

Species of *Lachesilla* in the Caribbean islands and Trinidad (Insecta: Psocoptera: Lachesillidae)

Alfonso Neri García Aldrete

Instituto de Biología, UNAM., Departamento de Zoología.
Apartado Postal 70-153, 04510, México, D.F. Mexico

Abstract: Twenty two species of *Lachesilla* were found in the West Indies and Trinidad, 11 of which are here described. Twelve species inhabit the Greater Antilles (with two exclusive endemics), four species are found in the Lesser Antilles (with two exclusive endemics), and 11 species are found in Trinidad, four of which are exclusive endemics. Two species are shared between the Greater and the Lesser Antilles. Nine of the 12 species of the Greater Antilles also occur in México and the U.S., eight species also occur in Central America and three species are also found in South America. One of the four species of the Lesser Antilles is also found in México, the U.S., Central and South America. Four of the 11 species of Trinidad also occur in North America, four are also found in Central America, and four are also found in South America. There is a sharp drop in number of species from Trinidad to the islands north of it. The assemblages of *Lachesilla* species of the Greater Antilles, the Lesser Antilles and Trinidad are distinct. The genus has undergone little speciation in the Greater and in the Lesser Antilles; in Trinidad some speciation may have occurred by isolation from mainland populations. The greater diversity of *Lachesilla* on Trinidad may be due to more collecting and to greater proximity to the mainland.

Key words: West Indies, Trinidad, *Lachesilla*, new species, distribution.

Resumen. Hasta el momento, se han encontrado 22 especies de *Lachesilla* en el Caribe y en Trinidad, 11 de las cuales se describen en éste trabajo. Las Antillas Mayores tienen 12 especies, dos de las cuales son endémicas exclusivas, y las Antillas Menores tienen cuatro especies, dos de las cuales son endémicas exclusivas. Trinidad tiene 11 especies, cuatro de las cuales son endémicas exclusivas. Sólo dos especies son comunes a las Antillas Mayores y a las Menores. Nueve de las 12 especies de las Antillas Mayores se encuentran también en México y en los Estados Unidos, ocho especies se encuentran también en Centro América y tres especies también se han colectado en América del Sur. Una de las cuatro especies de las Antillas Menores se encuentra también en México, los Estados Unidos, Centro y Sud América. Cuatro de las 11 especies de Trinidad también se encuentran en Norte América, cuatro se han colectado en Centro América y cuatro se encuentran también en Sud América. Hay una drástica disminución en número de especies de Trinidad hacia las islas al norte de ella. Las faunas de *Lachesilla* de las Antillas Mayores, Menores y Trinidad son diferentes y el género ha especiado poco en las Antillas propiamente dichas. En Trinidad puede haber habido alguna especiación por aislamiento de poblaciones de la cercana masa continental. La mayor diversidad de *Lachesilla* en Trinidad puede deberse a que allí se ha colectado más y a la mayor cercanía al continente.

Palabras clave. Caribe, Trinidad, *Lachesilla*, nuevas especies, distribución.

Introduction

Lachesilla is a large, cosmopolitan genus, with 173 described and 165 undescribed species, already on hand in collections. Its species are well represented throughout the world, except in Australia and in the Oriental region, where only a few species have been recorded (García Aldrete, 1988a, New & Lee, 1991). The genus is best represented in the Neotropics, particularly in México, where 159 species (described and undescribed) are known to occur. In this country, 144 species (91% of the total) have been collected in an area S of parallel 19°N and between meridians 91-101°W, including, in whole or in part, the states of Campeche, Chiapas, Distrito Federal, Guerrero, México, Michoacán, Morelos, Oaxaca, Puebla, Tabasco, Tlaxcala and Veracruz. It is in this area where the genus most likely has diversified and extended to areas north and south of it.

I have previously indicated that the genus probably extended to Africa before this continent separated from South America, some 150-130 mybp, and that from Africa it spread to Europe and the Orient, as far as Pakistan (García Aldrete, 1988a). Recently, New & Lee (1991), found two species of *Lachesilla* in West Malaysia, thus demonstrating a deeper penetration of the genus in the Oriental Region, although the number of species in the area

is very small. Figure 73 shows the number of species of *Lachesilla* in most American countries (Central America is here considered as a unit). From México to the north, the number of species drops drastically, and from México to the SE the number of species also decreases considerably in Central America, to increase again in the South American subcontinent, where probably the number of species is underestimated, given the vastness of unexplored areas and the lack of collecting by specialists.

What becomes evident from Figure 73 is that the mainlands bordering the Caribbean area are rich in species of *Lachesilla*.

Before this work was undertaken, only ten species of *Lachesilla* had been recorded in the Caribbean islands and Trinidad (Badonnel, 1977; García Aldrete, 1972, 1974b, 1982, 1988b, 1991; Mockford, 1974, Turner, 1975), but examination of important collections in the Illinois Natural History Survey (Urbana, = INHS), Illinois State University (Normal, = ISU), and the American Museum of Natural History (New York City, = AMNH), revealed the existence of many more species, so the purpose of this work was to document the species of *Lachesilla* in the Caribbean area and Trinidad, to determine which of these are endemic to the area, to analyze their known distribution, and to test some tenets of West Indian zoogeography: that the biota exhibit affinities mostly with Central and South America, and that the faunas of the Greater and the Lesser Antilles are distinct (Halffter, 1975; Lescure *et al.*, 1991; Liebherr, 1988).

Material and Methods

The specimens examined are preserved in 80% alcohol; those utilized for microscopic study were dissected in 80% alcohol, and the head, genitalia and right wings and legs were mounted permanently, either in Euparal or in Balsam of Canada. Measurements, of parts mounted on slides are in microns and were taken with a filar micrometer, whose measuring unit is 1.36 microns for wings and 0.53 microns for other parts. The following abbreviations refer to length of parts measured: FW: fore wing; HW: hind wing; F: femur; T: tibia; t1 and t2: tarsomeres of hind leg; f1...fn: flagellomeres 1...n; IO: minimum distance between compound eyes; D: antero-posterior diameter of compound eye; d: transverse diameter of compound eye; PO: d/D; ctt1 is the number of ctenidia on t1.

In the sections of records, the names of the collectors are abbreviated as follows: ANGA: Alfonso Neri García Aldrete; ELM: Edward L. Mockford; AMN: Aaron M. Nadler; GEE: Gary E. Eertmoed; CWOB, LBOB: Charles & Lois B. O'Brien; RM: Rodrigo Medellín; LBM: Leticia B. Menchaca; AC: Alex Cadena; EB: Ernesto Barrera; HB: Harry Brailovsky; LCP: Luis Cervantes Peredo; LP: Luis de la Peña; EC: E. Cisneros; JMC: J.M. Campbell; JGF: Javier García Figueroa; ABG: Ashley B. Gurney; TLE: Terry L. Erwin; ECB: E.C. Becker; LJS: Lewis J. Stannard; MWS: Milton W. Sanderson; DB: D. Barreto; FDB: F.D. Bennett; FP: Fritz Plauermann; RBC: R.B. Cumming; LS: L. Sanders; R & C: Reads & Cousins; FAB: F.A. Buchanan; JR: J. Reynolds; ESR: E.S. Ross; DQC: D.Q. Cavagnaro; LML: L.M. McLain; JBW: J.B. Wiig.

The specimens studied are from my own collection (Instituto de Biología, UNAM., = IBUNAM), and from the collections mentioned in the preceding section. The location of the types of the new species is indicated in the corresponding descriptions. In the next section the systematic treatment of the species dealt with is presented, followed by an analysis of the assemblage of *Lachesilla* species.

I have included the species of Trinidad for comparative purposes, this island is on the South American continental shelf and can not be considered as part of the West Indies; there is a drastic drop in species numbers from Trinidad-Tobago to the Lesser Antilles islands north of it, documented for butterflies, scorpions, birds, reptiles and amphibians (cf. Lescure *et al.*, 1991), and now for *Lachesilla* species.

In the Lesser Antilles, only species from Guadeloupe, Martinique, Dominica, St. Lucia and St. Vincent were available for study, so I faced here what Slater (1988), has referred to as 'the problem of negative evidence', but, with the data on hand, it is predictable that the islands for which evidence is missing, will have 1-2 species, and that these will be either endemics or widely distributed species, in a situation reminiscent to that of the scorpions of the Lesser Antilles (Lourenço, 1987).

Systematic Treatment

andra Group (García Aldrete, 1974a)

Lachesilla bilobata García Aldrete

L. bilobata García Aldrete, 1974b, p. 143.

This species is known from a single female collected in Piarco, Trinidad.

forcepeta group (García Aldrete, 1974a)

***Lachesilla acuminiforceps* García Aldrete,
new species
(Figs. 1-6)**

Diagnosis. With characters of the group, differing from other species in having a strongly pigmented area in anterior apex of ninth sternum, claspers acuminate and epiproct with two rugose, mesal protuberances.

Female. Color (in 80% alcohol). Body pale brown; ocelli clear, without centripetal crescents; antennae, maxillary palps and legs light brown. Wings (Fig. 1), hyaline, veins pale brown.

Morphology. Subgenital plate (Fig. 2), broad, setose, slightly concave posteriorly, with a hyaline band along posterior border. Gonapophyses (Fig. 3), wider basally, narrowing towards distal ends, apically blunt, with setae as illustrated. Spermapore in anterior half of ninth sternum, surrounded by a wide, pigmented ring. Ninth sternum (Fig. 3) with a pigmented band along anterior margin, and a pigmented area at the anterior apex of the sternite, anterior to the spermapore. Paraprocts (Fig. 4), semi-elliptical, setose, with well defined pigmented band on outer edge of each sensorium, these with 9-11 trichobothria. Epiproct (Fig. 4), straight anteriorly, rounded posteriorly; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 1870; HW: 1448; F: 390; T: 694; t1: 234; t2: 88; ctt1: 17; p4: 89; f1: 280; f2: 233; f3: 188; f4: 132; f5: 87; IO: 297; D: 179; d: 118; IO/D: 1.65; PO: 0.65

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 5), broad, setose, with sides parallel, and posterior border slightly projected posteriorly to a median, wide apex. Claspers (Fig. 5), proximally ovoid, with 6 setae; distally stout, curved outwards, terminally acuminate, each with a short, pointed apophysis on median inner edge. Phallosome apodemes (Fig. 5), forming a stout baculum that widens and divides posteriorly, each arm extending into an almost rectangular, membranous area. Paraprocts (Fig. 6), semi-elliptical, with a pigmented band on proximal end, next each sensorium, these with 10 trichobothria. Mesally a pigmented area with a small, sclerotized prong. Epiproct (Fig. 6), almost straight anteriorly, rounded posteriorly, mesally with a rounded, rugose protuberance, strongly sclerotized,

on each side of longitudinal midline. Setae of paraprocts and epiproct as illustrated.

Measurements. FW: 1662; HW: 1251; F: 343; T: 645; t1: 221; t2: 92; ctt1: 16; P4: 87; f1: 258; f2: 228; f3: 193; f4: 155; IO: 251; D: 165; d: 108; IO/D: 1.52; PO: 0.65.

Type locality. Mexico. *Quintana Roo.* 36 Km S Puerto Juárez, 31.X.1971, beating branches with dead leaves on forest edge. ANGA. Holotype M, allotype F, 2M and 18 F paratypes (IBUNAM).

Records. Mexico. *Chiapas.* Ocosingo, Río Lacantún, Ejido Boca Río Chajul, 24.IV.1982, beating vegetation in rain forest, RM, 1F. 22 Km E Cintalapa, 29.VI.1981, beating branches with dead leaves, forest edge, ANGA & LBM, 3F. 42 Km NW Ocozocoautla, 1.VII.1981, beating branches with dead leaves, forest edge, 1F. *Hidalgo.* Omitlán, ca. Real del Monte, 21.VIII.1980, beating oak branches, ANGA, 1F. *Oaxaca.* Chiltepec, 17.III.1990, beating vegetation, AC & EB, 1F. *Puebla.* Ca. Hueytamalco, El Guayabal, Rancho Las Margaritas, 8.VI.1976, beating branches with dead leaves, RM, 1F. *Quintana Roo.* 6 Km S Felipe Carrillo Puerto, 26.III.1964, beating vegetation, forest edge, EC, 1F. 8 Km SW Puerto Juárez, 30.X.1971, beating branches with dead leaves, forest edge, ANGA, 1F, 1M. *Veracruz.* 11 Km E Papantla, 25.VI.1962, beating branches with dead leaves, ELM, 1F. 27 Km Nautla, 27.VI.1962, ELM & JMC, 1F. Los Tuxtlas, Rd. to Cerro San Martín, from San Andrés Tuxtla, 13 Km from Hwy., 14.VII.1973, beating branches with dead leaves, forest edge, ELM, 1F. Ca. UNAM Biology Station, 3.VIII.1989, beating orange and dead fronds of banana trees, ANGA & JGF, 2F. UNAM Biology Station, 4.VIII.1989, on buttressed tree trunks in forest, ANGA, 1F. USA. *Florida.* Dade Co. Entrance to Everglades National Park, 2.XII.1970, beating vegetation in pine flatwoods, ELM, 1F. *Hispaniola.* **Dominican Republic.** Boca Chica, small island off beach, 2.II.1954, beating mangroves, ELM, 2F. 6.III.1955, AMN, 1F. **Puerto Rico.** Río Piedras. Agricultural Experimental Station, 14.III.1959, beating vegetation in wooded pasture, ELM, 1F.

***Lachesilla bilunaris* García Aldrete new
species. (Figs. 7-10)**

Diagnosis. With characters of the group, differing from other species in having two crescent-shaped pigmented areas at the posterior margin of the subgenital plate.

Female. Color (in 80% alcohol). Body light brown; ocelli clear, without centripetal crescents. Thorax with an irregular, longitudinal brown band on each pleuron. Wings (Fig. 7), hyaline, veins golden brown.

Morphology. Subgenital plate (Fig. 8), almost trapezoidal, with mesal field of setae. Gonapophyses (Fig. 9), short, stout, apically blunt. Spermapore almost in the center of the ninth sternum, surrounded by a wide, pigmented ring (Fig. 9). Paraprocts (Fig. 10), semi-elliptical, setose, with a well defined pigmented band on proximal end, next each sensorium; these with 9-10 trichobothria. Epiproct (Fig. 10), almost trapezoidal, setae as illustrated.

Measurements. FW: 1469; HW: 1144; F: 298; T: 543; t1: 201; t2: 82; ctt1: 15; P4: 75; f1: 236; f2: 179; f3: 155; f4: 120; f5: 82; f6: 75; f7: 68; f8: 68; f9: 64; f10: 61; f11: 83; IO: 212; D: 147; d: 83; IO/D: 1.44; PO: 0.56.

Type Locality. St. Vincent. B. W. I. King's Hill, 27.VIII.1961, beating branches with dead leaves, ELM. Holotype F (ISU).

***Lachesilla caribe* García Aldrete**

L. caribe García Aldrete, 1991, p. 326

This species was described from specimens of Guadeloupe and Martinique, in the Lesser Antilles. Additional records follow: *Martinique*. Fond La Haye, 8.I.1955, AMN, 2F, 1M. *St. Vincent*. King's Hill, 27.VIII.1961, beating branches with dead leaves, ELM, 1M. *Puerto Rico*. Mayaguez, 19-22.I.1955, AMN, 1M.

***Lachesilla denticulata* García Aldrete**

L. denticulata García Aldrete, 1988b, p. 43

This species is widely distributed in tropical México (in the states of Colima, Chiapas, Guerrero, Jalisco, María Madre Island, Nayarit, Oaxaca, Puebla, San Luis Potosí, Tabasco and Veracruz), and has also been recorded in Guatemala, Honduras, Belize, Panama, Jamaica and Trinidad.

L. denticulata Mockford (1991), from the Brazilian state of Roraima, constitutes a homonym, so a replacement name for this taxon is necessary; I have pointed this out to Dr. Mockford, and we have agreed that the name *Lachesilla yanomami* Mockford, replaces *Lachesilla denticulata* Mockford, 1991 (Acta Amazonica, 21: 261), as the name *denticulata* was occupied by the taxon described by me in 1988.

***Lachesilla denticuliforceps* García Aldrete
new species (Figs. 11-16)**

Diagnosis. With characters of the group, differing from other species in having stout, acuminate claspers, each with a large tooth and a row of small denticles on inner edge.

Female. Color (in 80% alcohol). Body light brown; ocelli clear, with brown centripetal crescents. Antennae and P3-P4 dark brown; legs light brown. Wings (Fig. 11), hyaline, veins light brown.

Morphology. Subgenital plate (Fig. 14), broad, with a central field of setae; sides irregular, posterior margin almost straight, with an unpigmented band along its length. Gonapophyses (Fig. 13), slender, apically blunt; spermapore small, surrounded by a thin, pigmented ring; almost in the center of the ninth sternum. Paraprocts (Fig. 12), short, rounded, setose, with a pigmented band in proximal end, next to sensorium; these with 11-12 trichobothria.

Measurements. FW: 1605; HW: 1238; F: 307; T: 606; t1: 203; t2: 82; ctt1: 15; P4: 83; f1: 254; f2: 204; f3: 164; f4: 123; f5: 88; f6: 84; f7: 69; f8: 69; f9: 66; f10: 65; f11: 88; IO: 235; D: 134; d: 84; IO/D: 1.75; PO: 0.62.

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 15), straight anteriorly, slightly convex posteriorly, setae as illustrated. Claspers (Fig. 15), stout, with 2-3 setae on basal halves; distal halves curved, distally acuminate, with a prominent tooth on each inner side, and a row of denticles preapically. Phallosome (Fig. 15), with apodemes fused to form a slender baculum, that divides distally and extends into irregular, membranous area. Paraprocts (Fig. 16), broad, elongate, with pigmented band on proximal end, next each sensorium, these with 9-10 trichobothria; posterior margin pigmented mesally, with a short, acuminate, sclerotized prong. Epiproct (Fig. 16), straight anteriorly, with sides converging to a posterior apex; on apical area a stout, elongate, sclerotized apophysis; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 1518; HW: 1126; F: 306; T: 598; t1: 203; t2: 86; ctt1: 16; P4: 83; f1: 261; f2: 217; f3: 193; f4: 137; f5: 111; f6: 95; f7: 92; f8: 83; f9: 87; f10: 80; f11: 114; IO: 212; D: 148; d: 98; IO/D: 1.43; PO: 0.66.

Type Locality. Cuba. Habana. Copelia Square, 10.XI.1989, beating dead fronds of fan

palms, ANGA & LP. Holotype M, allotype F, 5F, 1M paratypes (IBUNAM).

Records. Mexico. *Tabasco*. Río Tonalá, 17.III.1964, beating dead fern leaves, ELM & EC, 1M. *Yucatán*. 8 Km E Progreso, towards Telchac, 14.VII.1986, beating dead fronds of fan palms, ANGA, 1M.

Lachesilla dilatiforceps García Aldrete, new species

(Figs. 17-22)

Diagnosis. With characters of the group, differing from other species in having two large, distinct, pigmented areas on the subgenital plate, and distal halves of claspers dilated, distally pointed and with a small tooth mesally on inner edge.

Female. Color (in 80% alcohol). Body light brown; ocelli clear, with reddish brown centripetal crescents. An irregular, longitudinal brown band on each side of thorax. Wings (Fig. 17), hyaline, veins reddish brown.

Morphology. Subgenital plate (Fig. 18), broad, setose; mesally with two large, elongate, pigmented areas, one to each side of longitudinal midline. Gonapophyses (Fig. 19), elongate, apically blunt. Spermapore small, towards anterior border of ninth sternum, surrounded by a large pigmented area as illustrated. Paraprocts (Fig. 20), semi-elliptical, with a pigmented band on proximal end, next each sensorium, these with 10-11 trichobothria. Epiproct (Fig. 20), straight anteriorly, rounded posteriorly, with setal field on distal half.

Measurements. FW: 1620; HW: 1277; F: 313; T: 606; t1: 227; t2: 86; ctt1: 16; P4: 79; f1: 238; f2: 175; f3: 153; f4: 110; f5: 81; f6: 76; f7: 59; f8: 65; f9: 57; f10: 61; f11: 75; IO: 257; D: 129; d: 86; IO/D: 1.99; PO: 0.66.

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 21), almost triangular, setose. Claspers (Fig. 21), broad, curved, acuminate, each with a short, curved, acuminate projection mesally on inner edge. Phallosome apodemes fused to form a slender baculum (Fig. 21), that widens slightly posteriorly and extends into a triangular membranous area. Paraprocts (Fig. 22), semi-elliptical, with a pigmented band on proximal half, next each sensorium; these with 10-11 trichobothria; a pigmented band mesally, along outer edge. Epiproct (Fig. 22), slightly concave anteriorly, rounded posteriorly, with setal field on posterior

half, and a rectangular projection on apex, with 3 setae.

Measurements. FW: 1530; HW: 1160; F: 312; T: 592; t1: 225; t2: 86; ctt1: 16; P4: 81; f1: 245; f2: 192; f3: 171; f4: 131; f5: 97; f6: 88; f7: 82; f8: 74; f9: 75; f10: 69; f11: 102; IO: 234; D: 129; d: 84; IO/D: 1.81; PO: 0.65.

Type Locality. Puerto Rico. Maracao Insular Forest, 11-12.III.1959, beating low trees and ferns, ELM & AMN, Holotype M, allotype F, 5 paratypes F, 4 paratypes M (ISU).

Records. Puerto Rico. Río Piedras, 22.I.1955, AMN, 1F, 1M. 2.III.1955, AMN, 2F, 1M. 13.III.1959, beating West Indian cherry, ELM, 1F, 1M. 14.III.1959, Agric. Exp. Sta., beating vegetation in wooded pasture, ELM, 1F. Mayaguez. 19-22.I.1955, AMN, 8F, 3M. 21.II.1955, AMN, 3F, 1M. 11.III.1959, AMN, 1F. Tidre. Treasure Island, 26.II.1955, AMN, 3F. San Germán, 23.II.1955, AMN, 11F, 5M. **Hispaniola. Dominican Republic.** Ciudad Trujillo, Carretera Isabela, 4.II.1954, ELM, 1F. Boca Chica, 6.III.1955, AMN, 11F, 9M. HAITI. Mariani, 12.XI.1959, AMN, 1F.

Lachesilla dominicaensis García Aldrete, new species

(Figs. 23-27)

Diagnosis. With characters of the group, differing from other species in having subgenital plate anteriorly bilobulate, with three transverse, pigmented slender bands next to median cleft.

Female. Color (in 80% alcohol). Body light brown; ocelli clear, without centripetal crescents. Antennae, maxillary palps and legs light brown. Wings (Fig. 23), hyaline, veins light brown.

Morphology. Subgenital plate (Fig. 25), with sides converging towards broadly bilobed apex, with three transverse pigmented, slender bands next to median cleft; setae as illustrated. Gonapophyses (Fig. 26), short, stout, apically blunt. Spermapore small, surrounded by a wide, pigmented ring. Paraprocts (Fig. 27), semi-elliptical, with a pigmented band along proximal end, next each sensorium; these, with 10-11 trichobothria. Epiproct (Fig. 27), straight anteriorly, posteriorly rounded, with setal field on posterior half; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 1843; HW: 1422; F: 428; T: 695; t1: 236; t2: 91; ctt1: 17; P4: 96; f1: 303; f2: 243; f3: 204; f4: 154; f5: 99; f6: 99; f7: 80; f8: 85; f9: 74; f10: 75; f11: 100; IO: 269; D: 164; d: 109; IO/D: 1.64; Po: 0.66.

Type Locality. **Dominica.** Pont Cassé. 23.X.1966, ABG. Holotype F (ISU).

***Lachesilla magna* García Aldrete, new species**
(Figs. 28-31)

Diagnosis. With characters of the group, differing from other species in having large spermapore, surrounded by a large, ellipsoid pigmented area.

Female. Color (in 80% alcohol). Body pale brown; ocelli clear, with dark brown centripetal crescents. P4 dark brown, more pigmented than rest of the body. Wings (Fig. 28), hyaline, veins brown.

Morphology. Subgenital plate (Fig. 30), broad, with mesal, posteriorly triangular, setose convex area; sides of plate converging posteriorly towards straight margin. Gonapophyses (Fig. 31), large, wider in the middle, apically blunt. Spermapore large, surrounded by an ellipsoid pigmented area, the longer axis of which is longitudinal to the ninth sternum (Fig. 31). Paraprocts (Fig. 29), semi-elliptical, proximal end with a pigmented band, next each sensorium; these with 13-14 trichobothria. Epiproct (Fig. 29), almost trapezoidal, posteriorly rounded, setal field on posterior half; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 2113; HW: 1620; F: 453; T: 827; t1: 286; t2: 106; ctt1: 17; P4: 99; f1: 274; f2: 281; f3: 236; f4: 182; f5: 100; f6: 97; f7: 82; f8: 88; f9: 70; f10: 76; f11: 113; IO: 311; D: 198; d: 149; IO/D: 1.57; PO: 0.75.

Type Locality. **Trinidad.** North Range, mile 10.5 Arima-Blanchisseuse Rd., 10.V.1985, CWOB & LBOB. Holotype F, 2 paratypes F from 3 mi. E Arima-Blanchisseuse Rd., Cooker Trail, off La Laja, S Rd., 11.V.1985, CWOB & LBOB (IBUNAM).

Records. **Trinidad.** Blanchisseuse, 29.XII.1954, AMN, 1F. Simla, ca. Arima, 27.II.1954, beating vegetation, ELM, 1F. 30.VIII.1961, on dead fern leaves, ELM, 1F. **VENEZUELA.** Rancho Grande, 20.XII.1954, AMN, 2F. This species appears to be close to *L. valvula* New & Thornton (1975).

***Lachesilla nevermanni* (Navas)**

Elipsocus nevermanni Navas, 1933, p. 108

Lachesilla nevermanni (Navas). New, 1976, p. 94

This species was only known from Costa Rica; the following records broadens its distribution to

the southern Caribbean area: **Honduras.** Coyoles, 24.V.1949, on *Amaranthus viridis*, ECB, 1F. **Trinidad.** Piarco, 1.III.1959, AMN, 1F. Northern Range, Arima-Blanchisseuse Rd., 10.V.1985, CWOB & LBOB, 1M.

***Lachesilla pigmentithorax* García Aldrete, new species**
(Figs. 39-45)

Diagnosis. With characters of the group, differing from other species in having episterna of meso and metatorax reddish brown, contrasting with epimera and general body color pale brown.

Female. Color (in 80% alcohol). Body pale brown; ocelli clear, with ochre centripetal crescents. Antennae, P4 and legs brown. Episterna of meso and metathorax reddish brown, strongly contrasting with epimera and rest of the body, pale brown. Wings (Fig. 39), hyaline, veins brown.

Morphology. Subgenital plate (Fig. 41), broad, with a mesal, setose, convex area, posteriorly triangular; posterior third of plate projected, glabrous, with border straight. Gonapophyses (Fig. 42), short, globose, apically blunt; spermapore large, surrounded by a tear-shaped pigmented area (Fig. 42). Paraprocts (Fig. 43), ovoid, densely setose, as illustrated, proximal end with a pigmented band next each sensorium; these with 12-13 trichobothria. Epiproct (Fig. 43), anteriorly straight, posteriorly rounded, with setae on posterior half.

Measurements. FW: 2433; HW: 1853; F: 582; T: 1088; t1: 400; t2: 111; ctt1: 22; P4: 121; f1: 371; f2: 324; f3: 287; f4: 212; f5: 143; f6: 115; f7: 107; IO: 424; D: 260; d: 197; IO/D: 1.63; PO: 0.75

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 44), almost rectangular, slightly concave posteriorly, setae as illustrated. Claspers (Fig. 44), proximally broad, setose, with postero-lateral corners rounded; distally slender, curved, with apices slightly dilated. Phallosome apodemes fused to form a slender baculum that divides posteriorly, each arm extended into a large, triangular, membranous area. Paraprocts (Fig. 45), almost straight anteriorly, posteriorly rounded, mesally with a slender pigmented band along the border; sensoria with 12-13 trichobothria, one, on outer edge, without basal rosette. Epiproct (Fig. 45), straight anteriorly, rounded posteriorly, setae on distal half.

Measurements. FW: 2427; HW: 1808; F: 550; T: 968; t1: 392; t2: 106; ctt1: 22; P4: 115; f1: 354;

f2: 323; f3: 286; f4: 226; f5: 143; f6: 119; f7: 116; f8: 105; f9: 96; f10: 106; f11: 122; IO: 387; D: 239; d: 180; IO/D: 1.61; PO: 0.75.

Type Locality. Trinidad. B.W.I. Simla, ca. Arima, 24.II.1959, beating trees, ELM. Holotype M, allotype F, 1M, 2F paratypes. 27.II.1959, beating cacao trees, ELM, 1F paratype (ISU). 28.II.1959, AMN, 1F paratype, AMNH. This species is close to *L. magna* and to *L. valvula*, from which it can be separated on pigmentation details and in the shape of the spermapore sclerite (cf. *L. magna* García Aldrete, and New & Thornton, 1975).

***Lachesilla rugosa* García Aldrete, new species**
(Figs. 46-52)

Diagnosis. With characters of the group, differing from other species in having a small, strongly sclerotized, obtusely concave projection at the base of the distal half of each clasper, and in having two large fields of sclerotized papillae on the male epiproct.

Female. Color (in 80 % alcohol). Body pale brown; ocelli clear, without centripetal crescents. Antennae, maxillary palps and legs pale brown. Wings (Fig. 46), hyaline, veins light brown.

Morphology. Subgenital plate (Fig. 48), broad, setose as illustrated, with a wide, median, posterior concavity, so the plate is slightly bilobed, with the posterior border glabrous. Gonapophyses (Fig. 47), wide at base, narrowing towards distal ends, apices blunt. Spermapore on anterior third of ninth sternum, surrounded by an elliptical, pigmented area (Fig. 47). Paraprocts (Fig. 49), semi-elliptical, with pigmented bands along proximal ends, next sensoria; these with 11-12 trichobothria. Epiproct (Fig. 49), slightly concave anteriorly, rounded posteriorly, with setal field next to posterior margin. Setae of paraprocts and epiproct as illustrated.

Measurements. FW: 2158; HW: 1623; F: 425; T: 807; t1: 281; t2: 110; ctt1: 17; f1: 308; f2: 257; f3: 216; IO: 303; D: 160; d: 106; IO/D: 1.89; PO: 0.66.

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 50), straight anteriorly, slightly projected posteriorly to a wide apex, setae as illustrated. Claspers (Fig. 50), broad basally, with posterior outer corner projected, setae as illustrated; distal halves slender, slightly curved, apically blunt, each with 2-3 subapical denticles, and basally a small, sclerotized, obtusely concave

projection. Phallosome apodemes fused, forming a baculum that widens posteriorly and divides, each arm extending into a broad, membranous area (Fig. 50). Paraprocts (Fig. 52), semi-elliptical, with a distinct, wide, sclerotized crescent on proximal end, next each sensorium; these with 12-13 trichobothria. Epiproct (Fig. 51), straight anteriorly and posteriorly, with a field of large, sclerotized papillae on each postero-lateral corner. Setae of paraprocts and epiproct as illustrated.

Measurements. FW: 2265; HW: 1724; F: 451; T: 841; t1: 304; t2: 112; ctt1: 20; f1: 352; f2: 302; f3: 251; f4: 192; IO: 284; D: 172; d: 128; IO/D: 1.65; PO: 0.74.

Type Locality. Peru. Lima. La Molina, 18.IV.1975, on cassava, FDB. Holotype M, allotype F, 2 paratypes of each sex (ISU).

Records. Brazil. São Paulo, Forest Reserve, 16.I.1959, AMN, 1F. Botanical Garden, 13.II.1959, AMN, 1F, 1M. Ipiranga, 1.XII.1959, AMN, 3F, 3M. Rio de Janeiro. Botanical Garden, 20.I.1959, AMN, 1F. Nova Teutonia, IX.1979, FP, 1F. XI.1969, FP, 3F. IX.1970, FP, 1F, 1M. Trinidad. North Range, 5 Km E Arima-Blanchisseuse Rd., Cooker Trail, off La Laja S Rd., 11.V.1985, CWOB & LBOB, 1F.

***Lachesilla sandersoni* Mockford**
(Figs. 53-56)

L. sandersoni Mockford, 1974, p.143

This species was described from Cuba, on basis of females only. Turner (1975), described *L. mona*, from Jamaica, on basis of specimens of both sexes; in his description, Turner did not illustrate the subgenital plate of the female, and did not refer to the shape and pigmentation of the spermapore sclerite which, in some species, has diagnostic value. I have examined the holotype F of *L. mona*, deposited in the British Museum of Natural History (London), and it corresponds with the female *L. sandersoni* described by Mockford. I have also examined the allotype M of *L. mona*, deposited in the same institution, and have recently found the same Female-Male associations in the Dominican Republic, in Jamaica, and in Cuba. Lone females have been recorded in the Dominican Republic, in Haiti, French Guiana, Jamaica and in the Gulf Coast of México, whereas lone males have been collected in the Dominican Republic, in Guatemala and in Jamaica. Thus, *L. mona* Turner, becomes a synonym of *L. sandersoni* Mockford. The records of the species are the following: Cuba. Habana. Gardens of Hemingway Museum,

12.XI.1989, beating branches of trees and shrubs, ANGA, 3F, 1M. **Hispaniola. Dominican Republic.** Cd. Trujillo, Carretera Isabela at Arroyo Hondo, 25.I.1954, ELM, 7F. Boca Chica, 6.III.1955, AMN, 2M. USDA#61-4474, 11.II.1961, in plane cabin, LS, 1M. Haiti. Dept. du Nord. Milot, Ruins of Palais du Christophe, 20.V.1959, MWS, 1F. Mariani, 12.XI.1959, AMN, 1F. **French Guiana.** Cayenne, 16.II.1959, beating trees in botanical garden, ELM, 1F. Guatemala. Río Hato, 86 Km NE Guatemala City, Hwy. to Puerto Barrios, 28.VIII.1968, beating coconut palms, trees and shrubs, ELM, 3M. Jamaica. Kingston, 28.VI.1958, MWS, 1F, 2M. St. Andrew University Campus, allotype M, 10.XI.1970; Hardwar Gap, holotype F, 24.IX.1971 (Turner, 1975). **Mexico.** Veracruz. 8 Km S Tecolutla, 26.VI.1962, beating vegetation, ELM *et al.*, 6F. 27 Km N Nautla, 27.VI.1962, beating broad leaved trees, ELM *et al.*, 1F.

Lachesilla trinidadensis García Aldrete,
new species
(Figs. 57-62)

Diagnosis. With characters of the group, differing from other species in having a narrow hypandrium and prominent postero-lateral corners of the subgenital plate.

Female. Color (in 80% alcohol). Body light brown; ocelli clear, without centripetal crescents. Antennae, maxillary palps and legs brown. Wings (Fig. 57), hyaline, veins brown.

Morphology. Subgenital plate (Fig. 59), broad, with sides converging to almost straight, slightly projected posterior border; postero-lateral corners protruding, setal field of plate as illustrated. Gonapophyses (Fig. 58), stout, apically blunt; spermapore almost in center of ninth sternum, surrounded by a wide, pigmented ring. Paraprocts (Fig. 61), ovoid, with pigmented band along proximal end; sensoria with 11-12 trichobothria. Epiproct (Fig. 61), almost straight anteriorly, rounded posteriorly; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 2049; HW: 1552; F: 393; T: 766; t1: 252; t2: 93; ctt1: 19; f1: 340; f2: 288; f3: 242; f4: 186; f5: 128; f6: 112; f7: 94; f8: 93; f9: 89; f10: 78; IO: 294; D: 181; d: 128; IO/D: 1.62; PO: 0.70.

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 60), narrow, approximaly trapezoidal, setose. Claspers stout

(Fig. 60), with 5-6 setae on proximal halves; distal halves curved, apically dilated. Phallosome apodemes fused to form a slender baculum (Fig. 60), that ends posteriorly in two wide, membranous areas. Paraprocts (Fig. 62), semi-elliptical, setose, with 12-13 trichobothria on each sensorium. Epiproct (Fig. 62), straight anteriorly, rounded posteriorly, with setal fields on posterior half.

Measurements. FW: 1947; HW: 1461; F: 395; T: 728; t1: 251; t2: 96; ctt1: 18; f1: 371; f2: 336; f3: 276; f4: 222; f5: 155; f6: 134; f7: 117; f8: 117; f9: 102; f10: 96; f11: 130; IO: 282; D: 181; d: 126; IO/D: 1.55; PO: 0.68.

Type Locality. **Trinidad.** Northern Range, Arima- Blanchisseuse Rd., 7-10.V.1985, CWOB & LBOB. Holotype M, allotype F, 27F, 12M, paratypes (IBUNAM).

Records. **Trinidad.** Arima Valley, 266-400 m, 10-22.II.1964, R & C, 5F. Simla, 29.VIII.1961, on dead cacao leaves on branches, ELM, 1F. Blanchisseuse, 16 Km from Arima, 29.XII.1954, AMN, 1M. This species is close to *L. cuala* García Aldrete (1988b).

Lachesilla yanomamioides García Aldrete,
new species
(Figs. 63-68)

Diagnosis. With characters of the group, differing from other species in having slender distal halves of claspers, each with a row of small denticles on inner edge; and in having a slender, transverse irregular projection mesally on the male epiproct.

Female. Color (in 80% alcohol). Body pale brown; ocelli clear, without centripetal crescents. Wings (Fig. 63), hyaline, veins brown.

Morphology. Subgenital plate (Fig. 68), with sides converging to slightly concave posterior margin, a pigmented band running along each side, setae as illustrated. Gonapophyses (Fig. 67), wide at base, narrowing distally, apically blunt. Spermapore small, in center of ninth sternum, surrounded by a wide, pigmented ring. Ninth sternum (Fig. 67), limited anteriorly by a pigmented band. Paraprocts (Fig. 66), semi-elliptical, sensoria with 11-12 trichobothria. Epiproct (Fig. 66), almost trapezoidal, setal field on posterior half; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 2046; HW: 1496; F: 410; T: 749; t1: 262; t2: 95; ctt1: 20; P4: 89; f1: 331; f2: 266; f3: 213; f4: 165; f5: 94; f6: 106; f7: 75; f8: 75; f9: 59; IO: 291; D: 185; d: 125; IO/D: 1.57; PO: 0.67.

Male. Color (in 80% alcohol). Same as the female.

Morphology. Hypandrium (Fig. 65), broad, anteriorly straight, slightly projected posteriorly, setae as illustrated; claspers (Fig. 65), with 5-7 setae on basal halves, distally very slender, curved, slightly dilated apically, each with a row of fine denticles along outer edge. Phallosome apodemes (Fig. 65), fused to form a slender rod, distally divided, each arm extended into a wide membranous area. Paraprocts (Fig. 64), semi-elliptical, with a distinct, sclerotized area proximally, next each sensorium, these with 11-12 trichobothria. Epiproct (Fig. 64), almost trapezoidal, with a mesal, elongate, transverse, protuberant area; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 2155; HW: 1626; F: 420; T: 804; t1: 271; t2: 99; ct1: 19; P4: 95; f1: 363; f2: 261; f3: 231; f4: 181; f5: 110; f6: 106; f7: 87; f8: 84; f9: 80; f10: 73; f11: 100; IO: 259; D: 220; d: 150; IO/D: 1.17; PO: 0.68.

Type Locality. Mexico. Veracruz. Los Tuxtlas, Laguna Escondida, ca. UNAM Biology Station, 28.XII.1988, beating branches with dead leaves, forest edge, ANGA. Holotype M, allotype F, 8F, 1M paratypes (IBUNAM).

Records. Mexico. Campeche. 22 Km E Xpujil, 28.III.1964, beating dead, hanging palm fronds, ELM & EC, 1F, 1M. Km 178, Hwy. Escárcega-Chetumal, 23.VI.1989, LCP & ACC, 2F. Chiapas. Apicpac, Malpaso Reservoir, 53 Km NW Ocozocoautla, 1.VII.1981, on dead fronds of banana tree, ANGA & LBM, 2F, 1M. Hidalgo. 36 Km NE Rancho Viejo, Hwy. 85, 22.VI.1962, beating vegetation, mostly oaks, ELM *et al.*, 1F, 1M. Oaxaca. 16 Km SE Valle Nacional, 1 850 m., 11.VII.1986, beating dead fronds of banana trees, ANGA, 1F, 1M. Puebla. Finca Lourdes, La Unión, ca. Xicotep de Juárez, 2.XI.1963, beating vegetation along river edge, ELM, 1F, 1M. 16.X.1982, beating vegetation, coffee plantation, ANGA, 2F, 1M. San Luis Potosí. 12 Km W Naranjo, 20.VI.1962, ELM, 1F, 1M. Tamaulipas. 10 Km W Gómez Farías, 16.VI.1962, beating vegetation, ELM *et al.*, 2F, 2M. Veracruz. 11 Km E Papantla, 25.VI.1962, beating vegetation in forest patch, ELM *et al.*, 1F, 1M. 23 Km N Nautla, 27.VI.1962, beating vegetation in forest, ELM *et al.*, 3F, 2M. Metlac, 900 m., 5.XI.1975, beating *Cecropia* branches, HB, 1M. Los Tuxtlas, 3 Km N Santiago Tuxtla, 9.VII.1962, beating vegetation in forest, ELM *et al.*, 2F, 1M. 13 Km N Santiago Tuxtla, 7-8.VII.1967, on dead *Heliconia* leaves in forest, ELM, 1F, 1M. Coyame, 9.VII.1967,

on dead banana fronds, ELM, 3F. Road to Cerro El Vigía, ca. Santiago Tuxtla, 13.VII.1973, beating vegetation in forest, GE, 2F, 2M. Road to San Martín Volcano, 6 Km NE San Andrés Tuxtla, 15.VII.1973, beating vegetation, ANGA, 3F, 2M. 4 Km NE Catemaco, towards Sontecomapan, 29.VI.1979, beating branches with dead leaves in forest patch, ANGA & DY, 4F. UNAM Biology Station, 26.VI.1979, beating vegetation, ANGA & DY, 1F, 1M. 20.XII.1984, beating branches in forest, ANGA, 7F. Cerro El Vigía, ca. Microwaves Station, 28.VI.1979, beating vegetation, ANGA, 3F. 2 Km N Sontecomapan, 15.III.1984, beating branches in forest, ANGA, 1F. Balzapote, 30.XII.1988, on dead leaves of fallen trees, ANGA, 2F. Guatemala. Rabinal, 30.VIII.1968, beating dead banana leaves, ELM & ANGA, 1F, 1M. Trinidad. Simla, ca. Arima, 28.II.1959, beating cacao trees, ELM, 1M.

This species is close to *L. yanomami* Mockford. (cf. *L. denticulata* García Aldrete, in this paper).

pedicularia Group (García Aldrete, 1974a)

Lachesilla aethiopica (Enderlein)

Pterodela pedicularia var. *aethiopica* Enderlein, 1902. Mitt. zool. Mus. Berlin., 2: 11.
Lachesilla aethiopica (Enderlein). Badonnel, 1949. Bull. Inst. roy. Sci. nat. Belg., 25: 53.

This species, most likely parthenogenetic, was originally described from Tanganyika, Africa, and has also been recorded in Angola, Uganda and Zaire, as well as in Brazil, Galapagos Islands, Cuba, Florida, Trinidad, Hispaniola, Jamaica, Puerto Rico, and in numerous Mexican localities in the states of Chiapas, Hidalgo, Oaxaca, Puebla and Veracruz (Badonnel & García Aldrete, 1980). I include here-with additional records of this species in Central, South America, and the Caribbean region: Guatemala. 2 Km NW Panajachel, 29.VIII.1973, beating *Cupressus*, ANGA, 2F. Belize. Toledo District, Columbia Forestry Station, ca. San Antonio, 8-15.VII.1971, beating cohune palms and branches with dead leaves in forest, ELM, 5F. Costa Rica. Heredia Province, Finca La Selva, 1.VII.1977, beating branches with dead, hanging leaves in forest, ELM, 5F. Peru. La Merced, Chanchamayo Valley, 1.I.1959, AMN, 2F. St. Lucia. Edmunds Forestry Reserve, 8-10.VIII.1986, CWOB, 1F. Trinidad. Simla, 26.II.1959, AMN, 1F. Northern Range, Arima-Blanchisseuse Rd., 10.V.1985, CW & LBOB, 2F.

Jamaica. 3 Km SSW Unity Valley, 4.III.1955, AMN, 1F. Gt. Morass, 25.III.1955, AMN, 1F. Kinloss, 23.III.1955, AMN, 3F. Kingston, Hope Botanical Gardens, 16.III.1955, AMN, 16F. **Puerto Rico.** Mayaguez, 19-22.I.1955, AMN, 9F. 21.II.1955, AMN, 1F. 2-3.IX.1959, AMN, 1F. Río Piedras, 22.I.1955, AMN, 4F. 2.III.1955, AMN, 3F. 14.III.1959, beating vegetation, wooded pasture, ELM, 6F. El Yunque, 27.II.1955, AMN, 1F. La Parguera, 24.II.1955, AMN, 1F. Cidra, Treasure Island, 26.II.1955, AMN, 8F. San Germán, 23.II.1955, AMN, 2F. **Hispaniola.** Dominican Republic. Cd. Trujillo, Carretera Isabela, 4.II.1954, ELM, 4F. 3.III.1955, AMN, 1F. Boca Chica, 6.III.1955, AMN, 4F.

Lachesilla nadleri García Aldrete, new species
(Figs. 32-38)

Diagnosis. With characters of the group, differing from other species in having subgenital plate deeply obtusely concave posteriorly, with two mesal curved marks, claspers straight, directed posteriorly, and male epiproct bilobed, each lobe with a sharp, sclerotized projection.

Female. Color (in 80% alcohol). Body light brown; ocelli clear, without centripetal crescents. Antennae, maxillary palps and legs brown. Wings (Fig. 32), hyaline, veins brown.

Morphology. Subgenital plate (Fig. 33), deeply obtusely concave posteriorly, with resulting lobes stout, apically rounded, each with a distal field of 5-6 setae, other setae as illustrated; mesally with two pigmented, curved marks, one on each side of longitudinal midline. Gonapophyses (Fig. 34), wider basally, narrowing towards distal ends, apices acuminate; ninth sternum (Fig. 34), pigmented as illustrated. Paraprocts (Fig. 35), broad, outer margin rounded; sensoria with 9-10 trichobothria. Epiproct (Fig. 35), straight anteriorly, distally rounded, with distal field along posterior margin; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 1969; HW: 1506; F: 371; T: 694; t1: 249; t2: 89; ctt1: 19; P4: 106; f1: 260; f2: 234; f3: 191; f4: 152; f5: 91; f6: 90; f7: 75; f8: 75; f9: 66; f10: 74; f11: 99; IO: 279; D: 167; d: 103; IO/D: 1.67; PO: 0.61.

Male. Color (in 80% alcohol). Same as the female.

Morphology. Claspers fused laterally to almost triangular hypandrium (Fig. 36); proximal half of each clasper rounded, setae as illustrated, distal halves slender, almost straight, directed posteriorly,

slightly narrowing to the apices. Phallosome apodemes fused to form a stout baculum, distally widened and extended into large, rounded membranous area (Fig. 36). Paraprocts (Fig. 37), proximally rounded, articulated to condyles in clunium; each with a stout, setose prong; sensoria with 10-11 trichobothria. Epiproct (Fig. 38), straight anteriorly, bilobed posteriorly; each lobe with a small, sclerotized, acuminate apophysis; setae of paraprocts and epiproct as illustrated.

Measurements. FW: 1818; HW: 1366; F: 380; T: 703; t1: 267; t2: 89; ctt1: 20; P4: 98; f1: 285; f2: 258; f3: 224; f4: 171; f5: 112; f6: 121; f7: 94; f8: 92; f9: 84; IO: 258; D: 179; d: 110; IO/D: 1.44; PO: 0.61.

Type Locality. Trinidad, B. W. I. Simla, 28.XII.1954, AMN. Holotype M, allotype F, 1M, 1F paratypes (AMNH).

Records. Peru. *Madre de Dios.* Río Tambopata Reserve, 30 Km (air), SW Puerto Maldonado, 290 m., 12° 50' S: 69° 17' W. Smithsonian Institution Canopy Fogging Project, TLE *et al.*, 25.II.1984, 05/02/054, 1F. 6.IX.1984, 05/02/049, 1F. 14.IX.1984, 01/02/062, 1M.

Lachesilla rena Sommerman

L. rena Sommerman, 1946, p. 653.

This species was described from Phoenix, Arizona, and has a wide distribution: it has been recorded in Arizona, California and Texas, also in the Mexican states of Baja California Norte, Baja California Sur, Campeche, Colima, Chiapas, Jalisco, Guerrero, Nuevo León, Oaxaca, Puebla; San Juanito, María Madre and Socorro Islands, San Luis Potosí, Sinaloa, Sonora, Tamaulipas, Veracruz and Yucatán, as well as in Guatemala, Honduras, Haiti, Jamaica and Puerto Rico. The Central American and Caribbean records are as follow: **Guatemala.** 30 Km NE Guatemala City, Hwy. to Puerto Barrios, 27.VIII.1968, beating branches with dead leaves, desert scrub, ELM & ANGA, 1F, 1M. 9 Km NW Patzún, 29.VIII.1973, on dead hanging leaves of shrubs, ANGA, 1M. **Honduras.** Coyoles, 12 Km W Olanchito, 20-22.VI.1949, ECB, 1F, 4M. **Hispaniola.** Haiti. Dept. du Nord. Milot, Ruins of Palais du Christophe, 20.V.1959, MWS, 1M. **Jamaica.** Kingston. 28.VI.1958, MWS, 4F, 7M. Negrill, 24.III.1955, AMN, 1F. **Puerto Rico.** Maracao Insular Forest, 11.III.1959, beating vegetation, ELM, 1F, 1M.

L. tectorum Badonnel

L. tectorum Badonnel, 1931, p. 238.

L. pilosa Badonnel, 1966, p. 236.

This species was originally described from Mozambique (Badonnel, 1931). Badonnel (1966), described *L. pilosa* from Mauritius Island, which is in reality a synonym of *L. tectorum*, the species is also known to occur in Angola, Australia, Ivory Coast, Réunion Island, Madagascar, southern Florida and southern Texas (U.S.A.), in the Mexican states of Nuevo León and Tamaulipas, in Honduras, Grand Cayman, Cuba and Brazil (Badonnel, 1977; Mockford, 1993; Smithers, 1974, and my own records).

The following records widen considerably the distribution of the species: **Mexico**: states of Chiapas, Colima, Distrito Federal, Guanajuato, Michoacán, Morelos, Nuevo León, Puebla, Sinaloa, Tamaulipas, Veracruz and Zacatecas; the localities are too numerous to be cited. **Panama**. Canal Zone, Balboa, 22-28.IV.1946, lighthouse, 1F. **Colombia**. Ex. orchids, 10F. **Brazil**. Itu. 14.I.1959, AMN, 1F. **Hispaniola**. Haiti. Tombeau Cheval, 24.X.1950, 1F. Kenscoff, La Decouverte, 10-12.III.1955, AMN, 22F. **Jamaica**. Kingston, Hope Gardens, 6.V.1950, 2F. Hardwar Gap, Portland P., 9.V.1950, 1F. Trinidad. On *Persea americana*, 1F. **South India**. Dohnavur, Tirunelveli, 27.III.1962, ESR & DQC, 1F.

I have examined the type of *Lachesilla montana* Turner, deposited in the British Museum of Natural History, in London, and found that it is, in reality, *L. tectorum* Badonnel; thus, *L. montana* Turner, falls in the synonymy of the latter species.

riegeli group (García Aldrete, 1974a)

Lachesilla riegeli Sommerman

L. riegeli Sommerman, 1946, p. 654.

This species was described from Miami Beach, Florida, state in which the species has also been recorded in Indian River, Monroe, Highlands and Polk counties. In México it has been recorded in the states of Campeche, Guerrero, Jalisco, Nuevo León, Oaxaca, Sonora and Yucatán, and in María Madre and Socorro Islands. The records for Central, South America and the Caribbean region are the following: **Guatemala**. 30 Km NE Guatemala City, Hwy. to Puerto Barrios, 27.VIII.1968, beating branches with dead leaves, desert scrub, ELM & ANGA, 1M. 36 Km NE Guatemala City, 27.VIII.1973, beating shrub branches with dead, hanging leaves, ANGA, 1F.

Honduras. Coyoles, 12 Km W Olanchito, 20-22.VI.1949, ECB, 67F, 27M. Comayagua, 13 Km S Comayagua, 21.VII.1977, CWOB, 2F, 1M. Bahamas Is. N.P. Nassau, 21.IV.1958, AMN, 2F. Cuba. Matanzas, 1.V.1973, attracted to light, 1M. (Badonnel, 1977). **Hispaniola**. Haiti. Port au Prince, 22.V.1950, 1F. **Jamaica**. Negrill, 24.III.1955, AMN, 2F. Puerto Rico. La Parguera, 24.II.1955, AMN, 1F. 8 Km W Aguada, 28.IV.1959, MWS, 1M. **Colombia**. Valle Cali, 1000 m, 3-4.IX.1970, light trap, DB, 1F.

L. sola García Aldrete

L. sola García Aldrete, 1982, p. 204.

This species was described from Jamaica, on basis of six females. Additional records are the following: **Jamaica**. Negrill, 24.III.1955, AMN, 2F. Bahamas Is. N. P. Paradise I. 22-23.IV.1958, AMN, 8F.

Lachesilla tropica García Aldrete

L. tropica García Aldrete, 1982, p. 204.

This species has been recorded in Jamaica; it has also been collected in Guatemala, Honduras, in the Mexican states of Campeche, Chiapas, Guerrero, Jalisco, Nuevo León, Oaxaca, Quintana Roo, San Luis Potosí, Tamaulipas, Veracruz and Yucatán, and in southern Florida, USA.

Discussion

The three major divisions of the Caribbean - Greater Antilles, Lesser Antilles and Trinidad Tobago - are recognizable as entities on the basis of their *Lachesilla* fauna. Only one species, *L. aethiopica*, is shared by all three major divisions. This species, widespread in tropical areas outside the Caribbean is, notably, the only species shared between the Lesser Antilles and Trinidad-Tobago. Two other species, *L. denticulata* and *L. tectorum*, are shared between Trinidad-Tobago and the Greater Antilles; both of them are relatively widespread on various mainland areas.

In the Antilles apart from Trinidad-Tobago there are 15 species. One endemic, *L. caribe* is found on both major divisions, but is restricted in the Greater Antilles to the easternmost island, Puerto Rico. The Greater Antilles have only two exclusive endemics: *L. dilatiforceps* (*forcepeta* group) and *L. sola* (*riegeli* group). In addition to the six aforementioned species,

six others occur in the Greater Antilles, all of which are shared with various mainland areas.

The Lesser Antilles have two exclusive endemics: *L. bilunaris* on St. Vincent and *L. dominicaensis* on Dominica (both *forcepeta* group). Both are known only from females and differ primarily in size. These two plus the two mentioned above are all that are known from the Lesser Antilles. Assuming that these numbers are not collection artifacts, one is led to believe that the Lesser Antilles are difficult to reach and/or difficult to establish upon for these psocids.

For the Antilles proper, then, excluding Trinidad-Tobago, *Lachesilla* as currently understood has undergone little speciation and most of the species have become established from other areas.

Of the 11 species on Trinidad-Tobago, four are endemics: *L. bilobata*, *L. magna*, *L. pigmentithorax*, and *L. trinidadensis* (all *forcepeta* group). Some speciation may have occurred on Trinidad by isolation from adjacent mainland populations.

In addition to the four endemics and the three species mentioned above, four other species occur on Trinidad. All are shared with various mainland areas, and one, *L. yanomamioides*, reaches North America, though restricted there to southern and eastern México. The seemingly greater diversity of *Lachesilla* on the relatively small land mass of Trinidad-Tobago, compared to the Greater Antilles may be due in part to more collecting and in part to greater proximity to the mainland.

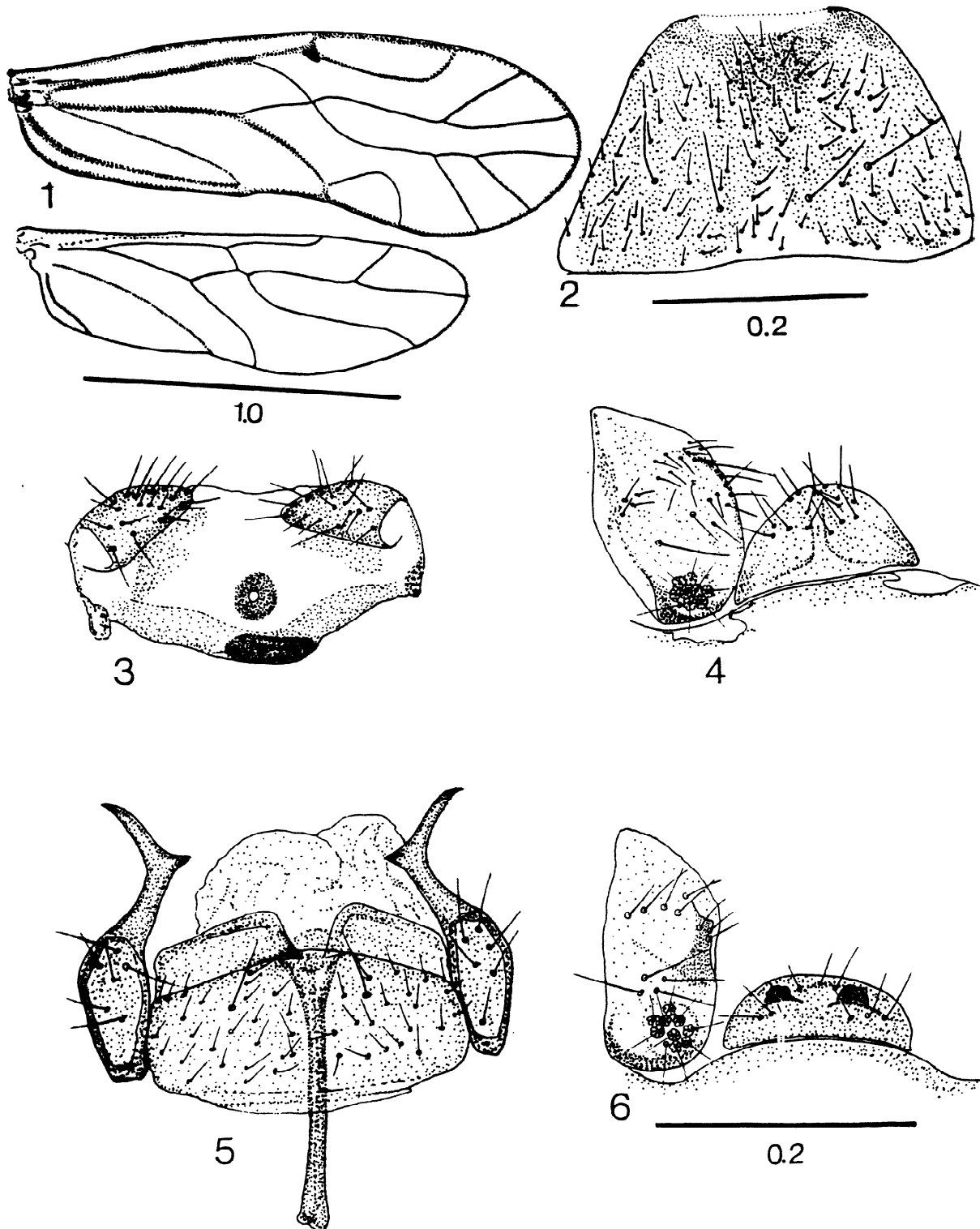
Acknowledgements

I am indebted to the Illinois Natural History Survey, Urbana; to Dr. E. L. Mockford (Illinois State University, Normal), and to Dr. Randall T. Schuh (American Museum of Natural History, New York) for loans of *Lachesilla* specimens in their respective collections. To Dr. Mockford I also owe the discussion included in the paper. Felipe Villegas (Instituto de Biología, UNAM, México City), drew the distribution maps. I am also grateful to this latter institution for supporting my research throughout the years.

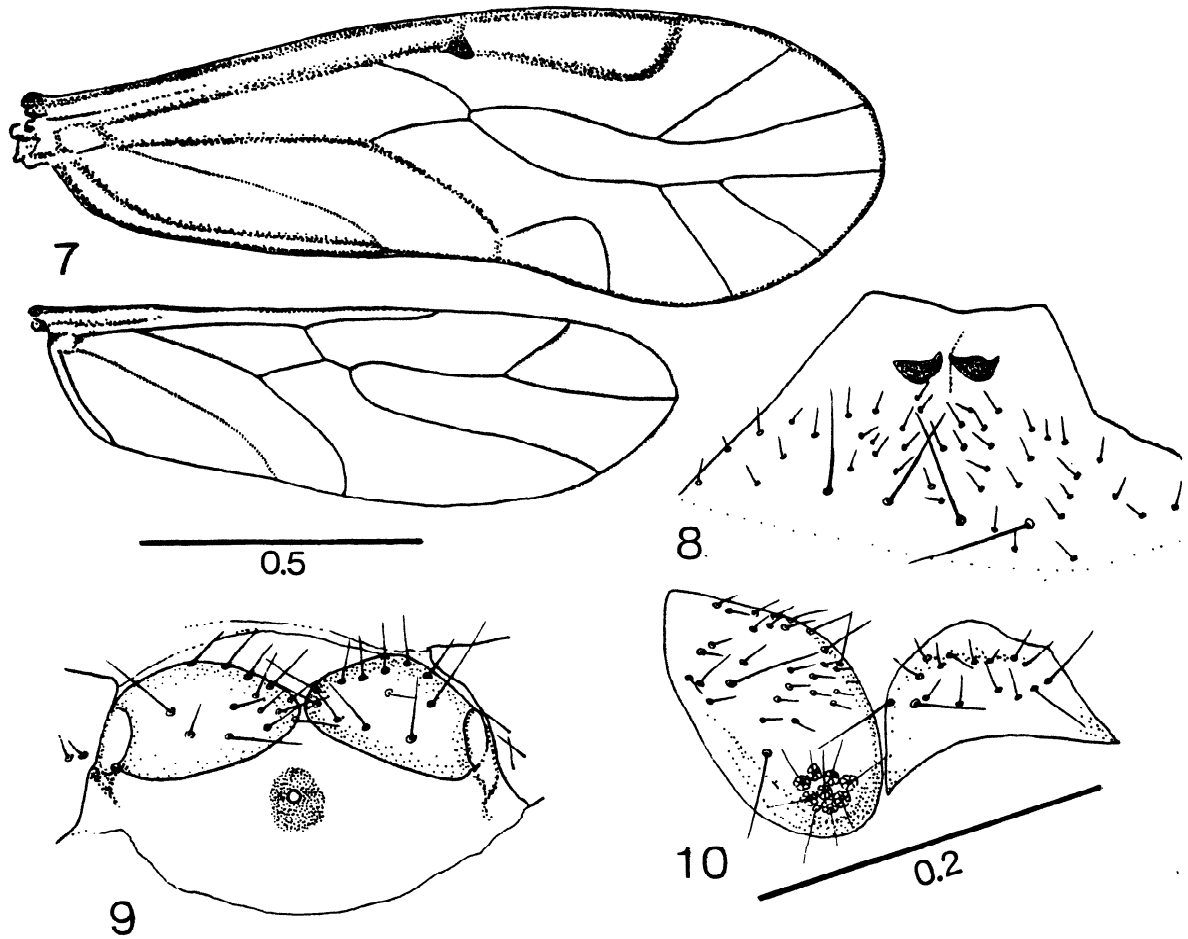
References

- Badonnel, A.** 1931. Contribution a l'étude de la faune de Mozambique. Voyage de M. P. Lesne (1928-1929). 4eme note. Copeognathes. Annales des Sciences Naturelles, Zoologie, ser. 10, 14:229-260
- Badonnel, A.** 1949. Psocoptères du Congo Belge (3eme note). Bulletin de l'Institut Royal des Sciences Naturelles de Belgique. 25: 1-64
- Badonnel, A.** 1966. Sur quelques Psocoptères des îles Mascareignes. Bulletin de la Société Entomologique de France. 71: 234-238
- Badonnel, A.** 1977. Psocoptères cavernicoles de Cuba (Deuxième note). In: Resultats des Expéditions Biospéologiques Cubano-Roumaines à Cuba. Editura Academia Republica Socialista Romania: 345-353
- Badonnel, A. and A. N. García Aldrete.** 1980. *Lachesilla nuptialis* n. sp. espèce-soeur de *Lachesilla aethiopica* (Enderlein) (Psocoptera: Lachesillidae). Folia Entomologica Mexicana. 44: 5-18
- Enderlein, G.** 1902. Zur Kenntnis der Insekten Deutsch-Ostafrikas. Ergebnisse der Nyassasee- und Kingagebirges- Expedition der Heckmann-Wentz-elstiftung. 2. Psociden aus Deutsch Ostafrikas. Mitteilungen des Zoologischen Museums, Berlin. 2: 7-16
- García Aldrete, A. N.** 1972. A taxonomic study of the genus *Lachesilla* (Insecta: Psocoptera). Ph. D. dissertation. Illinois State University, Normal, Illinois, 213 p.
- García Aldrete, A. N.** 1974a. A classification above species level of the genus *Lachesilla* Westwood (Psocoptera: Lachesillidae). Folia Entomologica Mexicana. 27:1-88
- García Aldrete, A. N.** 1974b. *Lachesilla bilobata* sp. nov. y *L. chiapensis* sp. nov., nuevas especies del grupo "andra" (Psocoptera: Lachesillidae). Revista de la Sociedad Mexicana de Historia Natural. 35: 143-148.
- García Aldrete, A. N.** 1982. The species group "riegeli" of the genus *Lachesilla* (Psocoptera: Lachesillidae). Diagnoses, records and descriptions of new species. Zoologischer Anzeiger (Jena). 209: 196-210.
- García Aldrete, A. N.** 1988a. A new Oriental *Lachesilla* (Psocoptera: Lachesillidae). Oriental Insects, 22: 501-504
- García Aldrete, A. N.** 1988b. Species of *Lachesilla* (Psocoptera: Lachesillidae) from the coast of the Mexican state of Jalisco. Folia Entomologica Mexicana. 77: 33-61.
- García Aldrete, A. N.** 1991. Two new species of Caribbean psocids (Psocoptera, Trogiidae, Lachesillidae). Nouvelle Revue d'Entomologie (N.S.). 8: 323-329.
- Halffter, G.** 1975. Elements anciens de la entomofaune neotropical: ses implications biogéographiques. Memoires du Muséum National d'Histoire Naturelle, Paris. N.S. ser. A, Zoologie, 88: 114-145.
- Lescure, J., Jeremie, J., Lourenço, W., Mauries, J.P., Pierre, J., Sastre, C., and Thibaud, J.M.** 1991. Biogéographie et insularité: l'exemple des Petites Antilles. Comte-Rendu des Seances de la Société de Biogéographie. 67: 41-59.
- Liebherr, J. K.** 1988. General patterns in West Indian insects, and graphical biogeographic analysis of some circum-caribbean *Platynus* beetles (Carabidae). Syst. Zool. 37: 385-409.

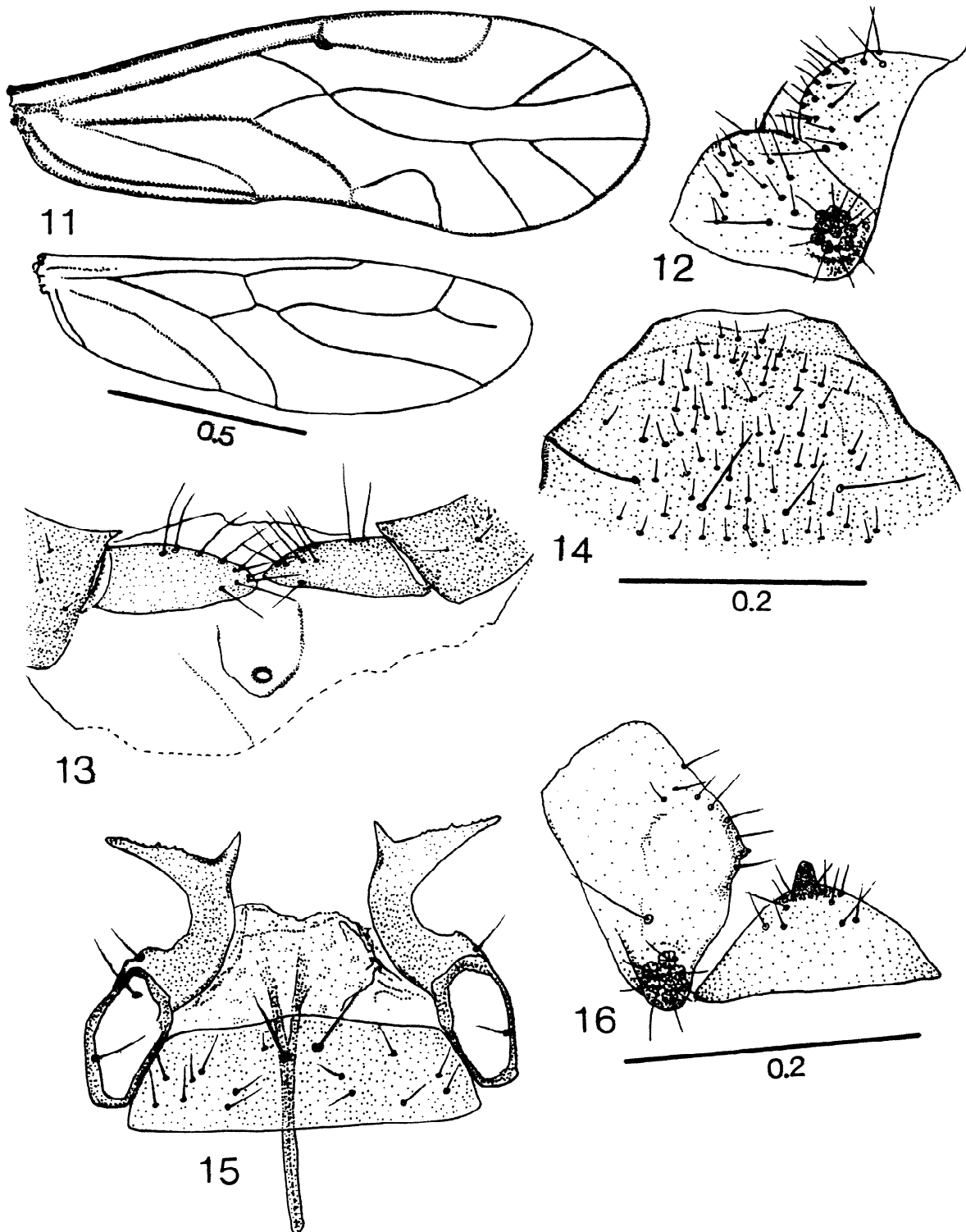
- Lourenço, W. R.** 1987. Les scorpions des Petites Antilles. Approche biogéographique. Bulletin de la Société Zoologique de France. 112: 355-362.
- Mockford, E. L.** 1974. Records and descriptions of Cuban Psocoptera. Entomologica Americana. 48: 103-215.
- Mockford, E. L.** 1991. New species and records of Psocoptera (Insecta) from Roraima state, Brazil. Acta Amazonica. 21: 211-318.
- Mockford, E. L.** 1993. North American Psocoptera. Flora & Fauna Handbook No. 10. Sandhill Crane Press Inc. Gainesville, Fla., Leiden, The Netherlands. 455 pp.
- Navás, L.** 1933. Décadas de insectos nuevos. Década 24. Broteria. ser. zool. 2: 101-110.
- New, T. R.** 1976. Redescriptions of some Psocoptera from Costa Rica described by L. Navás. Revista Brasileira de Entomología. 20: 91-99.
- New, T. R., and Thornton, I. W. B.** 1975. *Psocomorpha* (Psocoptera) collected on recent expeditions to South America. Journal of Entomology (B), 44: 27-80.
- New, T. R., and Lee, S. S.** 1991. *Lachesilla* Westwood (Psocoptera: Lachesillidae) in Malaysia. Oriental Insects, 25: 127-129
- Slater, J. A.** 1988. Zoogeography of West Indian Lygaeidae (Hemiptera). In: Liebherr, J. K. (Ed.). Zoogeography of Caribbean Insects. Cornell University Press, Ithaca, New York. Chapter 3. pp. 38-60
- Smithers, C. N.** 1974. *Lachesilla tectorum* Badonnel (Psocoptera: Lachesillidae) from Queensland. Australian Entomological Magazine. 1: 86
- Sommerman, K. M.** 1946. A revision of the genus *Lachesilla* north of Mexico (Corrodentia: Caeciliidae). Annals of the Entomological Society of America. 39: 627-661.
- Turner, B. D.** 1975. The Psocoptera of Jamaica. Transactions of the Royal Entomological Society of London. 126: 533-609



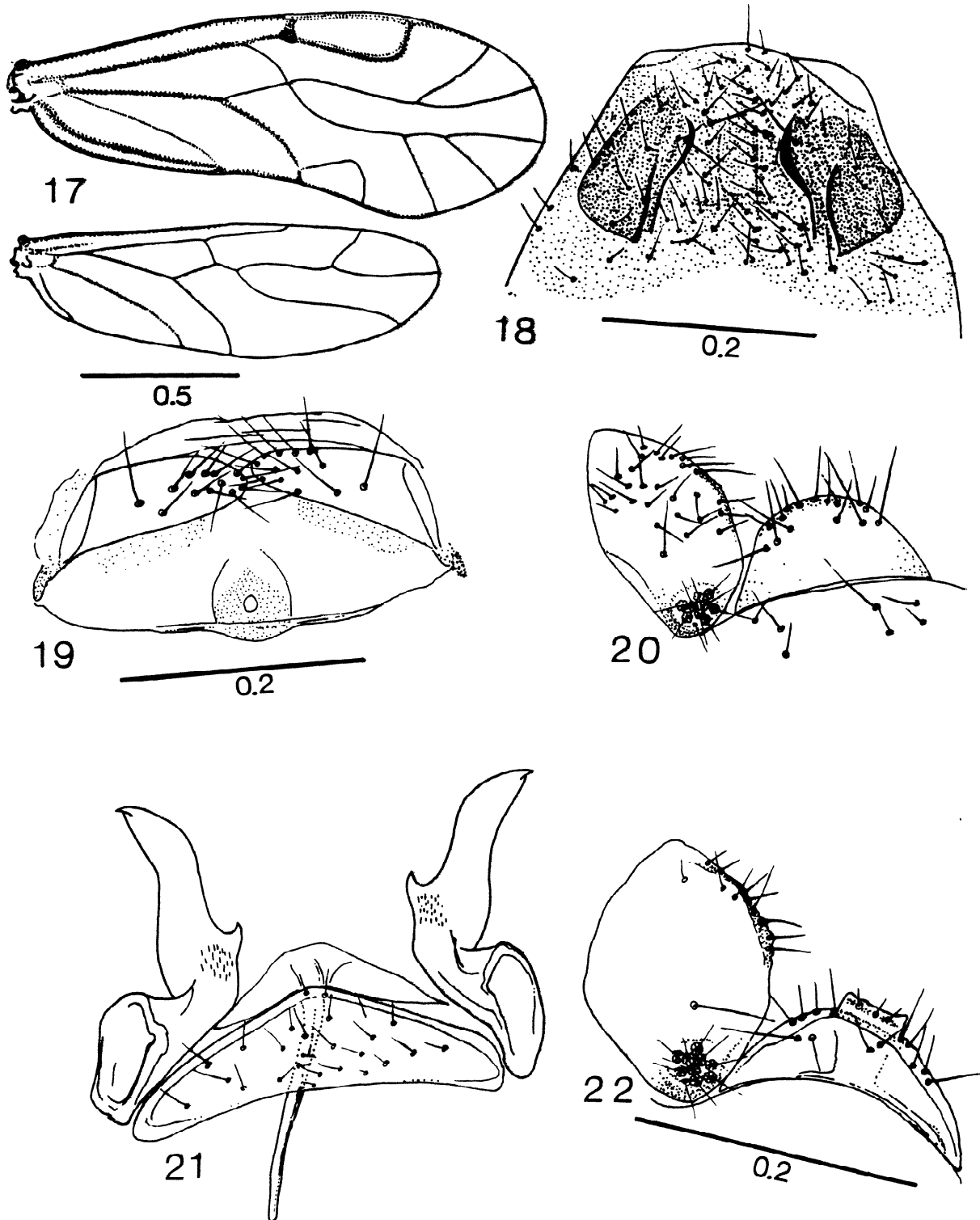
Figures 1-6. *Lachesilla acuminiforceps* n. sp. 1. Fore and hind wings, F. 2. Subgenital plate, F. 3. Gonapophyses and ninth sternum, F. 4. Right paraproct and epiproct, F. 5. Hypandrium, claspers and phallosome apodemes, M. 6. Right paraproct and epiproct, M. Scales in mm. Figs. 3-4 to scale of Fig. 2. Fig. 5 to scale of Fig. 6.



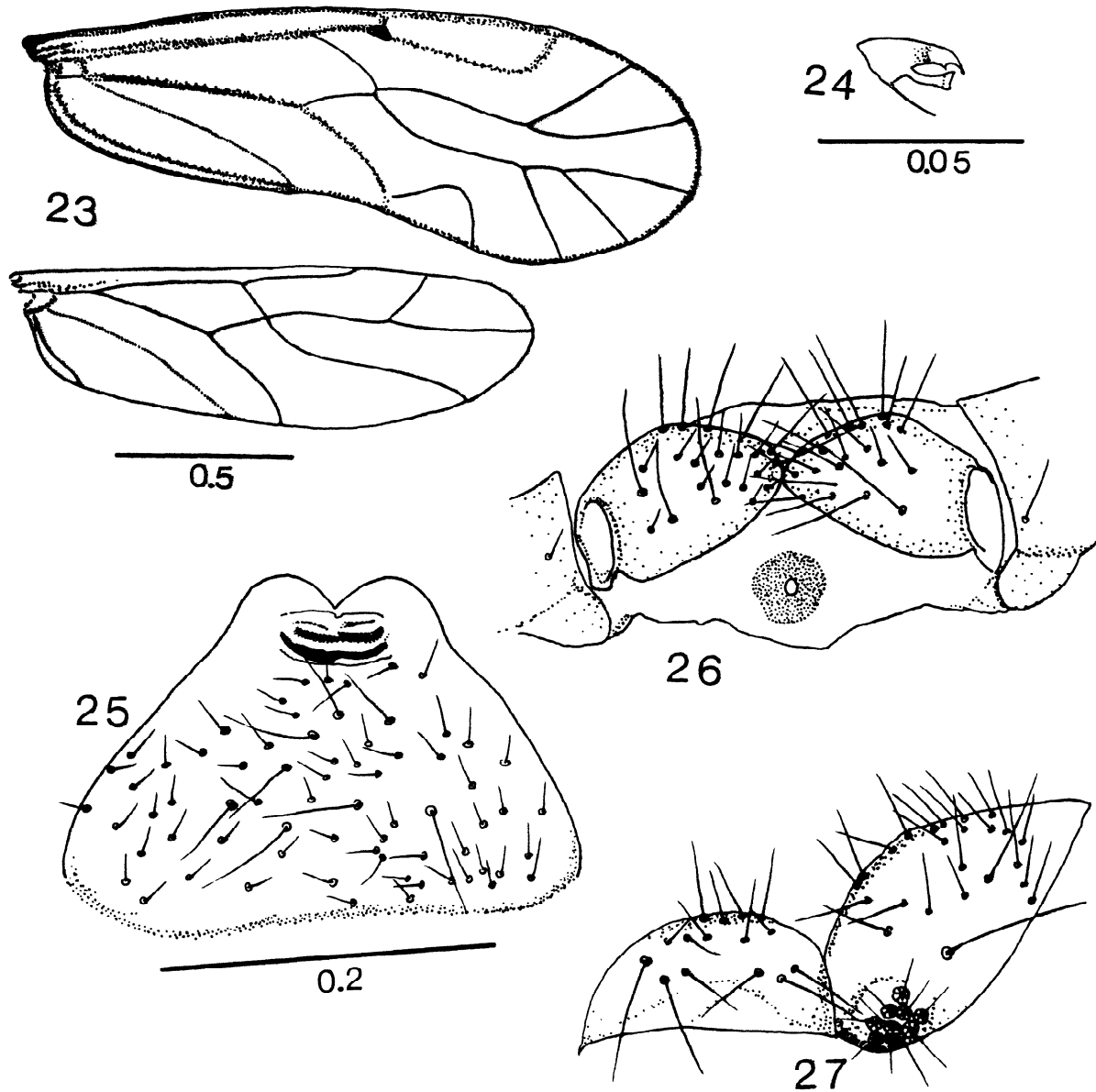
Figures 7-10. *Lachesilla bilunaris* n. sp. F. 7. Fore and hind wings. 8. Subgenital plate. 9. Gonapophyses and ninth sternum. 10. Right paraproct and epiproct. Scales in mm. Figs. 8-9 to scale of Fig. 10.



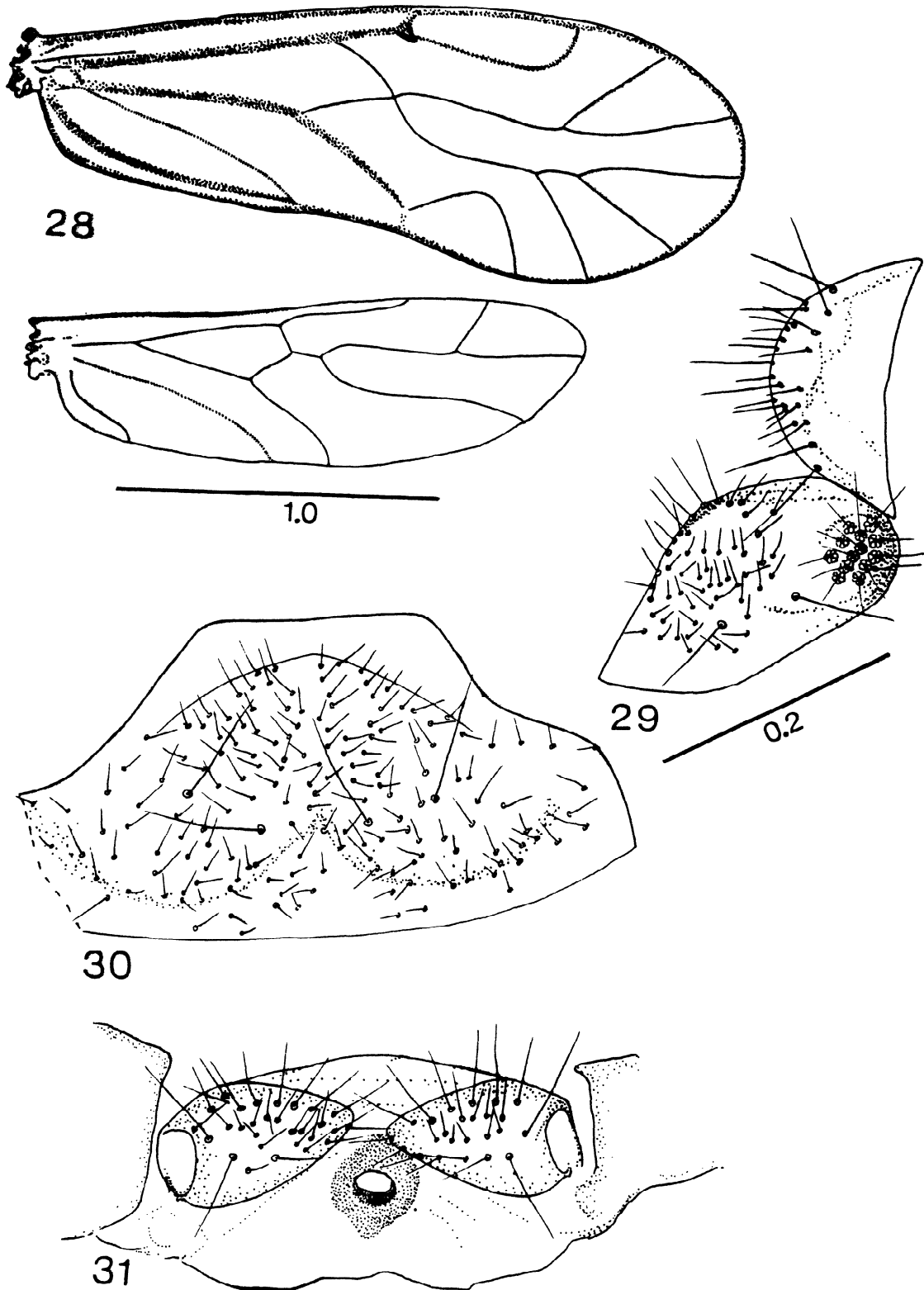
Figures 11-16. *Lachesilla denticuliforceps* n. sp. 11. Fore and hind wings, F. 12. Right paraproct and epiproct, F. 13. Gonapophyses and ninth sternum, F. 14. Subgenital plate, F. 15. Hypandrium, claspers and phallosome apodemes, M. 16. Right paraproct and epiproct, M. Scales in mm. Figs. 12-13 to scale of Fig. 14. Fig. 15. to scale of Fig. 16.



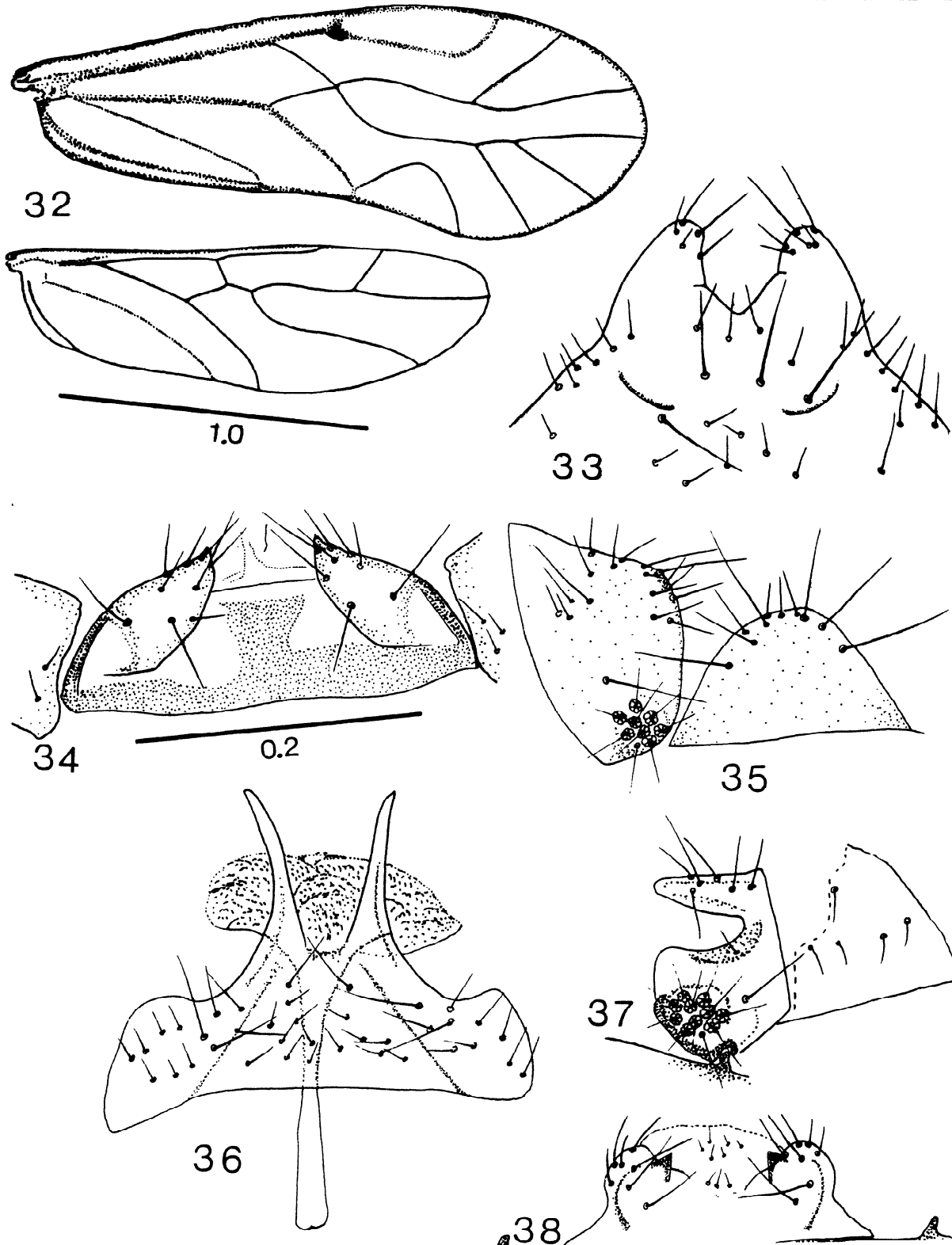
Figures 17-22. *Lachesilla dilatiforceps* n. sp. 17. Fore and hind wings, F. 18. Subgenital plate, F. 19. Gonapophyses and ninth sternum, F. 20. Right paraproct and epiproct, F. 21. Hypandrium, claspers and phallosome apodemes, M. 22. Right paraproct and epiproct, M. Scales in mm. Fig. 20 to scale of Fig. 19. Fig. 21 to scale of Fig. 22.



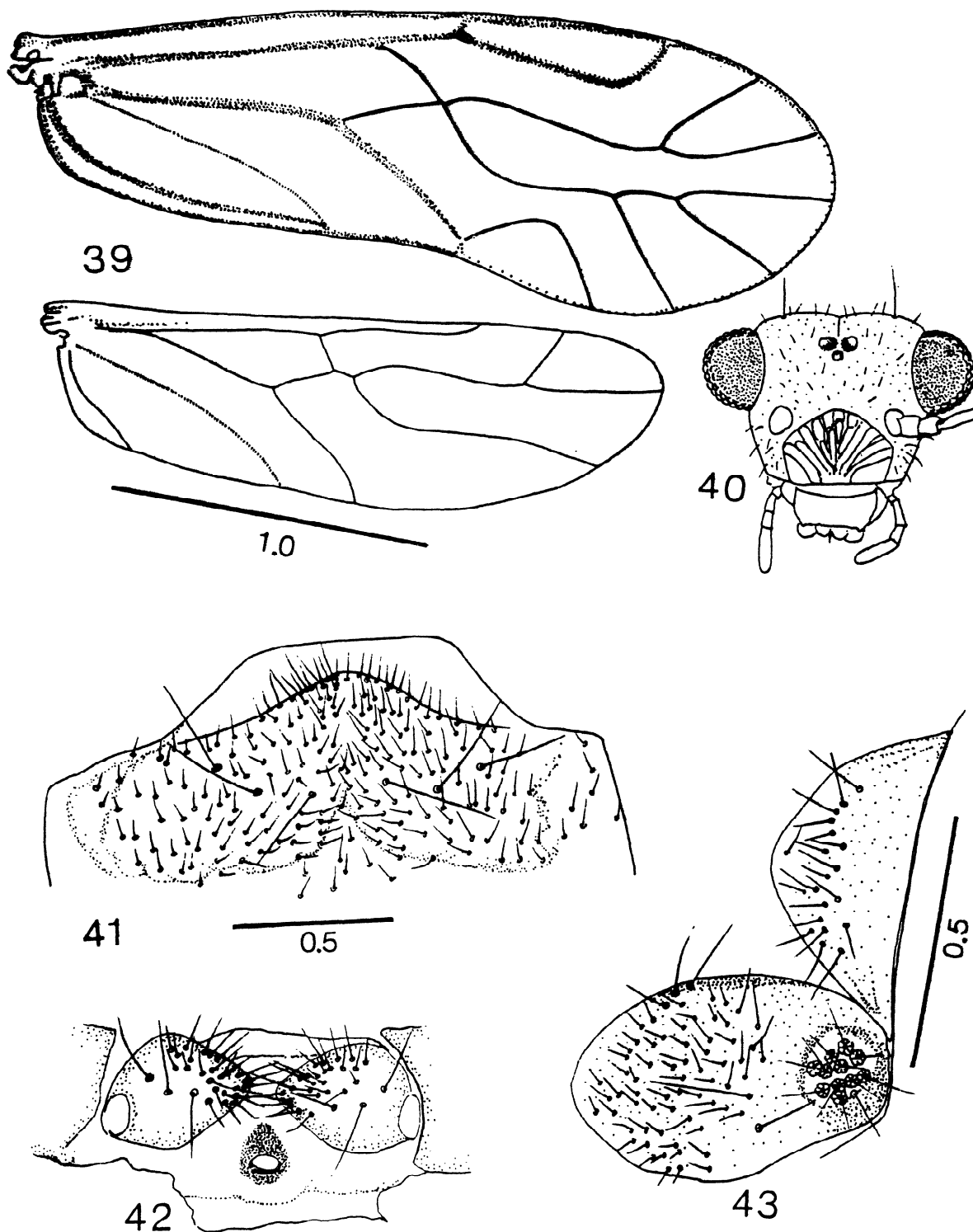
Figures 23-27. *Lachesilla dominicaensis* n.sp. F. 23. Fore and hind wings. 24. pretarsal claw. 25. Subgenital plate. 26. Gonapophyses and ninth sternum. 27. Epiproct and left paraproct. Scales in mm. Figs. 26-27 to scale of Fig. 25.



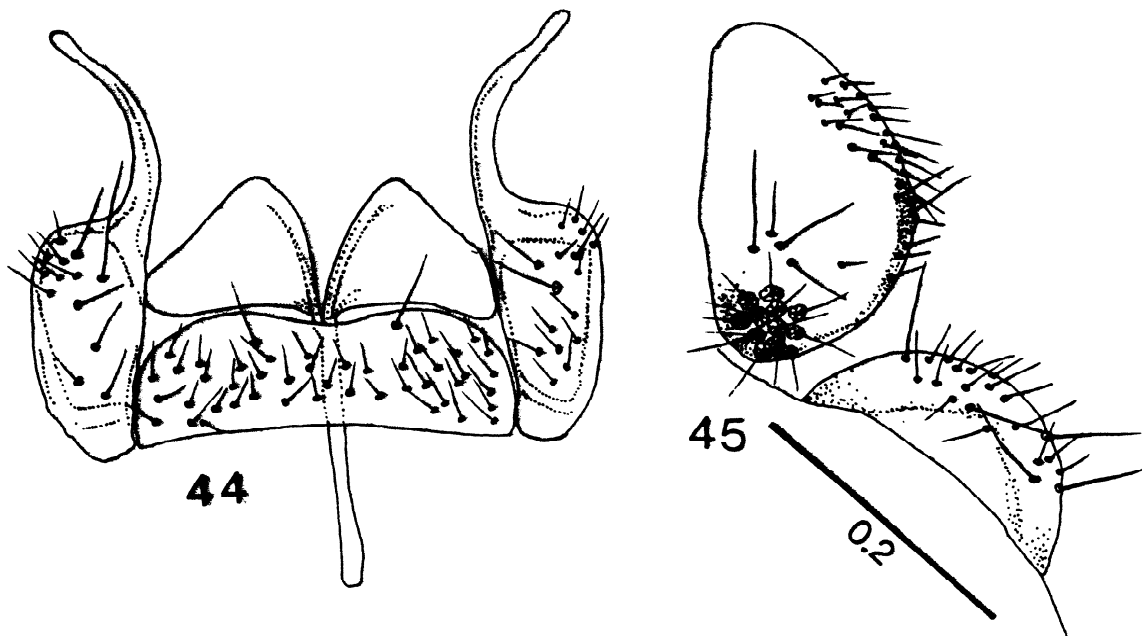
Figures 28-31. *Lachesilla magna* n. sp. F. 28. Fore and hind wings. 29. Right paraproct and epiproct. 30. Subgenital plate. 31. Gonapophyses and ninth sternum. Scales in mm. Figs. 30-31 to scale of Fig. 29.



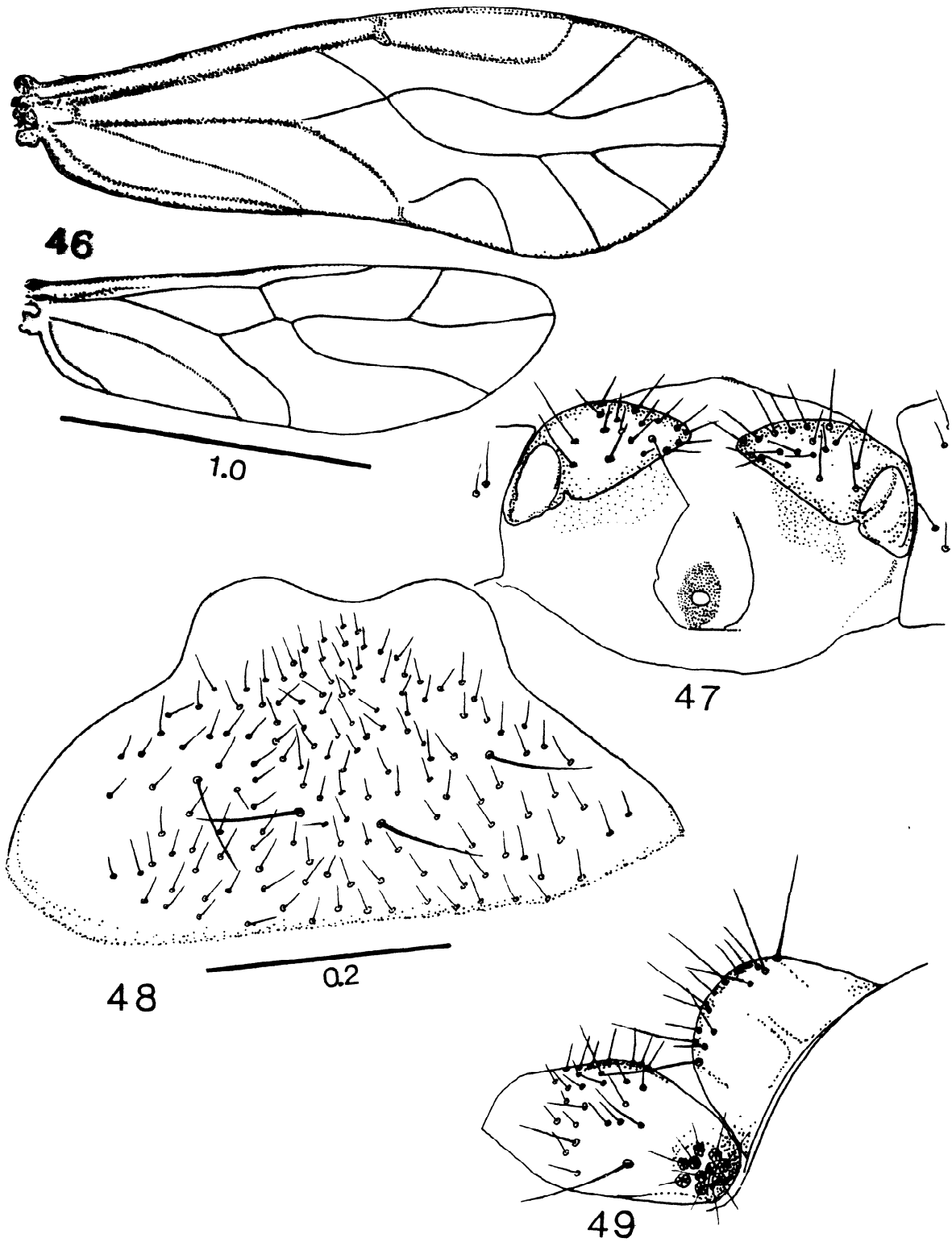
Figures 32-38. *Lachesilla nadlerin* sp. n. 32. Fore and hind wings, F. 33. Subgenital plate, F. 34. Gonapophyses and ninth sternum, F. 35. Right paraproct and epiproct, F. 36. Hypandrium, claspers and phallosome apodemes, M. 37. Left paraproct, M. 38. Epiproct, M. Scales in mm. Figs 33, 35-38 to scale of Fig. 34.



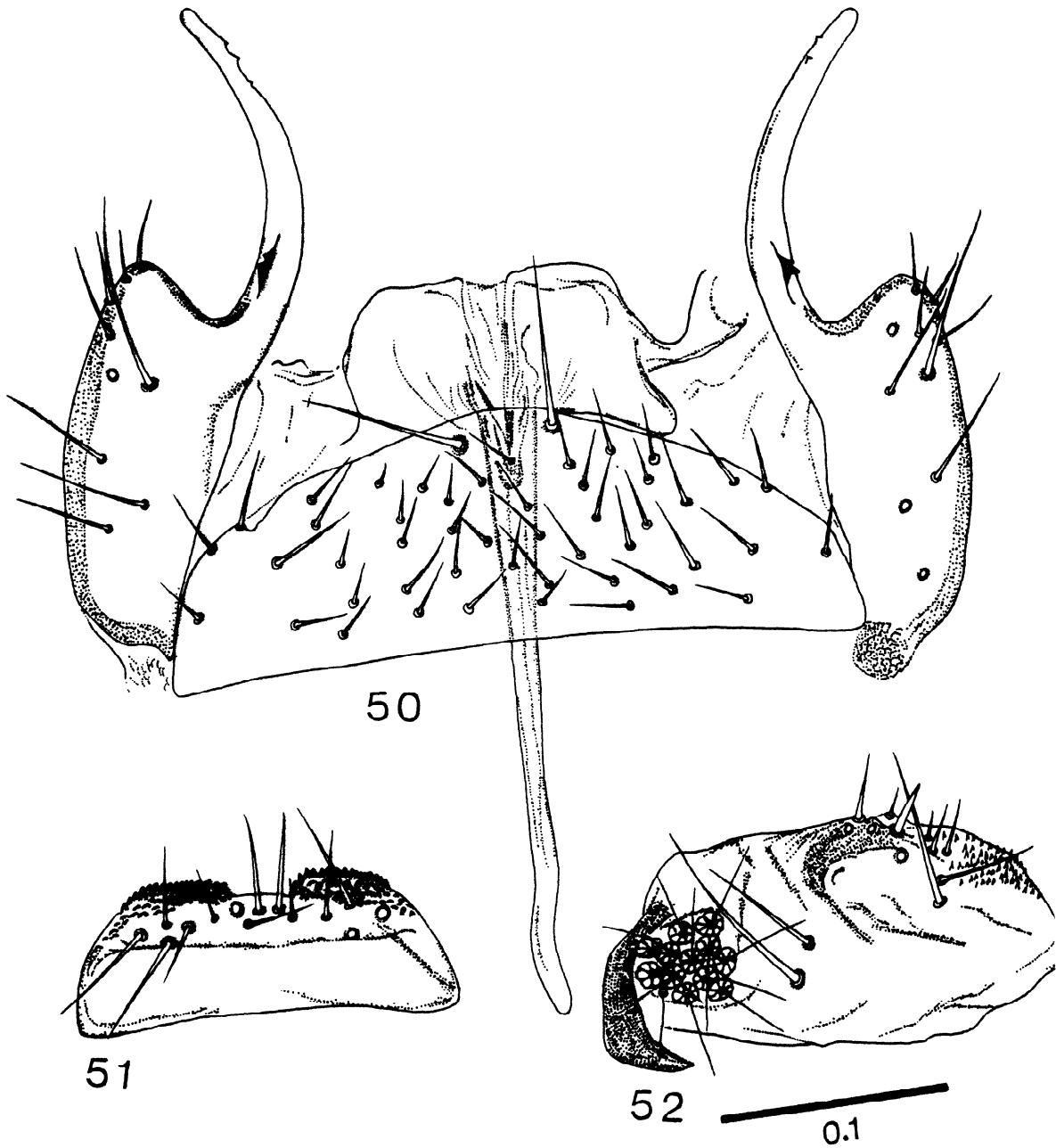
Figures 39-43. *Lachesilla pigmentithorax* n. sp. F. 39. Fore and hind wings. 40. Frontal view of head. 41. Subgenital plate. 42. Gonapophyses and ninth sternum. 43. Right paraproct and epiproct. Scales in mm. Fig. 42 to scale of Fig. 41.



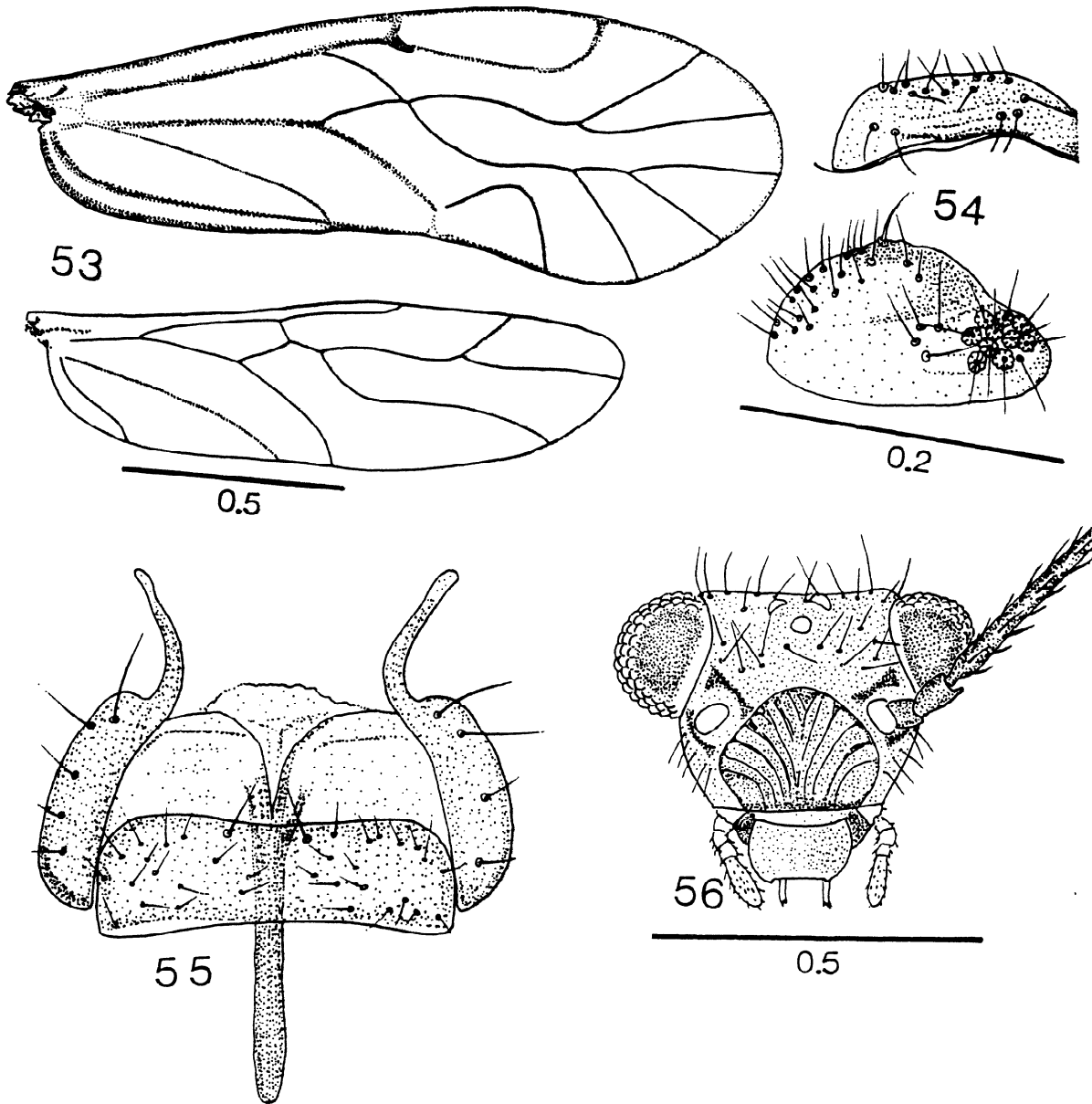
Figures 44-45. *Lachesilla pigmentithorax* n. sp. M. Fig. 44. Hypandrium, claspers and phallosome apodemes. 45. Right paraproct and epiproct. Scale in mm. Fig. 44 to scale of Fig. 45.



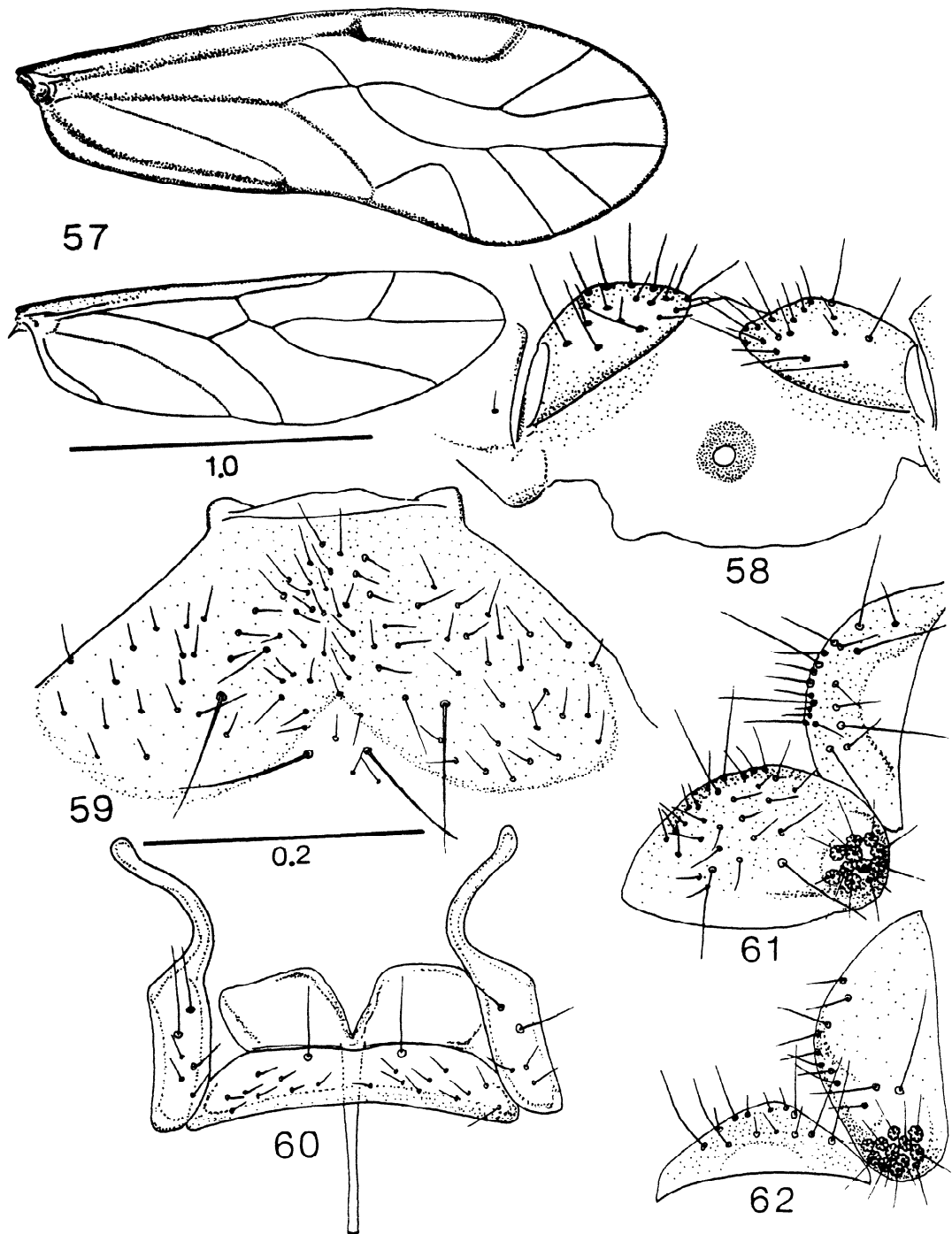
Figures 46-49. *Lachesilla rugosa* n. sp. F. 46. Fore and hind wings. 47. Gonapophyses and ninth sternum. 48. Subgenital plate. 49. Right paraproct and epiproct. Scales in mm. Figs. 47 and 49 to scale of Fig. 48.



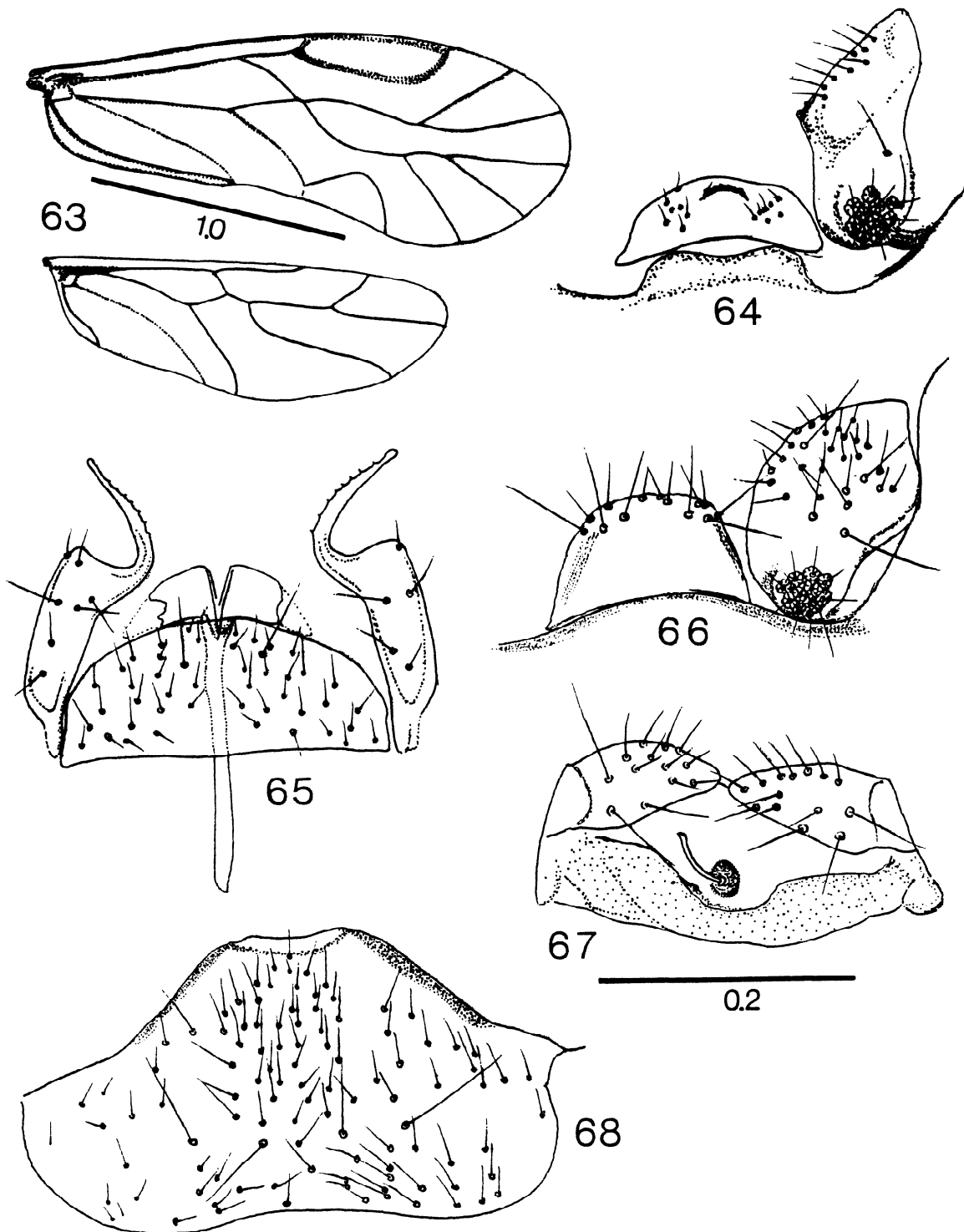
Figures 50-52. *Lachesilla rugosa* n.sp. M. 50. Hypandrium, claspers and phallosome apodemes. 51. Epiproct. 52. Left paraproct. Scale in mm. Figs. 50-51 to scale of Fig. 52.



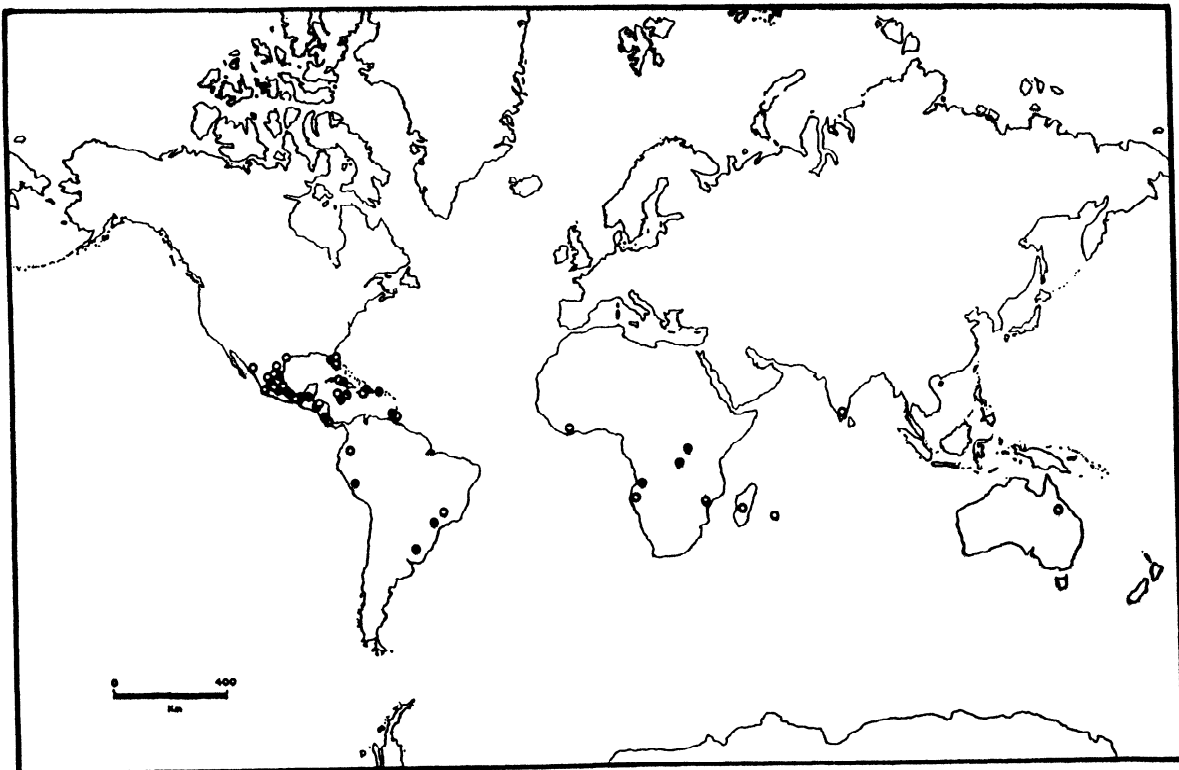
Figures 53-56. *Lachesilla sandersoni* Mockford, M. 53. Fore and hind wings. 54. Epiproct and right paraproct. 55. Hypandrium, claspers and phallosome apodemes. 56. Frontal view of head. Scales in mm. Fig. 55 to scale of Fig. 54.



Figures 57-62. *Lachesilla trinidadensis* n. sp. 57. Fore and hind wings, F. 58. Gonapophyses and ninth sternum, F. 59. Subgenital plate, F. 60. Hypandrium, claspers and phallosome apodemes, M. 61. Right paraproct and epiproct, F. 62. Epiproct and left paraproct, M. Scales in mm. Figs. 58, 61-62 to scale of Fig. 60.



Figures 63-68. *Lachesilla yanomamioides* n. sp. 63. Fore and hind wings, F. 64. Epiproct and left paraproct, M. 65. Hypandrium, claspers and phallosome apodemes, M. 66. Epiproct and left paraproct, F. 67. Gonapophyses and ninth sternum, F. 68. Subgenital plate, F. Scales in mm. Figs. 64-66 and 68, to scale of Fig. 67.



69

Figure 69. Distribution of Caribbean *Lachesilla*: 1. *L. tectorum* Badonnel (open circle). 2. *L. aethiopica* Enderlein (closed circle).

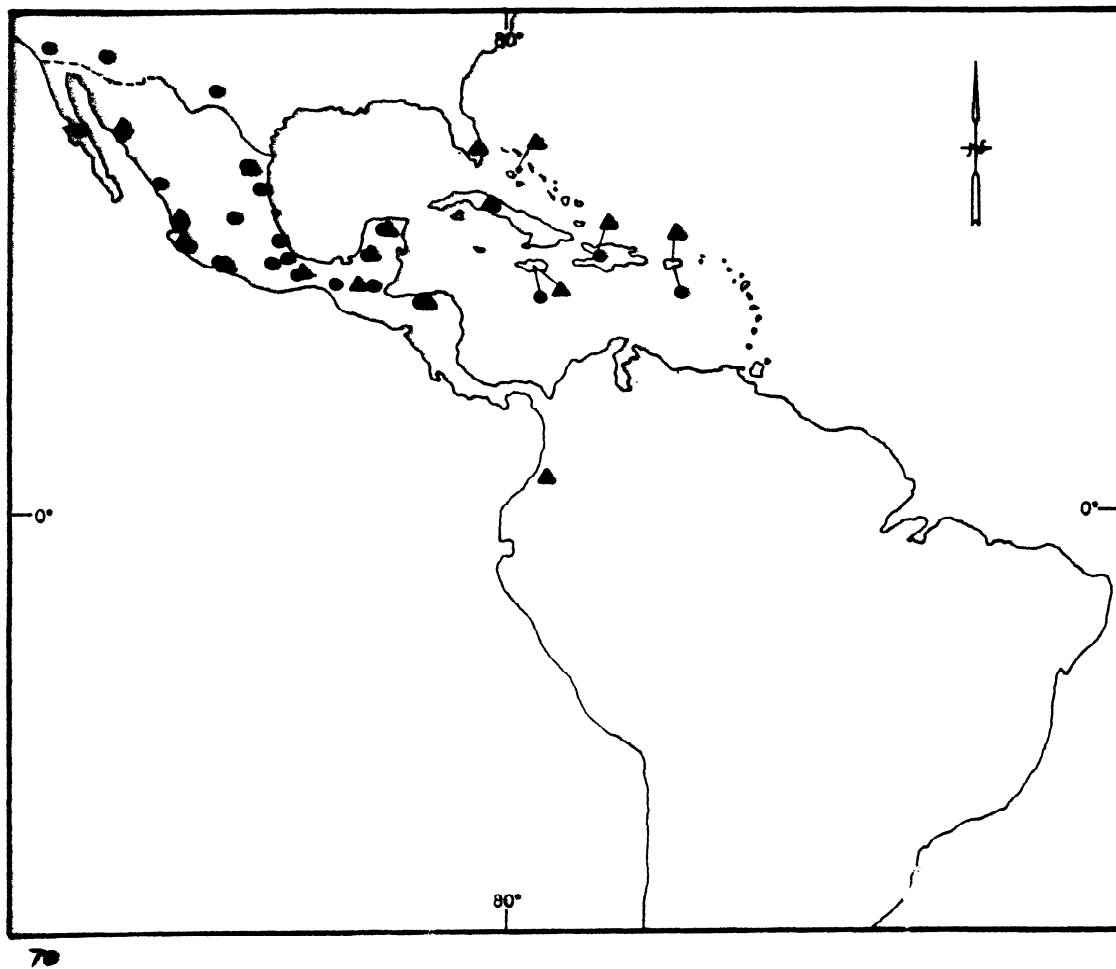


Figure 70. Distribution of Caribbean *Lachesilla*: 1. *L. rena* Sommermann (closed circle). 2. *L. riegeli* Sommermann (triangle).

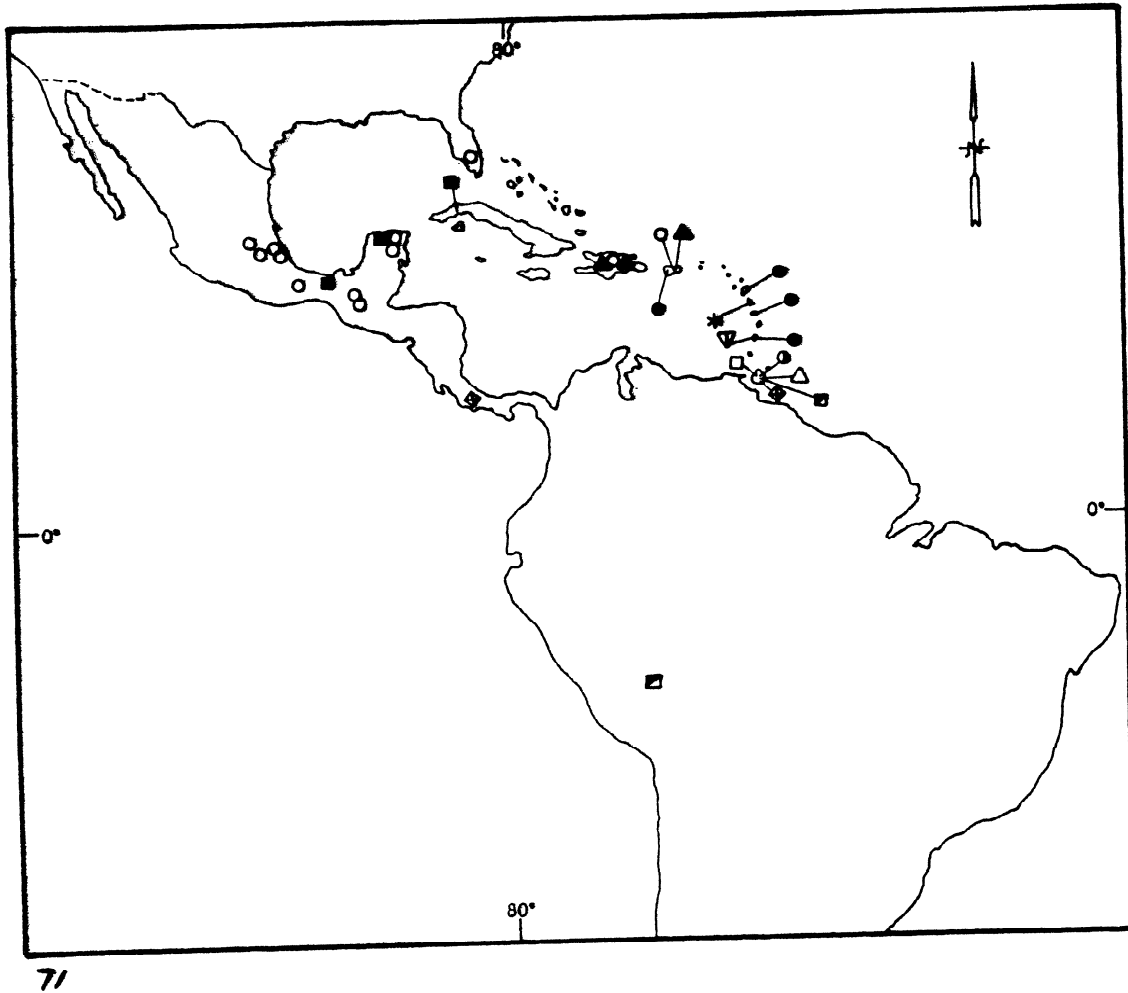


Figure 71. Distribution of Caribbean *Lachesilla*: 1. *L. magna* García Aldrete (open triangle). 2. *L. nadleri* García Aldrete (square, half open). 3. *L. nevermanni* Navas (diamond with cross). 4. *L. pigmentithorax* García Aldrete (open circle). 5. *L. caribe* García Aldrete (filled circle). 6. *L. denticuliforceps* García Aldrete (closed square). 7. *L. dilatiforceps* García Aldrete (closed triangle). 8. *L. acuminiforceps* García Aldrete (open circle). 9. *L. bilobata* García Aldrete (open square). 10. *L. bilunaris* García Aldrete (upturned triangle). 11. *L. dominicaensis* García Aldrete (closed star).

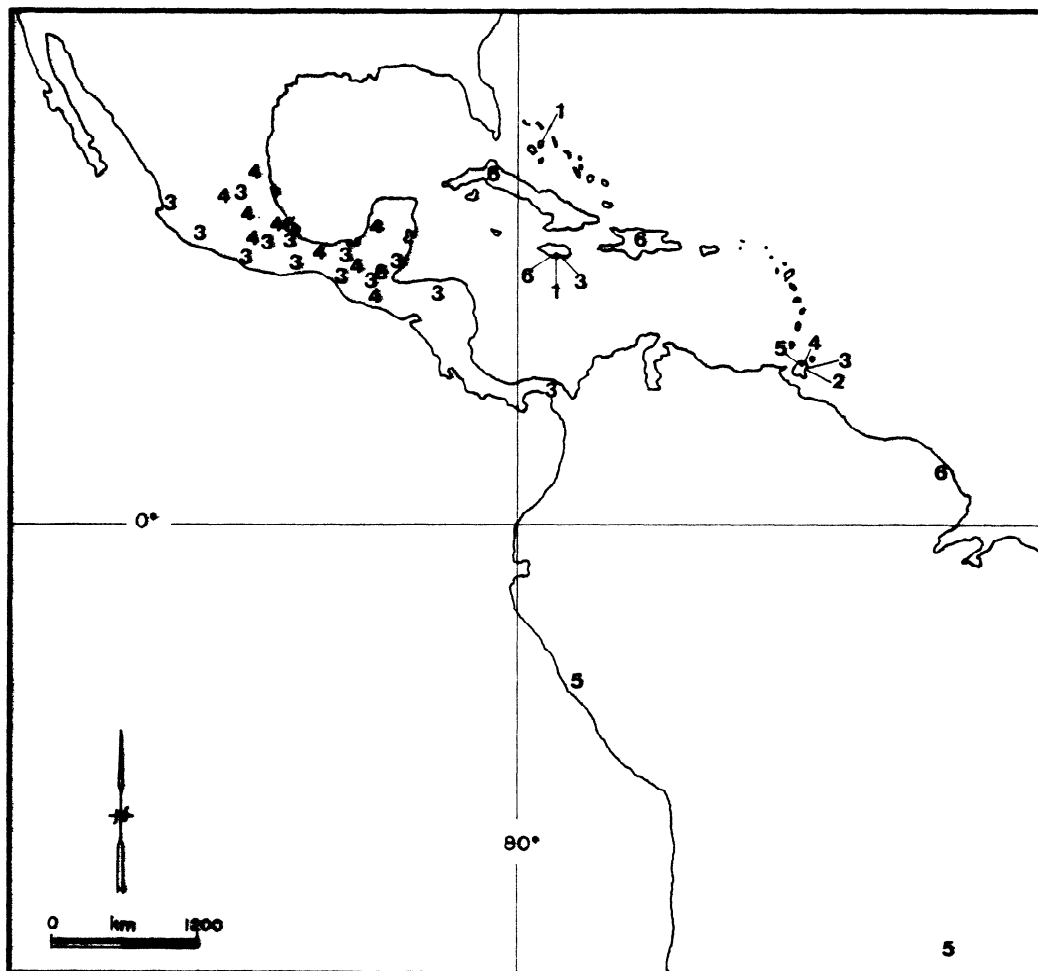
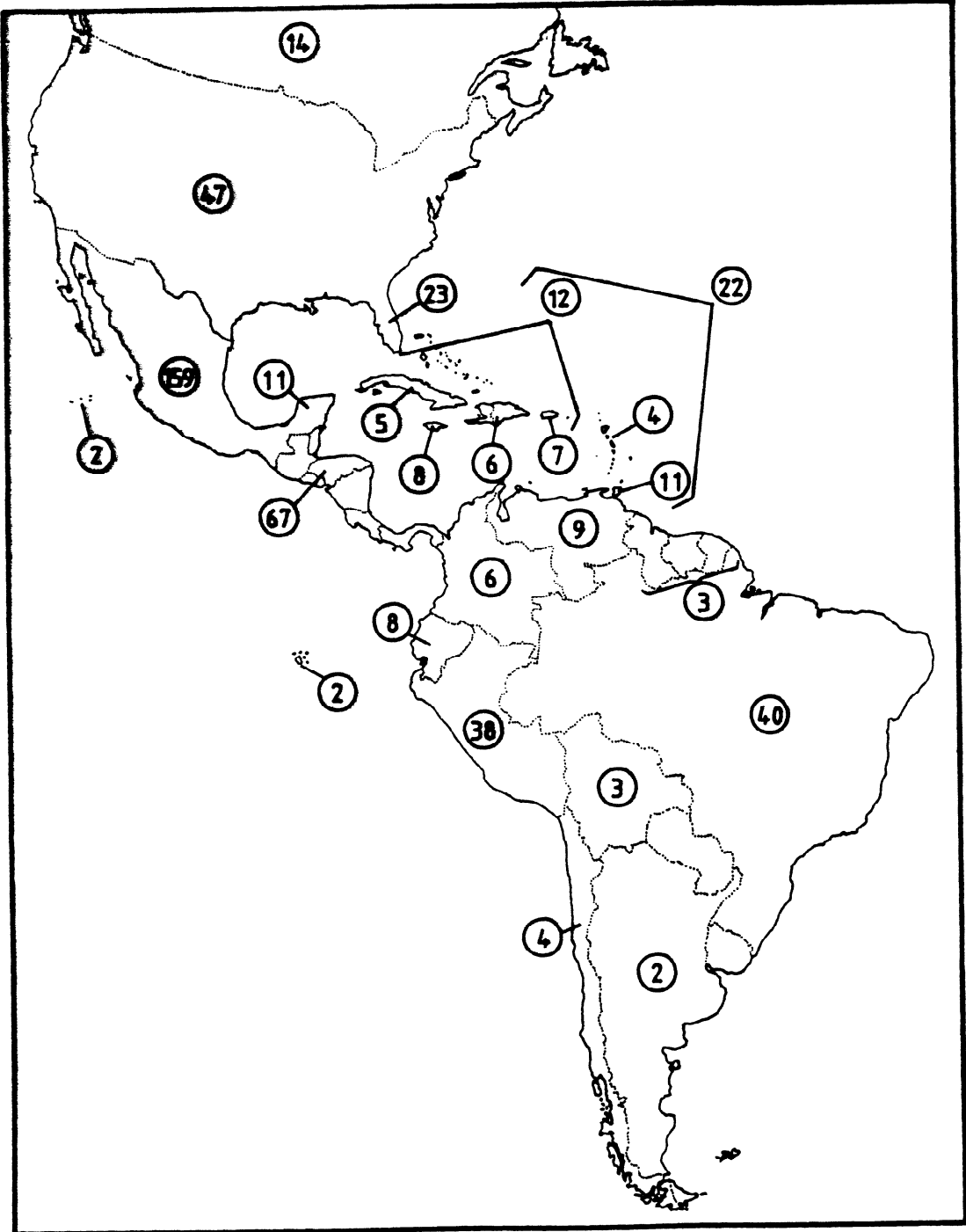


Figure 72. Distribution of Caribbean *Lachesilla*: 1. *L. sola* García Aldrete (closed circle). 2. *L. trinidadensis* García Aldrete (closed triangle). 3. *L. denticulata* García Aldrete (open circle). 4. *L. yanomamioides* García Aldrete (diamond with cross). 5. *L. rugosa* García Aldrete (closed square). 6. *L. sandersoni* Mockford (open triangle).



73

Figure 73. Number of species of *Lachesilla* in Caribbean and circum-Caribbean areas

Table 1. Species of *Lachesilla* in Caribbean islands and in adjacent mainlands.
(Vertical bar separates Greater and Lesser Antilles)

	B	C	J	GC	H	PR	G	D	M	SL	SV	T	NA	CA	SA
<i>L. aethiopica</i> (Enderlein)		X	X		X	X				X		X	X	X	X
<i>L. acuminiforceps</i> n. sp.					X	X							X		
<i>L. bilobata</i> García Aldrete												X			
<i>L. bilunaris</i> n. sp.						X	X		X		X				
<i>L. caribe</i> García Aldrete												X	X	X	
<i>L. denticulata</i> García Aldrete			X									X	X		
<i>L. denticuliforceps</i> n. sp.		X													
<i>L. dilatiforceps</i> n. sp.					X	X									
<i>L. dominicaensis</i> n. sp.								X							
<i>L. magna</i> n. sp.												X			X
<i>L. nadleri</i> n. sp.												X			
<i>L. nevermanni</i> (Navas)												X	X		
<i>L. pigmentithorax</i> n. sp.												X		X	
<i>L. rena</i> Sommermann			X		X	X							X	X	X
<i>L. riegeli</i> Sommermann	X	X	X		X	X						X			X
<i>L. rugosa</i> n. sp.													X	X	
<i>L. sandersoni</i> Mockford		X	X		X								X	X	
<i>L. sola</i> García Aldrete	X		X									X	X	X	X
<i>L. tectorum</i> Badonnel		X	X	X		X						X			
<i>L. trinidadensis</i> n. sp.													X	X	
<i>L. tropica</i> García Aldrete			X									X	X	X	
<i>L. yanomamioides</i> n. sp.															

B: Bahamas; C: Cuba; J: Jamaica; GC: Grand Cayman; H: Hispaniola; PR: Puerto Rico; G: Guadeloupe; D: Dominica; M: Martinique; SL: St. Lucia; SV: St. Vincent; T: Trinidad; NA: North America; CA: Central America; SA: South America.

Table 2. Species of *Lachesilla* shared between pairs of Caribbean islands, and between each island and adjacent mainlands. Numbers in extreme diagonal: No. of species in each island. (Vertical and horizontal lines separate Greater and Lesser Antilles).

	B	C	J	GC	H	PR	G	D	M	SL	SV	T	NA	CA	SA
B	2	1	2	0	1	1	0	0	0	0	0	0	1	1	1
C		5	4	1	3	3	0	0	0	1	0	2	5	4	3
J			8	1	4	4	0	0	0	1	0	3	6	7	3
GC				1	0	1	0	0	0	0	0	1	1	1	1
H					6	5	0	0	0	1	0	1	5	4	2
PR						7	1	0	1	1	1	2	5	4	3
G							1	0	1	0	1	0	0	0	0
D								1	0	0	0	0	0	0	0
M									1	0	1	0	0	0	0
SL										1	0	1	1	1	1
SV											2	0	0	0	0
T												11	4	8	4
NA													-	-	-
CA														-	-
SA															-

B: Bahamas; C: Cuba; J: Jamaica; GC: Grand Cayman; H: Hispaniola; PR: Puerto Rico; G: Guadeloupe; D: Dominica; M: Martinique; SL: St. Lucia; SV: St. Vincent; T: Trinidad; NA: North America; CA: Central America; SA: South America.