally; median longitudinal carina on propodeum uniformly elevated along its entire length; in lateral view, outline of thoracic dorsum flat (Fig. 5); EMGC/EGD ratio: 0.7 or less 2
2. Mesopleura and sides of propodeum densely punctate (Fig. 4); propodeal dorsum with a median longitudinal black pubescent band (Costa Rica through Venezuela, Ecuador)*cincta* (du Buysson)
- A few scattered punctures on posterior margins of mesopleura and sides of propodeum; propodeum covered with dense short white pubescence (Mexico, Guatemala, Costa Rica, Panama)*subgracilis* (Cameron)

ACKNOWLEDGMENT

We are grateful to the British Embassy in Panama, in particular to Ambassador Thomas H. Malcomson, for securing transportation funds to England for R.A.C.; to the Entomology Department personnel of the British Museum (Natural History), London, for providing R.A.C. with working facilities and assistance during his visit. Our thanks to the Smithsonian Tropical Research Institute (STRI), in particular to Ira Rubinoff, for providing research facilities. We highly appreciate STRI Research Opportunities Fund No. 1234F20A-3400 to D.Q.A., that helped us carry out field work in Brazil, and the great hospitality and facilities provided by Patricia Albuquerque, São Luis, Maranhão, Brazil. We appreciate the loan of unidentified mutillid specimens from John E. Lattke, Instituto Zoología Agrícola, Universidad Central de Venezuela, Maracay, Robert Brooks, Snow Entomological

Museum, University of Kansas, and Professor Giovanni Onnore, Universidad Pontificia Católica del Ecuador, Quito. We also thank José Albertino Rafael, Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil, Roger D. Hutchings H., INPA-Biological Dynamics of Forest Fragments Project-Smithsonian Institution, Paul Hanson, Museo de Insectos, Universidad de Costa Rica, San Pedro, Jesús Armando Ugalde Gómez, Instituto Nacional de Biodiversidad, Heredia, and Philip J. Clausen, Department of Entomology, University of Minnesota, St. Paul, for hospitality and loan of specimens. Recent collections of *L. cincta* from Darién Province were made possible by funds Nos. 1-4500-91-12 & 04-05-94-01 from Vicerrectoría de Investigación y Postgrado, Universidad de Panamá. Our thanks to Arnold S. Menke, Karl V. Krombein, USNM, E. E. Grissell, U.S. Department of Agriculture-USNM, and Annette Aiello, STRI, for reviewing the manuscript and for their helpful suggestions. Special thanks to Isabelita Bohorquez, Universidad Nacional de San Marcos, Lima, Peru, for collecting and donating to us the very rare female of *L. acanthophora*.

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