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The Lachesillidae (Insecta: Psocoptera) of Nicaragua

ALFONSO N. GARCÍA ALDRETE*

Resumen. La familia Lachesillidae está representada en Nicaragua por una especie de *Anomopsocus*, tres especies de *Prolachesilla*, y por 17 especies de *Lachesilla*, en los grupos *centralis, corona, forcepeta, pedicularia, riegeli*, y *rufa*. Tres de las especies de *Lachesilla*, dos de ellas endémicas de Nicaragua, se describen e ilustran en este trabajo. De las 21 especies de Lachesillidae nicaragüenses, dos son endémicas y sólo otras seis no se habían registrado previamente en Centro América.

Palabras clave: Psocoptera, Lachesillidae, *Anomopsocus, Prolachesilla, Lachesilla*, Nicaragua.

Abstract. The family Lachesillidae is represented in Nicaragua by one species of *Anomopsocus*, three species of *Prolachesilla*, and 17 species of *Lachesilla*, in the groups *centralis, corona, forcepeta, pedicularia, riegeli*, and *rufa*. Three *Lachesilla* species, two of them endemic to Nicaragua, are here described and illustrated. Of the 21 species of Nicaraguan Lachesillidae, two are endemic and only another six had not previously been collected in Central America.

Key words: Psocoptera, Lachesillidae, *Anomopsocus, Prolachesilla, Lachesilla*, Nicaragua.

Introduction

Other than the general and preliminary account of Nicaraguan Psocoptera, by Maes & García Aldrete (1998), there is nothing known on the composition of the psocid fauna of that Central American country. In fact, little is known about the psocid fauna of Central America in general, although a good amount of collecting has been conducted during the last 30 years in Guatemala, Belize, Costa Rica, Honduras and

* Departamento de Zoología, Instituto de Biología, UNAM. Apartado postal 70-153, 04510 México, D.F. c.e: anga@servidor.unam.mx

Panamá. This collecting has resulted mostly in publications of new species descriptions, in new records for those countries, and in lists of systematic light trap collections from two localities in Panamá, on which studies on seasonality, and faunal diversity and guild size were based (Broadhead 1983, Broadhead & Wolda 1985, Wolda & Broadhead 1985, Eertmoed 1973, 1986; García Aldrete 1973, 1975,1978, 1985, 1986, 1990, 1997; Mockford 1957, 1967, 1972, 1989, 1996, 1998; Navás 1927; New 1976). Nevertheless, there is a dearth of information, resulting from continued, systematic collecting that would give an idea of the faunal composition of most insect orders. In perspective, this situation is explainable, given the political unrest in Guatemala, El Salvador and Nicaragua, together with the deep underdevelopment of the region, that have made the quest for entomological knowledge an almost heroic endeavor.

The oldest Nicaraguan record of a psocid in collection is that of a female *Psococerastis*, collected by Lois B. O'Brien, of Florida A. & M. University, in Nandaime, Granada as recently as 1974. In 1986, a few specimens, mostly of *Liposcelis entomophila* (Enderlein), were collected by José Palacios Vargas, of the School of Sciences, UNAM, México City, but it has been mostly through the efforts and enthusiasm of Jean Michel Maes, of the Entomological Museum of León, Nicaragua, that an important collection of Psocoptera, well cured, has been integrated, mostly from Granada, but also from Carazo, Masaya, Zelaya, Jinotega, Matagalpa, Chinandega and León. A list of the Psocoptera presently known from Nicaragua, backed up by the specimens collected by Maes and associates, plus the preliminary account presented by Maes & García Aldrete (1998), is presented in the Appendix. The list, which is far from complete, includes 113 species in 51 genera. By comparison, one year of collecting at the Biosphere Reserve of Calakmul, Campeche, Mexico, produced 96 species in 50 genera (García Aldrete & Casasola 1999), and 86 species in 50 genera have been collected in Belize, mostly in the Chiquibul Forest Reserve, whereas a program of light trap collecting over one year period, placing traps in the canopy and near ground in Barro Colorado Island, Panama (Broadhead & Wolda 1985), produced 148 species in 49 genera. Beyond these general comparisons, a great deal of work is still required to identify to species the components of the collections cited above, in order to assess the level of similarity among the different areas.

The purpose of this work is to present a detailed account of the Nicaraguan Lachesillidae, since this family constitutes an important component of the fauna (18.58% of it). This family is represented by 21 species in three genera, including the genus *Lachesilla*, perhaps one of the most speciose genera of the Psocoptera, with 17 species. Another important component of the fauna is the group Epipsocetae (Suborder Psocomorpha), with 16 species, in nine genera and five families, with which I intend to deal with separately.

Specimens of the species here described were dissected in 80% alcohol, and their parts were mounted in Canada Balsam. Color was recorded by observation of the specimens placed in 80% alcohol, under the dissecting microscope, illuminated with yellow light, at 100X. Measurements, given in microns, of parts mounted on

slides, were taken with a filar micrometer, whose measuring unit is 1.53 microns for wings, and 0.56 microns for other parts. Abbreviations for parts measured are the following. FW, HW: lengths of fore and hind wings; F, T, t1, and t2: lengths of femur, tibia and tarsomeres of right hind leg; ctt1: number of ctenidobothria on t1; Mx4: length of fourth segment of right maxillary palp; fl...fn: lengths of flagellomeres 1...n, of right antenna; IO, D, and d, respectively: minimum distance between compound eyes, antero-posterior and transverse diameter of right compound eye; PO: d/D. The types and the specimens of the species here dealt with are deposited in the National Insect Collection, Instituto de Biología, UNAM, Mexico City.

Taxonomic treatment

Family LACHESILLIDAE
Subfamily Eolachesillinae Mockford & Sullivan 1986
Tribe Graphocaeciliini Mockford & Sullivan 1986

Anomopsocus sp. a

This species used to correspond to *Anomopsocus radiolosus* (Roesler), the ♀ holotype of which, from La Caja, b. San José, Costa Rica, collected in 1930 (Roesler 1940), was destroyed during World War II (Gaedicke 1970). Mockford & Sullivan (1986), showed that Mexican and Guatemalan material of the former *A. radiolosus* constitute one species –*Anomopsocus* sp. a- and that South American specimens, from Trinidad, West Indies, constitute a different species –*Anomopsocus* sp. b-. Since it is not known which species gets the name *A. radiolosus*, Mockford & Sullivan decided to treat both species as *A.* sp. a and *A.* sp. b. The Nicaraguan records are the following: Granada. Volcán Mombacho, El Progreso 1, 16.III.1998, 1♂; cloud forest 2, 30.IV.1998, 1♂. Both specimens taken in Malaise traps by Jean Michel Maes.

Prolachesilla mediana Mockford & Sullivan

P. mediana Mockford & Sullivan 1986, p. 40

This species was described from San José Province, Costa Rica (Hotel Georgina, near Villa Mills), and no further records were known. The Nicaraguan record is the following: Zelaya, Cerro Saslaya, 13°44'N: 85°01'W, 700 m, IV.1996, 2♀♀, 1♂, J. M. Maes.

Prolachesilla mexicana Mockford & Sullivan

P. mexicana Mockford & Sullivan 1986, p. 35

This species has been found in the Mexican states of Chiapas, Guerrero, Hidalgo, México, Michoacán, Morelos, Nuevo León, Oaxaca, Puebla, Querétaro, Tamaulipas, Tlaxcala, Veracruz, Distrito Federal, and in Guatemala and Panama (Mockford & Sullivan 1986). The Nicaraguan record is the following: Jinotega. Peñas Blancas, 13°17'N: 85°38´W,1300m, 25.VII.1997, 2♀♀, J. M. Maes.

Prolachesilla pallida Mockford & Sullivan

P. pallida Mockford & Sullivan 1986, p. 46

This species has been found in Los Tuxtlas, Veracruz, Mexico, and in Panama. In Nicaragua, 1♀ was collected by J. M. Maes in Jinotega, Peñas Blancas, 13°17'N: 85°38'W, 1300m, 25.VII.1997, and 1♂ was collected in Matagalpa, Hotel Selva Negra, 13°00'N:85°54.5'W, light trap, 31.VII.2001, by E. González.

Subfamily Lachesillinae Mockford & Sullivan 1986

Lachesilla aethiopica (Enderlein)

Pterodela pedicularia var. *aethiopica* Enderlein 1902, p. 11

This widely distributed species, belonging in group *pedicularia* of García Aldrete (1974), has been found in Florida (USA), in the Mexican states of Chiapas, Hidalgo, Oaxaca, Puebla and Veracruz, in the Central and South American countries of Belize, Guatemala, Costa Rica, Panama, Venezuela, Brazil and Peru, in the West Indian Islands of Cuba, Hispaniola, Jamaica, Puerto Rico and Trinidad, in the Galapagos Archipelago, and in the African countries of Tanzania, Uganda, Angola and Zaire (Mockford 1993). The Nicaraguan records are the following: 50 km E Matagalpa, El Coyolar, 15.V.1991, 6V light trap, 13 ♀♀. Zelaya. Río Las Latas, 14°04'N: 88°23'W, 220m, 2.VI.1997, 1♀, J. M. Maes. Granada. Volcán Mombacho, Santa Ana 2, 16.III.1998, Malaise trap, 1♀, J. M. Maes.

Lachesilla acuminiforceps García Aldrete

L. acuminiforceps García Aldrete 1996, p. 107

This species belongs in group *forcepeta* (García Aldrete 1974); it has been found in southern Florida, in the Mexican states of Chiapas, Hidalgo, Oaxaca, Quintana Roo and Veracruz, and in the Caribbean islands of Hispaniola and Puerto Rico. It had not been collected in Central America. The 6♀♀ and 4♂♂ Nicaraguan specimens were collected in León, IX.1989, on citrus, by J. M. Maes.

Lachesilla asperiforceps n. sp.
(Figs. 1-7)

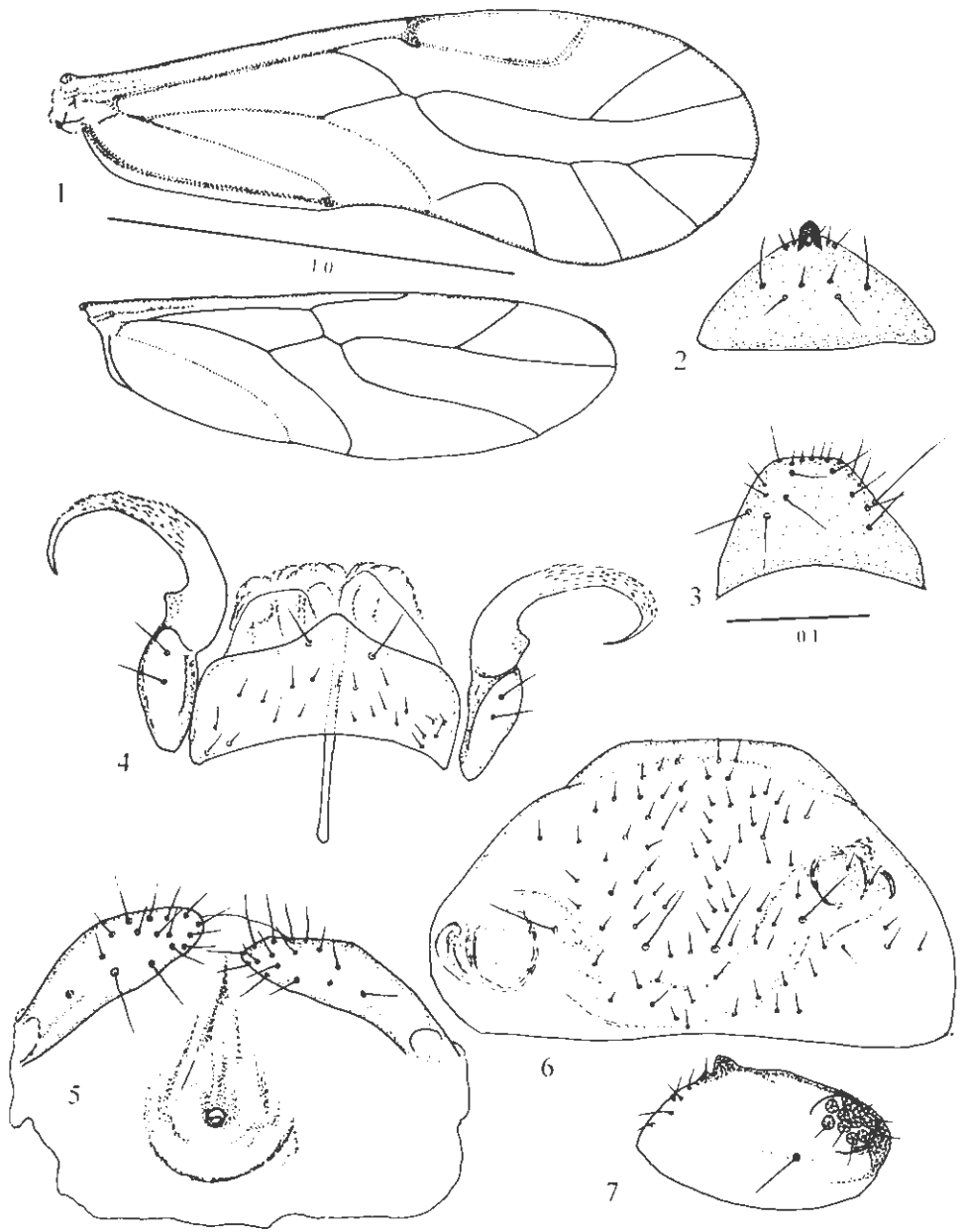
Female. Color (in 80% alcohol). Ground color pale brown. Compound eyes black, ocelli hyaline, without pigmented centripetal crescents. An ochre band from each compound eye to epistomal sulcus, enclosing antennal fossae. Maxillary palps brown, Mx3 and Mx4 slightly more pigmented. Antennae pale brown. Wings hyaline, veins brown. Legs light brown. Thorax reddish brown, pleural sulci well defined; tergal lobes of meso- and metathorax slightly more pigmented.

Morphology. Lacinial tips bifid, typical of the genus. Fore wings with pterostigma elongate (Fig. 1), slightly wider posteriorly; Rs-M fused basally for a length; areola postica wide, rounded posteriorly. Subgenital plate (Fig. 6), almost trapecial, with setal field as illustrated; one almost circular pigmented area on each side next each lateral border. Gonapophyses (Fig. 5), elongate, setose, blunt ended. Spermapore almost on center of ninth sternum, surrounded by a broadly tear-shaped, diffusely pigmented area (Fig. 5). Paraprocts semi-elliptical, setose; sensory fields with 11-12 trichobothria, a peripheral, anterior one, without basal floret. Epiproct (Fig. 3) almost trapecial, with setae as illustrated.

Measurements. FW: 1667, HW: 1292, F: 381, T: 399, t1: 119, t2: 68, ctt1: 9, Mx4: 94: f1:272, f2: 237, f3: 187, f4: 136, IO: 248, D: 150, d: 125, IO/D: 1.65, PO: 0.83.

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

Morphology. Hypandrium broadly rectangular (Fig. 4), with sides parallel, anterior border slightly concave, and posterior border projected in the middle. Claspers with basal pieces elongate (Fig. 4), with two setae; distal pieces slender, curved, acuminate, each with a conical protuberance basally on outer margin; distal halves with a dense field of microspines, giving a rugged appearance. Phallosome apodemes fused to form a long, slender baculum, posteriorly extended on each side into a broadly triangular, membranous area (Fig. 4). Paraprocts (Fig. 7) semi-elliptic, robust, with



Figs. 1-7. *Lachesilla asperiforceps* n. sp. 1. Fore- and hindwings, ♀. 2. Epiproct, ♂. 3. Epiproct, ♀. 4. Hypandrium, claspers and phallosome apodemes, ♂. 5. Gonapophyses and ninth sternum, ♀. 6. Subgenital plate, ♀. 7. Right paraproct, ♂. Scales in mm. Figs. 2, and 4-7, to scale of Fig. 3.

setae as illustrated; each with a conic mesal prong and sensory fields with 12-13 trichobothria, a peripheral anterior one without basal floret. Epiproct (Fig. 2) triangular, wide based, with a short prong apically, setae as illustrated.

Measurements. FW: 1584, HW: 1224, F: 326, T: 636, t1: 196, t2: 60, ctt1: 16, Mx4: 69, f1:265, f2:232, f3: 187, f4:148, f5: 106, f6: 94, f7: 73, f8: 85, f9: 69, f10: 68, f11: 95, IO: 212, D: 162, d: 124, IO/D: 1.3, PO: 0.76.

Type locality. **NICARAGUA**. GRANADA. Volcán Mombacho, San Joaquín 3, 15.V.1998, Malaise trap, holotype ♂. San Joaquín 1, 31.III. 1998, Malaise trap, allotype ♀. Paratypes: 2♂♂, same locality and date as holotype, 3♀♀, same locality and date as allotype, 1♂, 2♀♀, 21.VIII.1998, same locality as holotype, all specimens taken in Malaise traps by J. M. Maes.

Records. **MÉXICO**. CHIAPAS. 32 km E of Tuxtla Gutiérrez, rd. 190, 15.VII.1962, E. L. Mockford & F. Hill, 1♂. 44.8 km E of Tuxtla Gutiérrez, rd. 190, 15.VII.1962, J. M. Campbell, 1♀. GUERRERO. 57 km N of Acapulco, 29.VII.1969, beating dry nanche leaves on hut roof, 1♂. 15 km NE Jaleaca de Catalán, 6.II.1974, beating *Quercus* branches with dead leaves, 1♂. MORELOS. Balneario Las Estacas, ca.Cuautla, 23.I.1984, sifting litter, E. González, 2 ♂♂, 1 ♀. NAYARIT. María Madre Island. Arroyo Platanar, 170m, ca. San Juan Papelillo, 29.III.1984, beating branches with dead leaves in low forest, 1♂, 1♀. Arroyo Platanar, rd. to La Antena, 440m, 29.III.1984, beating branches with dead leaves in low forest, 5 ♀♀. Ca. San Juan Papelillo Camp, 29.III.1984, beating branches with dead leaves, 1 ♂. Road from Puerto Balleto to La Antena, 210m, 380m, 26.III.1984, 7 ♂♂, 10 ♀♀. Ca. Nayarit Camp, 29.III.1984, beating lemon trees,1 ♀. All specimens from Guerrero and Nayarit, collected by A. N. García Aldrete. **GUATEMALA**. 41.6 km N El Rancho, on road to Cobán, 29.VIII.1968, E. L. Mockford & A. N. García Aldrete, 3 ♂♂, 2 ♀♀.

Comments. This species belongs in species group *forcepeta* (García Aldrete 1974), in a complex of five closely related species that occur in southern Mexico, Guatemala and Nicaragua. *L. asperiforceps* has the widest distribution in the complex, and from it have probably derived *L.* sp. *A*, restricted to the Acapulco area, species B and C, restricted to eastern Oaxaca-western Chiapas, and western Chiapas, respectively, and *L.* sp. D, only known from Central Guatemala, all within the distribution area of *L. asperiforceps*. The closest species to the complex seems to be *L. denticuliforceps* García Aldrete (1996), from the Mexican states of Tabasco and Yucatan, and from Cuba, distinctly apart geographically from the *L. asperiforceps* complex.

Lachesilla centralis García Aldrete

L. centralis García Aldrete 1983, p. 14

This species is one of three in the *L. centralis* complex. It has been found in California, USA, and in the Mexican states of Guerrero, Hidalgo, Jalisco, Mexico, Michoacán, Morelos, Nuevo León, Oaxaca, Puebla, San Luis Potosí, Sinaloa and Sonora. In Nicaragua it was collected in Granada. Volcán Mombacho, cloud forest 1, 2.III.1998, 1 ♂, 1 ♀, and cloud forest 2, 30.IV.1998, 1 ♂. All specimens taken in Malaise traps by J. M. Maes.

Lachesilla denticulata García Aldrete

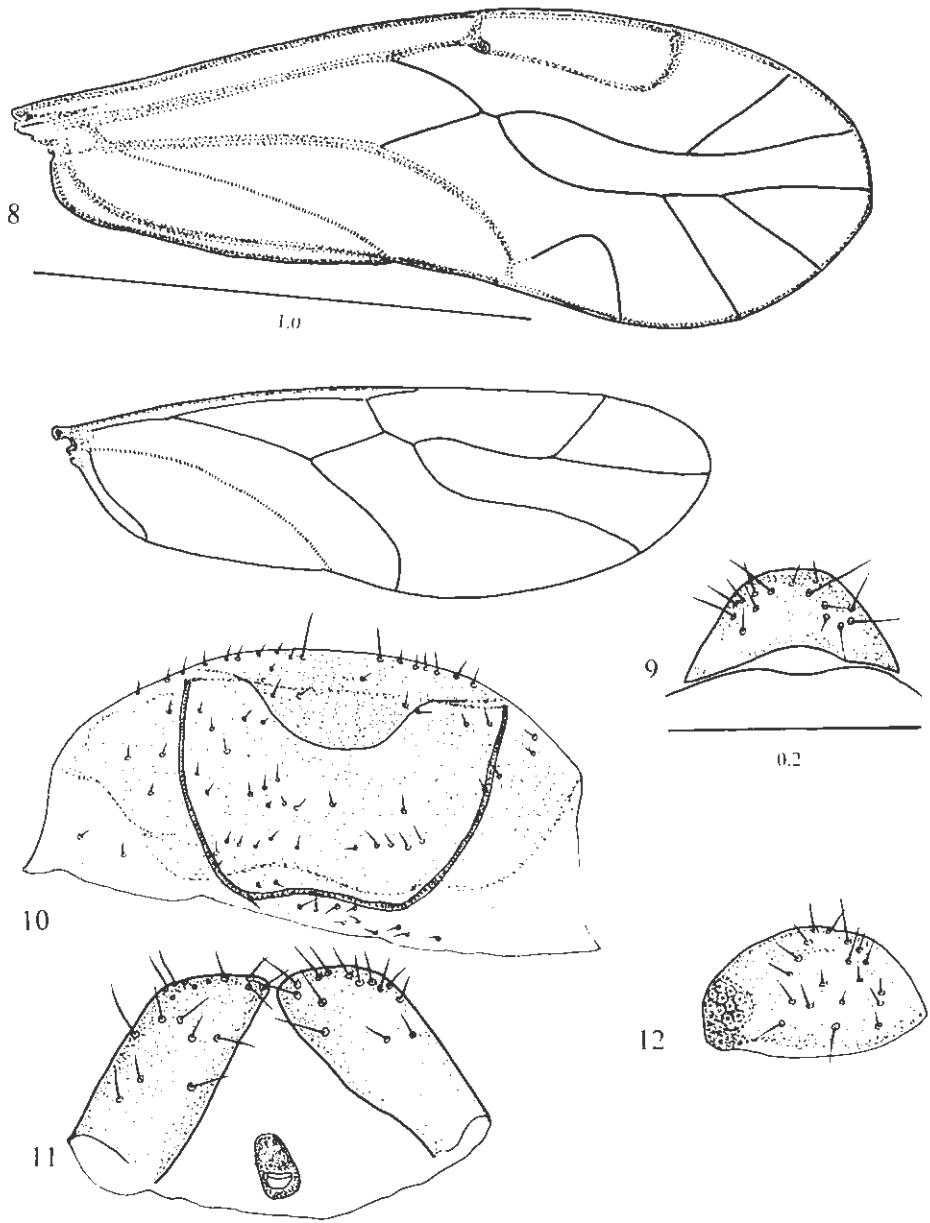
L. denticulata García Aldrete 1988, p. 43

This species belongs in species group *forcepeta* (García Aldrete 1974). It is widely distributed in tropical Mexico, in the states of Colima, Chiapas, Guerrero, Jalisco, María Madre Island, Nayarit, Oaxaca, Puebla, San Luis Potosí, Tabasco and Veracruz. It has also been recorded in Belize, Guatemala, Honduras, Panama, Jamaica and Trinidad. The Nicaraguan records are the following: 50 km E Matagalpa, El Coyolar, 15.V.1991, 6V light trap, 1 ♂, S. Hue. León. 28.I.1995, UV light trap, 1 ♀. Granada. Volcán Mombacho, cloud forest 2, 13.V.1998, Malaise trap, 1 ♀. J. M. Maes, collector.

Lachesilla mombachensis n. sp. (♀)
(Figs. 8-12)

Ground color pale reddish brown. Compound eyes black, ocelli hyaline, without pigmented centripetal crescents. Epicranial sulcus well defined. Antennae and maxillary palps brown. Legs pale brown. Wings hyaline , veins brown. Thorax with pleural sulci well defined, tergal lobes of meso and metathorax dark brown. Abdomen with subcuticular, reddish brown, transverse rings, less conspicuous ventrally.

Morphology. Lacinial tips bifid, with outer cusp larger, typical of the genus. Fore wings pterostigma slightly wider posteriorly (Fig. 8), Rs-M fused basally for a short length; areola postica almost triangular, apically rounded (Fig. 8). Subgenital plate wide, rounded posteriorly, with a distinct, semi-circular area, next to the posterior border, setae as illustrated (Fig. 10). A broad, almost rectangular sheet underlying the plate (Fig. 10). Gonapophyses stout, with sides almost parallel, posteriorly directed; spermapore central to ninth sternum, surrounded by a pigmented area (Fig. 11). Paraprocts semi-elliptic, setose; sensory fields rounded, with 10-11 trichobothria, a peripheral one without basal floret (Fig. 12). Epiproct trapecial, setae as illustrated (Fig. 9).



Figs. 8-12. *Lachesilla mombachensis* n. sp. (♀). 8. Fore- and hindwings. 9. Epiproct. 10. Subgenital plate. 11. Gonapophyses and ninth sternum. 12. Left paraproct. Scales in mm. Figs. 10-12 to scale of Fig. 9.

Measurements. FW: 1687, HW: 1312, F: 344, T: 661, t1: 213, t2: 70, ctt1: 19, Mx4: 90, f1: 199, f2: 172, f3: 144, f4: 99, f5: 73, f6: 69, f7: 56, f8: 63, f9: 55, f10: 57, f11: 65, IO: 265, D: 166, d: 109, IO/D: 1.59, PO: 0.65.

Type locality. **NICARAGUA**. GRANADA. Volcán Mombacho, El Progreso No. 1, 16.III.1998, Malaise trap, 1 ♀, holotype, J. M. Maes.

Comments. This species belongs in species group *forcepeta* (García Aldrete 1974). It differs from the many species in the group by the shape of the subgenital plate and its underlying plate, and in the stout gonapophyses, reminiscent to those of *L. nigripalpa* Turner & Cheke (1983), from Benin & Togo, in West Africa.

Lachesilla nevermanni (Navás)

Elipsocus nevermanni Navás 1933, p. 108

This species was originally described from Costa Rica as a species of *Elipsocus* (Navás 1933). New (1976), examined the type specimen of Navás and transferred the species to *Lachesilla*. It belongs in species group *forcepeta*, and it is now known to occur in Honduras (Coyoles), Panama (Barro Colorado Island), Trinidad (Piarco and North Range), and Brazil (García Aldrete 1996 and personal records). One male specimen was found in Nicaragua: Zelaya, El Recreo, 8.X.1984, J.M. Maes.

Lachesilla penta Sommerman

L. penta Sommerman 1946, p. 652

This widely distributed species belongs in species group *forcepeta* (García Aldrete 1974). Its distribution extends from southeastern United States (Brownsville, Texas area; New Orleans, Louisiana, and Alachua, Highlands and Marion counties in Florida), south through eastern and southern Mexico to Belize and Guatemala. It has been found in the Mexican states of Campeche, Chiapas, Nuevo León, Oaxaca, Puebla, Quintana Roo, Tamaulipas, Veracruz and Yucatán (Mockford 1993 and personal records). The Nicaraguan records (southernmost part of the species range), are from: 50 km E Matagalpa, El Coyolar, 15.V.1991, 6V light trap, 2♂♂, S. Hue. Zelaya. Cerro Saslaya, 13°44'N: 86°01'W, 700m, IV.1996, Malaise trap, 1 ♀, J. M. Maes. Río Las Latas, 14°01'N: 88°33'W, 220m, 2.VII.1997, Malaise trap, 1 ♀, J. M. Maes & B. Hernández. Las Américas, 13°07'N: 84°31'W, 230m, 10.VII.1997, Malaise trap, 1 ♀, J. M. Maes.

Lachesilla rena Sommerman

L. rena Sommerman 1946, p. 653

This species belongs in species group *pedicularia* (García Aldrete 1974), and it is one of four in a complex of closely related species, presently under study by E. L. Mockford, of Illinois State University. It has been found in southern California, north to Riverside County, in Maricopa County, Arizona, and in Hidalgo and Brown counties, Texas. It has been also found in much of Mexico, in the states of Baja California, Campeche, Colima, Chiapas, Guerrero, Jalisco, Nuevo León, Oaxaca, Puebla, San Luis Potosí, Sinaloa, Sonora, Tamaulipas, Veracruz and Yucatán, as well as in Guatemala, Honduras, Haití, Jamaica and Puerto Rico (Mockford 1993 and personal records). In Nicaragua it has been found in Carazo, Bioreserva Chococente, 10°30'N:86°10'W, 11-13.IX.1992, dense, dry tropical forest, UV light trap, 1♀, J.M. Maes, Martínez & López. León, 27.I.1993, 220V UV light trap, 4♀♀, M. Pogatshnik. 10.II.1993, same locality and collector, 4♀♀, 1♂. León, between La Leona and Izapa, 30.I.1995, 1♀, J. M. Maes. It was mentioned from León, by Maes &García Aldrete (1998).

Lachesilla riegeli Sommerman

L. riegeli Sommerman 1946, p. 654

This species belongs in species group *riegeli* (García Aldrete 1982). It has been found in southern Florida, north to Indian River and Polk counties; in the Mexican states of Campeche, Guerrero, Jalisco, Nayarit (María Madre Island), Nuevo León, Oaxaca, Sonora and Yucatán, and in Guatemala, Honduras and Colombia, in the Bahamas, Cuba, Hispaniola, Jamaica and Puerto Rico (Mockford 1993 and personal records). The Nicaraguan records are the following: Masaya. Las Flores, IV.1993, UV light trap, 1♂, C. Lecoq & I. Cantamessa. VI.1993, same locality and collectors, 1 ♀. 30.IX.1994, same locality, 1 ♀. Carazo, Bioreserva Chococente, 10°30'N:86°10'W, 11-13.IX.1992, dry tropical forest, UV light trap, 2♂♂, J.M. Maes, Martínez & López. León. 27.I.1993, 220V UV light trap, 3♀♀, 3♂♂, M. Pogatshnik. 10.II.1993, same locality and collector, 2♀♀, 13♂♂. Finca El Fortín, 27.VII.1993, Malaise trap in cotton field, 1♂, A. Baumera. Between La Leona and Izapa, 30.I.1995, 1♂, Malaise trap, J. M. Maes. It was recorded from León by Maes & García Aldrete (1998).

Lachesilla sandersoni Mockford

L. sandersoni Mockford 1974, p. 143

This species belongs in group *forcepeta* (García Aldrete 1974). It has been found in Cuba, in the Dominican Republic, in French Guiana, in Guatemala and in the Mexican state of Veracruz. In Nicaragua, 1♂ was collected in Leon, 10.II.1993, in UV trap (220 V), by M. Pogatshnik.

Lachesilla silvatica García Aldrete

L. silvatica García Aldrete 1988, p. 53

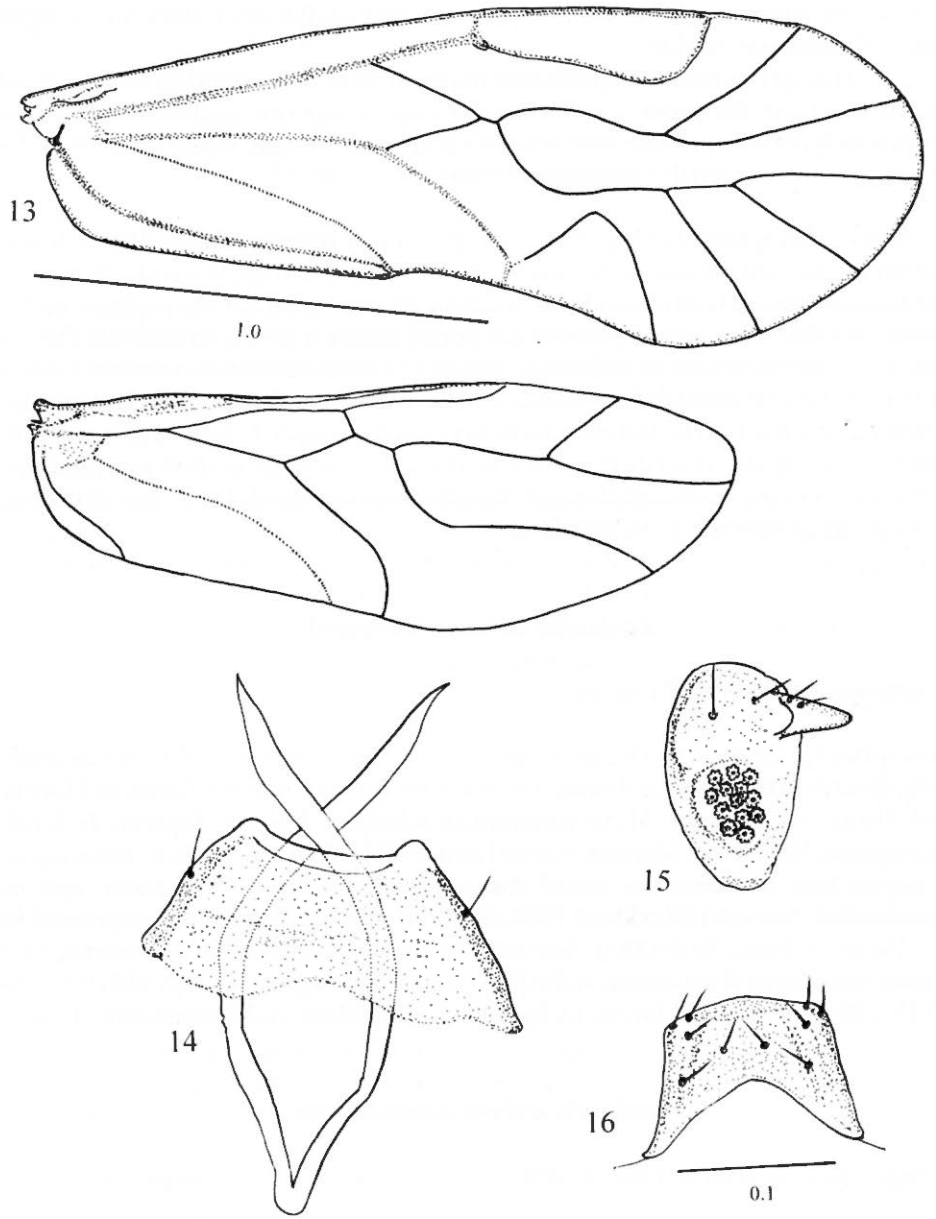
This species belongs in species group *corona* (García Aldrete 1974). It has been found in the Mexican states of Chiapas, Jalisco and Veracruz, and in María Madre Island (Nayarit). The Nicaraguan record is the following: 50 km E Matagalpa, El Coyolar, 15.V.1991, in 6V light trap, 1♂. S. Hue.

Lachesilla tapiabarqueroi n. sp. (♂)
(Figs. 13-16)

Color (in 80% alcohol). Ground color pale brown. Compound eyes black, ocelli hyaline, with ochre centripetal crescents. Maxillary palps brown, Mx4 with apex dark brown. Antennae pale brown. Wings hyaline, veins yellowish brown. Legs pale brown. Thorax reddish brown, pleural sulci ochre. Tergal lobes of meso- and metathorax dark brown.

Morphology. Lacinial tips bifid, with outer cusp larger, typical of the genus. Fore wings with pterostigma broad, elongate, wider posteriorly. Rs-M fused basally for a short length; areola postica wide, tall, with pointed apex (Fig. 13). Hypandrium broad, slightly concave posteriorly, with a sclerotized band along posterior border (Fig. 14). Claspers fused laterally to hypandrium, slightly projected posteriorly, with apices rounded (Fig. 14), and a distinct macrosetae mesally on outer edge (other setae not discernible, the specimen had dried up, and after being reconstituted in soft soap solution, lost much of its vestiture). Phallosome apodemes basally fused; each arm stout, curved, distally acuminate (Fig. 14). Paraprocts (Fig. 15), almost elliptical, elongate; sensory fields with 13-14 trichobothria on basal florets; with a robust, mesal prong, setae as illustrated.

Measurements. FW: 1992, HW: 1546, F: 403, T: 784, t1: 227, t2: 90, ctt1: 18, Mx4: 99, fl: 304, IO: 236, D: 265, d: 201, IO/D: 0.89, PO: 0.76.



Figs. 13-16. *Lachesilla tapiabarqueroi* n. sp. (♂). 13. Fore- and hindwings. 14. Hypandrium, claspers and phallosome apodemes. 15. Right paraproct. 16. Epiproct. Scales in mm. Figs. 14-15 to scale of Fig. 16.

Type locality. **NICARAGUA.** 50 km E MATAGALPA, El Coyolar, 15.V.1991, in 6V light trap, 1♂, holotype, S. Hue.

This species is dedicated to honor the memory of a fine Nicaraguan: Ingeniero Humberto Tapia Barquero, a study mate, a man of superior qualities, that left us prematurely; of whom, those who were fortunate to know him, would have wished a longer permanence on this passage through time.

Comments. This species belongs in species group *rufa* (García Aldrete 1990). It has not been collected outside of Nicaragua. In male morphology, it stands close to *L. nita* Sommerman, which occurs from southern USA, to Panama. Other species in the group *rufa* that have been collected in Central America are: *L. cupressicola* García Aldrete, *L. lienhardi* García Aldrete, *L. salamana* García Aldrete, *L. smithersi* García Aldrete, *L. turneri* García Aldrete and *L. yuccalnicola* García Aldrete, all in Guatemala, besides L. wongae García Aldrete, which occurs in Nicaragua. *L. tapiabarqueroi* clearly differs from all the described species in the group *rufa* in genital morphology. Differences in wing venation between *L. tapiabarqueroi* (male), and *L. wongae* (females), rule out the possibility of conspecificity.

Lachesilla tectorum Badonnel

L. tectorum Badonnel 1931, p. 238

This species belongs in species group *pedicularia* (García Aldrete 1974). It was originally described from Mozambique, and is known to occur in Ivory Coast, in Florida and Texas (USA), in the Mexican states of Chiapas, Colima, Distrito Federal, Guanajuato, Michoacán, Morelos, Nuevo León, Puebla , Sinaloa, Tabasco, Tamaulipas, Veracruz and Zacatecas, in Brazil, Grand Cayman, Haití, Honduras, and in Queensland, Australia (Mockford 1993, Smithers 1974, and specimens deposited in the National Insect Collection, Instituto de Biología, UNAM). In Nicaragua, one female was collected in Carazo, at the Bioreserva Chococente, 11°30'N:86°10'W, 11-13.IX.1992, dry tropical forest, UV light trap, J. M. Maes, A. Martínez & R López.

Lachesilla tropica García Aldrete

L. tropica García Aldrete 1982, p. 204

This species belongs in species group *riegeli* (García Aldrete 1982). It has been found in Big Pine Key, Monroe County, Florida, in the Mexican states of Campeche, Chiapas, Guerrero, Jalisco, Nuevo León, Oaxaca, Quintana Roo, San Luis Potosí, Tamaulipas, Veracruz and Yucatán, and in Guatemala, Honduras and Jamaica. The Nicaraguan records are from Carazo. Bioreserva Chococente, 10°30'N:86°10'W,11-13.IX.1992,

dry tropical forest, UV light trap, 9♀♀, 9♂♂. León. 20.I.1993, UV light trap (220V), 1♀, M. Pogatshnik. 10.II.1993, same locality and collector, 3♀♀, 1♂. Granada. Volcán Mombacho, El Progreso, 15.V.1998, Malaise trap, 1♂, J. M. Maes.

Lachesilla wongae García Aldrete

L. wongae García Aldrete 1990, p. 71

This species belongs in species group *rufa* (García Aldrete 1990). It was known only from one female collected 10 km NE of San Andrés Tuxtla, Veracruz, Mexico, so its presence in Nicaragua is remarkable. One female was collected in Granada. Volcán Mombacho, El Progreso No. 1, 2.VI.1998, Malaise trap, J. M. Maes.

Lachesilla species group *pedicularia*

This species is represented by one male and one female, collected by J. M. Maes in Malaise trap in Masaya. Las Flores, 30.IX1994; it belongs in a complex of four closely related species that includes *L. rena* Sommerman; the species has also been collected in several localities in southeastern Mexico and is not here described, as the complex is presently being studied by Dr. E. L. Mockford, of Illinois State University.

General comments

This paper documents in detail the presence of 21 species of lachesillids in Nicaragua; two species are endemic to the country (*L. mombachensis* and *L. tapiabarqueroi*), five species are recorded for the first time in Central America (*L. acuminiforceps, L. centralis, L. silvatica, L. wongae,* and *L.* species group *pedicularia*), seven species were already known in Central America and their presence in Nicaragua constitute range extensions (*P. mediana, L. asperiforceps, L. penta, L. rena, L. sandersoni, L. tectorum* and *L. tropica*), and the Nicaraguan presence of seven species falls within their range of distribution(*Anomopsocus* sp. a, *P. mexicana, P. pallida, L. aethiopica, L. denticulata, L. nevermanni,* and *L. riegeli*).

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Appendix. A list of Nicaraguan Psocoptera (species not backed by specimens marked with an asterisk*)

Suborder Trogiomorpha
- Lepidopsocidae
  1. *Thylacella cubana* (Banks)
  2. *Echmepteryx falco* Badonnel
  3. *Echmepteryx* sp.
  4. *Proentomum personatum* Badonnel
  5. *Soa flaviterminata* Enderlein
  6. *Nepticulomima* sp.
- Trogiidae
  7. *Cerobasis* sp.*
  8. *Lepinotus* sp.*
- Psyllipsocidae
  9. *Psocathropos microps* Enderlein

Suborder Troctomorpha
- Pachytroctidae
  10. *Tapinella* sp.
  11. *Nanopsocus oceanicus* Pearman
  12. *Pachytroctes* sp.
- Liposcelididae
  13. *Liposcelis bostrychophila* Badonnel
  14. *L. entomophila* (Enderlein)
  15. *Liposcelis* sp.
- Compsocidae
  16. *Compsocus elegans* Banks

Suborder Psocomorpha
- Neurostigmatidae

17. *Neurostigma* sp.

Epipsocidae

18. *Epipsocus badonneli* Mockford
19. *Epipsocus* sp.
20. *Mesepipsocus* sp.

Dolabellopsocidae

21. *Dolabellopsocus* sp. 1
22. *Dolabellopsocus* sp. 2

Cladiopsocidae

23. *Cladiopsocus* sp.
24. *Spurostigma epirotica* Eertmoed

Ptiloneuridae

25. *Loneura* sp. 1
26. *Loneura* sp. 2
27. *Loneura* sp. 3
28. *Loneura* sp. 4
29. *Euplocania zelayensis* García Aldrete (Ms. name)
30. *Euplocania* sp.
31. *Triplocania maesi* García Aldrete
32. *T. saslayensis* García Aldrete

Caeciliusidae[1]

33. *Valenzuela flavidus* (Stephens)
34. *V. casarum* (Badonnel)
35. *Valenzuela* sp. 1
36. *Valenzuela* sp. 2
37. *Valenzuela* sp. 3
38. *Valenzuela* sp. 4
39. *Valenzuela* sp. 5
40. *Valenzuela* sp. 6
41. *Valenzuela* sp. 7
42. *Valenzuela* sp. 8
43. *Xanthocaecilius* sp.

Stenopsocidae

44. *Graphopsocus mexicanus* Enderlein

Amphipsocidae

45. *Dasydemella* sp.

[1] The mention of *Paracaecilius* sp. (Maes & García Aldrete 1998), from Nueva Segovia, is probably an error, as that genus occurs in Africa, Madagascar, China, India, Australia, Tasmania, Java, New Guinea, Japan, and in Christmas, Fiji and Krakatau islands; no species of *Paracaecilius* has been recorded in North, Central or South America (Mockford 1999)

46. *Dasypsocus* sp.
47. *Polypsocus* sp.

Peripsocidae
48. *Peripsocus* sp.

Ectopsocidae
49. *Ectopsocus maindroni* Badonnel
50. *E. vilhenai* Badonnel
51. *Ectopsocus* sp.

Philotarsidae
52. *Philotarsus* sp.
53. *Aaroniella* sp.

Pseudocaeciliidae
54. *Pseudocaecilius citricola* (Ashmead)
55. *Scytopsocus* sp.

Lachesillidae
56. *Anomopsocus* sp.*
57. *Prolachesilla pallida* Mockford & Sullivan
58. *P. mediana* Mockford & Sullivan
59. *P. mexicana* Mockford & Sullivan
60. *Lachesilla aethiopica* Enderlein
61. *L. acuminiforceps* García Aldrete
62. *L. asperiforceps* García Aldrete
63. *L. centralis* García Aldrete
64. *L. denticulata* García Aldrete
65. *L. mombachensis* García Aldrete
66. *L. nevermanni* (Navás)[2]
67. *L. penta* Sommerman
68. *L. rena* Sommerman
69. *L. riegeli* Sommerman
70. *L. sandersoni* Mockford
71. *L. silvatica* García Aldrete
72. *L. tapiabarqueroi* García Aldrete
73. *L. tectorum* Badonnel
74. *L. tropica* García Aldrete
75. *L. wongae* García Aldrete
76. *Lachesilla* species group *pedicularia*

Archipsocidae
77. *Archipsocus* sp.*
78. *Parorchipsocus* sp.

Hemipsocidae
79. *Hemipsocus africanus* Enderlein

[2] Cited as *Lachesilla forcepeta* in Maes & García Aldrete (1998)

Psocidae

80. *Amphigerontia* sp. 1
81. *Amphigerontia* sp. 2
82. *Amphigerontia* sp. 3
83. *Blaste* sp. 1
84. *Blaste* sp. 2
85. *Blaste* sp. 3
86. *Blastopsocus* sp. 1
87. *Blastopsocus* sp. 2
88. *Blastopsocus* sp. 3
89. *Blastopsocus* sp. 4
90. *Blastopsocus* sp. 5
91. *Cerastipsocus trifasciatus* (Provancher)
92. *Psococerastis opulenta* (Navás)
93. *Psococerastis* sp. 1
94. *Psococerastis* sp. 2
95. *Metylophorus* sp. 1
96. *Metylophorus* sp. 2
97. *Metylophorus* sp. 3
98. *Indiopsocus* sp. 1
99. *Indiopsocus* sp. 2
100. *Indiopsocus* sp. 3
101. *Indiopsocus* sp. 4
102. *Indiopsocus* sp. 5
103. *Ptycta* sp. 1
104. *Ptycta* sp. 2
105. *Trichadenotecnum* sp. 1
106. *Trichadenotecnum* sp. 2

Myopsocidae

107. *Lichenomima* sp. 1
108. *Lichenomima* sp. 2
109. *Lichenomima* sp. 3
110. *Lichenomima* sp. 4
111. *Lichenomima* sp. 5
112. *Myopsocus* sp. 1
113. *Myopsocus* sp. 2