

## SPECIES OF *LACHESILLA* (PSOCOPTERA: LACHESILLIDAE: FROM THE INDIAN HIMALAYA

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### RESUMEN

La hembra de *Lachesilla falcicula* Badonnel y *L. sonamarga* sp. nov., se describen en este trabajo, con material procedente de Cachemira, India, en la vertiente sudoccidental del Himalaya. Ambas especies son cercanas entre sí y constituyen las primeras del género *Lachesilla* registradas en la India, elevando a cinco el número de especies de *Lachesilla* en la Región Oriental. (*L. bernardi* Badonnel, *L. falcicula* Badonnel; *L. loisae* García Aldrete (en prensa); *L. pedicularia* Lineo y *L. sonamarga* sp. nov.). Ambas especies pertenecen al grupo Andra, un conjunto de especies que se conoce en las Américas, Africa, Arabia Saudita, Mongolia y Europa. Los ejemplares estudiados y los tipos de *L. sonamarga* se encuentran depositados en la Colección de Insectos, Instituto de Biología, UNAM. Departamento de Zoología, Apartado Postal 70-153, C. P. 04510, México, D. F., México.

### ABSTRACT

The female of *Lachesilla falcicula* Badonnel, and *L. sonamarga* n. sp., are described from Kashmir, India, from the southwestern slope of the Himalaya. Both species are closely related, and represent the first species of *Lachesilla* recorded in India, thus raising to five the number of *Lachesilla* species in the Oriental Region (*L. bernardi* Badonnel, *L. falcicula* Badonnel; *L. loisae* García Aldrete (in press); *L. pedicularia* Linnaeus and *L. sonamarga* n. sp.). Both species belong in species group Andra, an assemblage known in the Americas, Africa, Saudi Arabia, Mongolia and Europe. The specimens studied, and the types of *L. sonamarga* are deposited in the Insect Collection, Instituto de Biología, UNAM, Departamento de Zoología, Apartado Postal 70-153, C. P. 04510, México, D. F., México.

### INTRODUCTION

Species of the genus *Lachesilla* (Psocoptera: Lachesillidae) had not been previously recorded in India, where 73 species of other psocids have been identified (New, 1977). *Lachesilla* is virtually unrepresented in the whole Oriental region: *L. bernardi* Badonnel, *L. falcicula* Badonnel and *L. loisae* García Aldrete (in press) are known from northern Pakistan and *L. pedicularia* (Linnaeus), a cosmopolitan, vagrant species is known from the Philipinnes (García Aldrete, in press).

This paper deals with two species of *Lachesilla* from Kashmir, India: one of them, *L. falcicula*, was described by Badonnel (1981) from northern Pakistan, on basis of a

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single male, I have now material of both sexes at hand and I am including a description of the female. The other species is new and belongs in the same species group as *L. falcicula* (group Andra, as defined by García Aldrete, 1984).

The specimens for microscopic study were dissected and their parts mounted in Hoyer's Medium, the slides were sealed with Canada Balsam. The usual measurements were taken with a filar micrometer whose unit was 136  $\mu$  for wings and 53  $\mu$  for other parts. Types and other specimens studied are deposited in the Insect Collection, Instituto de Biología, UNAM (IBUNAM), Departamento de Zoología, Apartado Postal 70-153, 04510 México, D. F., México.

### *Lachesilla falcicula* Badonnel

*L. falcicula* Badonnel, 1981, p. 140

**FEMALE.** *Color* (in 80% alcohol). Body pale brown. Compound eyes black, ocelli clear, with dark brown centripetal crescents.  $P_4$  dark brown, distinctly more pigmented than  $P_1$ - $P_3$ . Wings hyaline; abdomen pale brown, with dark brown subcuticular semi-rings.

*Morphology.* Subgenital plate (Fig. 2) broad, setose, with four mesal macrosetae; projected posteriorly to form an apically concave, broad extension; underlying the plate a central area, flanked by two tongue-shaped bodies, pigmentation of the plate more intense at the sides. Gonapophyses (Fig. 4) blunt, short, directed posteriorly. Ninth sternum (Fig. 4) with a pigmented area on posterior half; spermapore almost in the center of the plate; an irregular body, strongly sclerotized on outer edge, on each side of longitudinal midline. Paraprocts robust (Fig. 3) setose; Sensory fields with 12-13 trichobothria, one without basal floret. Epiproct (Fig. 5) rounded posteriorly, setose.

*Measurements* (in  $\mu$ ). FW: 2430; HW: 1872; F: 504; T: 931;  $t_1$ : 296;  $t_2$ : 119;  $P_4$ : 120;  $f_1$ : 281;  $f_2$ : 255;  $f_3$ : 204;  $f_4$ : 165;  $f_5$ : 106;  $f_6$ : 102;  $f_7$ : 84;  $f_8$ : 84;  $f_9$ : 75;  $f_{10}$ : 84; IO: 394; D: 167; d: 110; IO/D: 2.35; PO: 0.65.

**LOCALITY: INDIA: KASHMIR:** 12 K W Sonamarg, 17.IX.1985, C. W. & L. B. O'Brien, 1 $\sigma$ , 3 $\phi$ .

**RECORDS: INDIA: KASHMIR:** 9 K W Sonamarg, 17.IX.1985. C.W. & L. B. O'Brien, 1 $\sigma$ . 36 K NW Srinigar, Prang, 17.IX.1985. C. W. & L. B. O'Brien, 1 $\phi$ .

### *Lachesilla sonamarga*, n. sp.

**FEMALE.** *Color* (in 80% alcohol). Body pale brown; compound eyes black, ocelli clear, with dark brown centripetal crescents.  $P_4$  dark brown, distinctly more pigmented than preceding segments. Wings hyaline, veins brown. Abdomen with ochre subcuticular, dorsal semi-rings.

*Morphology.* Subgenital plate (Fig. 8) broad, rounded posteriorly, setose, with four mesal macrosetae; setal field extending to posterior border; mesally with two strongly sclerotized marks, approximately bean-shaped, one to each side of longitudinal midline; underlying the plate, a broad sheet, rounded anteriorly, deeply pigmented along its border. Gonapophyses (Fig. 7), short, apically blunt; ninth sternum, (Fig. 7), with

a well defined pigmented area, deeply concave on distal half, and two elongated, transverse pigmented areas, each distally rounded and much more strongly pigmented apically.

Paraprocts and epiproct as illustrated (Fig. 9), sensory fields of paraprocts with 13-14 trichobothria, one without basal floret.

*Measurements* (in  $\mu$ ). FW: 2836; HW: 2154; F: 560; T: 952;  $t_1$ : 323;  $t_2$ : 125;  $ctt_1$ : 18;  $P_4$ : 121;  $f_1$ : 426;  $f_2$ : 358; IO: 381; D: 174; d: 119; IO/D: 2.18; PO: 0.68.

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

*Morphology.* Hypandrium (Fig. 11) almost rounded posteriorly, with a small, median concavity; surface setose, with distinct fields of setae postero-laterally and with a conical, setose, sclerotized prominence in the middle (Figs. 11 and 13); from each side of the cone a pigmented, diagonal line to each side of the sclerite. Without claspers. Phallosome apodemes (Fig. 11) joined basally, each arm curved, acuminate, smooth, without denticles (Fig. 14; only one specimen available, damaged, with one apodeme remaining) Paraprocts (Fig. 12) setose, sclerotized as in the illustration, each with a strong, aquiline, mesal prong, and sensory fields with 13-14 trichobothria, one without basal floret. Epiproct (Fig. 12, torn longitudinally in the slide), with a setal field on each side and, on each postero-lateral angle, a rounded, sclerotized prominence (Fig. 15).

*Measurements* (in  $\mu$ ). FW: 2532; HW: 1886; F: 484; T: 885;  $t_1$ : 273;  $t_2$ : 109;  $ctt_1$ : 17;  $P_4$ : 112;  $f_1$ : 294;  $f_2$ : 278;  $f_3$ : 227;  $f_4$ : 204;  $f_5$ : 136;  $f_6$ : 121;  $f_7$ : 103;  $f_8$ : 98;  $f_9$ : 86;  $f_{10}$ : 95;  $f_{11}$ : 69; IO: 351; D: 167; d: 115; IO/D: 2.10; PO: 0.68.

**TYPE LOCALITY: INDIA: KASHMIR:** 9 K W Sonamarg, 17.IX.1985, C. W. & L. B. O'Brien, holotype  $\sigma$ , allotype  $\varphi$ , paratype  $\varphi$  (IBUNAM).

## COMMENTS

In the original description of *L. falcicula*, Badonnel (1981), indicates that the male has the parameres (= phallosome apodemes), largely separated at the base; in the Indian specimens, the males have the phallosome apodemes basally joined, and since they are otherwise attributable to Badonnel's description, I decided to assign the Indian specimens to *L. falcicula*. As for *L. sonamarga* n. sp., it is quite close to *L. falcicula*; the female are easily separable, and the most important differences in the males of both species are the following:

- a) Absence of denticles in the distal halves of the phallosome apodemes in *L. sonamarga* (present in *L. falcicula*);
- b) Hypandrial cone larger and more setose in *L. sonamarga* (smaller and flanked by two setae in *L. falcicula*);
- c) Sclerotized protuberance of the epiproct decidedly smaller and wider in *L. sonamarga* (elongated and slender in *L. falcicula*) and
- d) *L. sonamarga* is smaller than *L. falcicula* (cf. measurements).

Both species here dealt with are assigned in species group Andra, as diagnosed by García Aldrete (1974), with modifications; the pigmented diagonal lines in the hypan-

drium of *L. sonamarga* can possibly be interpreted as the lines of fusion of claspers with hypandrium, and the cone could be seen as the fusion of the distal ends of the claspers; such an hypandrium is thus reminiscent of the hypandrium of *Lachesilla* species in the group Pedicularia.

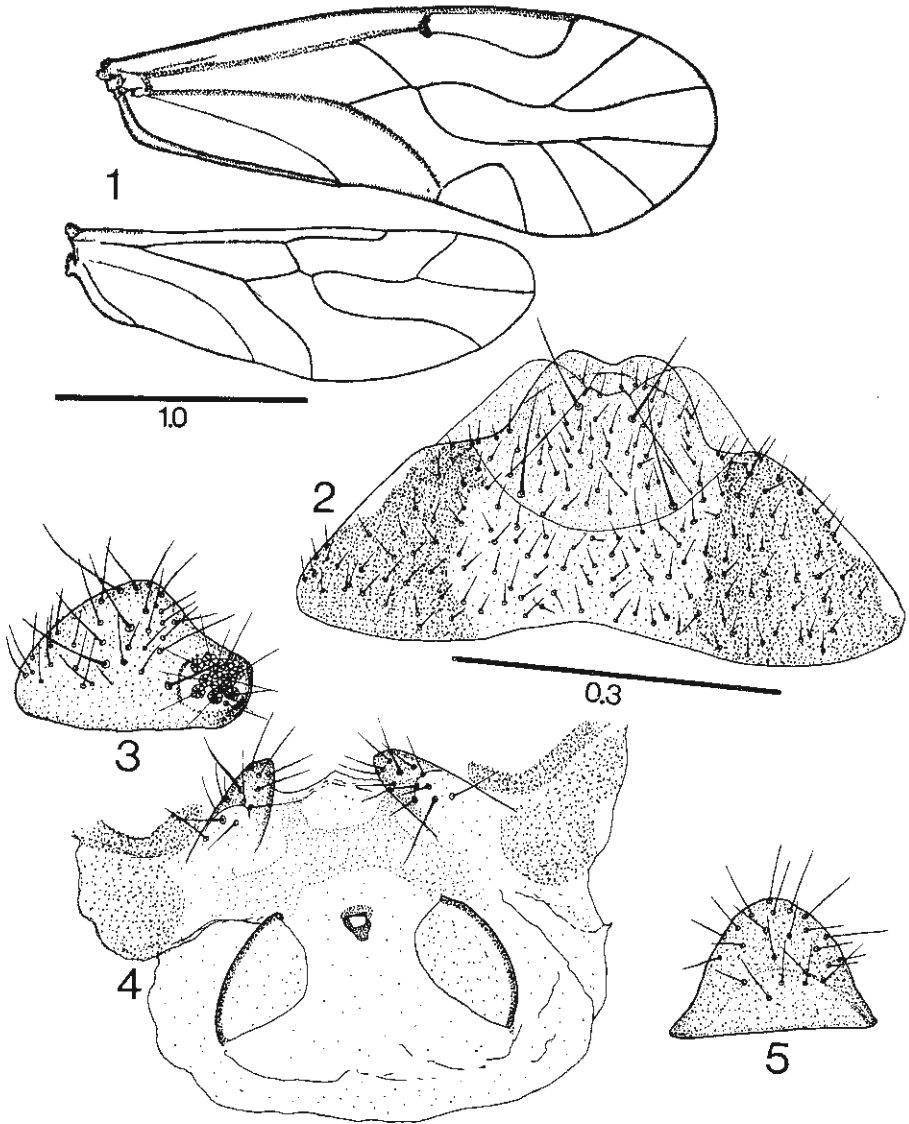
Badonnel (1981) pointed out that *L. falcicula* constituted the first species of *Lachesilla* known from the Himalayan region, representing a division of the genus so far only known from America. Presently, three species are known from the southwestern slopes of the Himalaya: *L. falcicula*, *L. sonamarga* and *L. loisae* García Aldrete, the first two in the Andra group and the third one in the Pedicularia group. The species in the Andra group are predominantly American (18 species), but other than the above mentioned, some of them also occur in the Old World. e.g.: *L. buettikeri* New, 1979, in Saudi Arabia, *L. kerzhneri* Günther, 1974, in Mongolia; *L. micrura* Badonnel, 1965, in Angola, and *L. tanaidana* Roesler, 1953, in the U.S.S.R., Mongolia and Switzerland. Biogeographically, the distribution of the species in the group (North America, South America, Africa, Saudi Arabia, Pakistan, India and Eastern Europe mostly), is of interest, and can be interpreted as a result of past continental movements, as the origin of the genus in neotropical. It can be thought then, that the Andra group had extended to Africa before this continent separated from South America some 150-130 my BP (Seyfert and Sirkin, 1979) and that from Africa extended to Saudi Arabia, the Himalaya and the Eastern Palearctic region to produce its present distribution.

### ACKNOWLEDGEMENTS

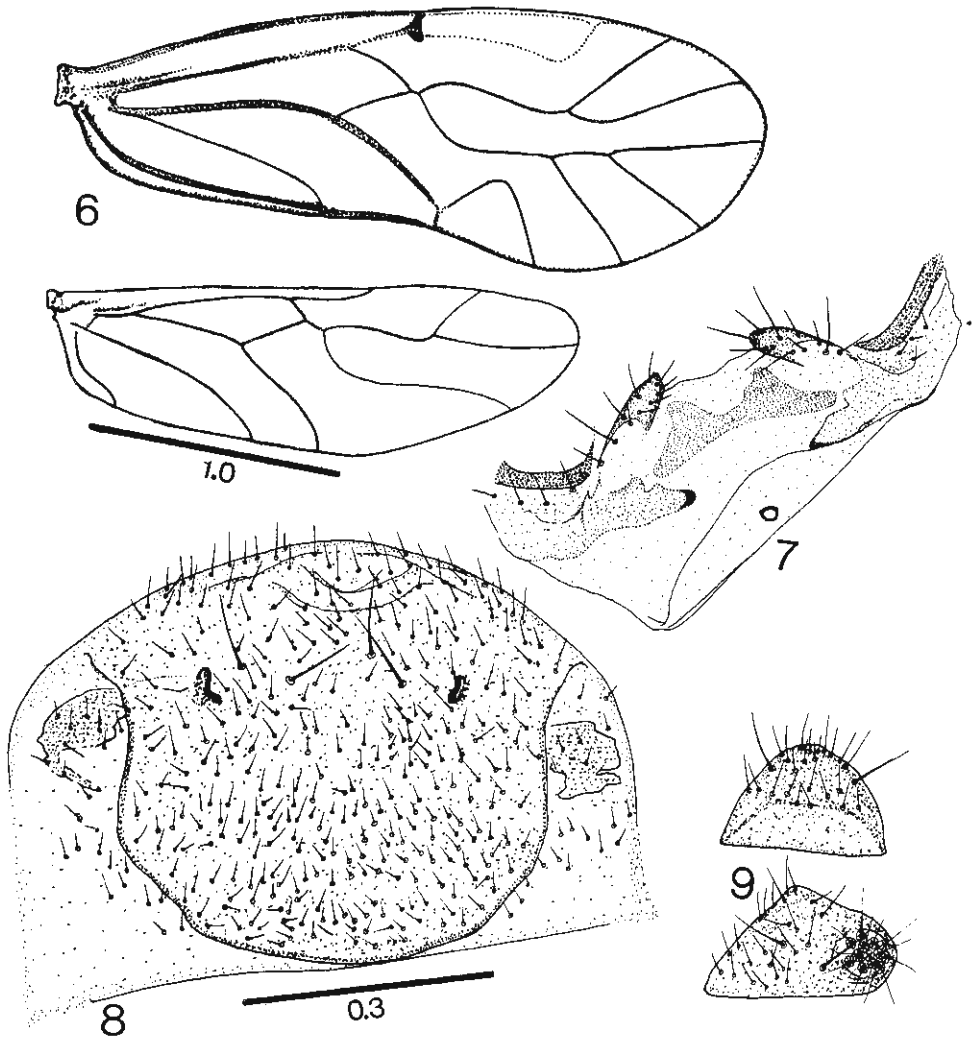
I wish to thank most sincerely, Lois B. and Charles W. O'Brien, of Florida A & M University, Tallahassee, for the donation of the Psocoptera collected in their 1985 trip to India and Pakistan. Thanks also to Sra. María de la Luz Morales S., Instituto de Biología, UNAM, for the typing of the manuscript.

### REFERENCES CITED

- BADONNEL A., 1955. *Psocoptères de L'Angola*. Publ. Cult. Cfa. Diam. Angola. 26: 1-257.
- , 1981. Psocoptères du nord de l'Inde et du Pakistan. *Entomol. Bas.* 6: 120-149.
- GARCÍA ALDRETE, A. N. 1974. A classification above species level of the genus *Lachesilla* Westwood (Psocoptera: Lachesillidae). *Folia Entomol. Mex.* 27: 1-88.
- , A new Oriental *Lachesilla* (Psocoptera: Lachesillidae) *Oriental Insects*, 22.
- GÜNTHER, K., 1974. Psocoptera of the Mongolian People's Republic. *Insects of Mongolia*, No. 2: 34-50. (In Russian with abstract in German).
- NEW, T. R., 1977. Psocoptera of the Oriental Region: a review of published taxonomic information with keys to families and genera. *Oriental Insects Suppl.* No. 6: 1-83.
- , 1979. Psocoptera. Insects of Saudi Arabia. *Fauna of Saudi Arabia I.* 84-89.
- ROESLER, R., 1953. Zwei neue *Lachesilla*-Arten (Psocoptera). *Entomol. Berich.* 14: 295-300.
- SEYFERT, C. K., and L. E. SIRKIN, 1979. *Earth history and plate tectonics. 2nd. Ed., Harper and Row, New York, VIII + 600.*



Figs. 1-5. *Lachesilia falcicula* Badonnel, ♀. Fig. 1. Fore—and hind—wings. Fig. 2. Subgenital plate. Fig. 3. Right paraproct. Fig. 4. Gonapophyses and ninth sternum. Fig. 5. Epiproct. Scales in mm. Figures 3-5 to same scale of Fig. 2.



Figs. 6-9. *Lachesilla sonamarga* n. sp. ♀. Fig. 6. Fore- and hind-wings. Fig. 7. Gonapophyses and ninth sternum. Fig. 8. Subgenital plate. Fig. 9. Epiproct and right paraproct. Scales in mm. Figs. 7 and 9 to same scale as Fig. 8.

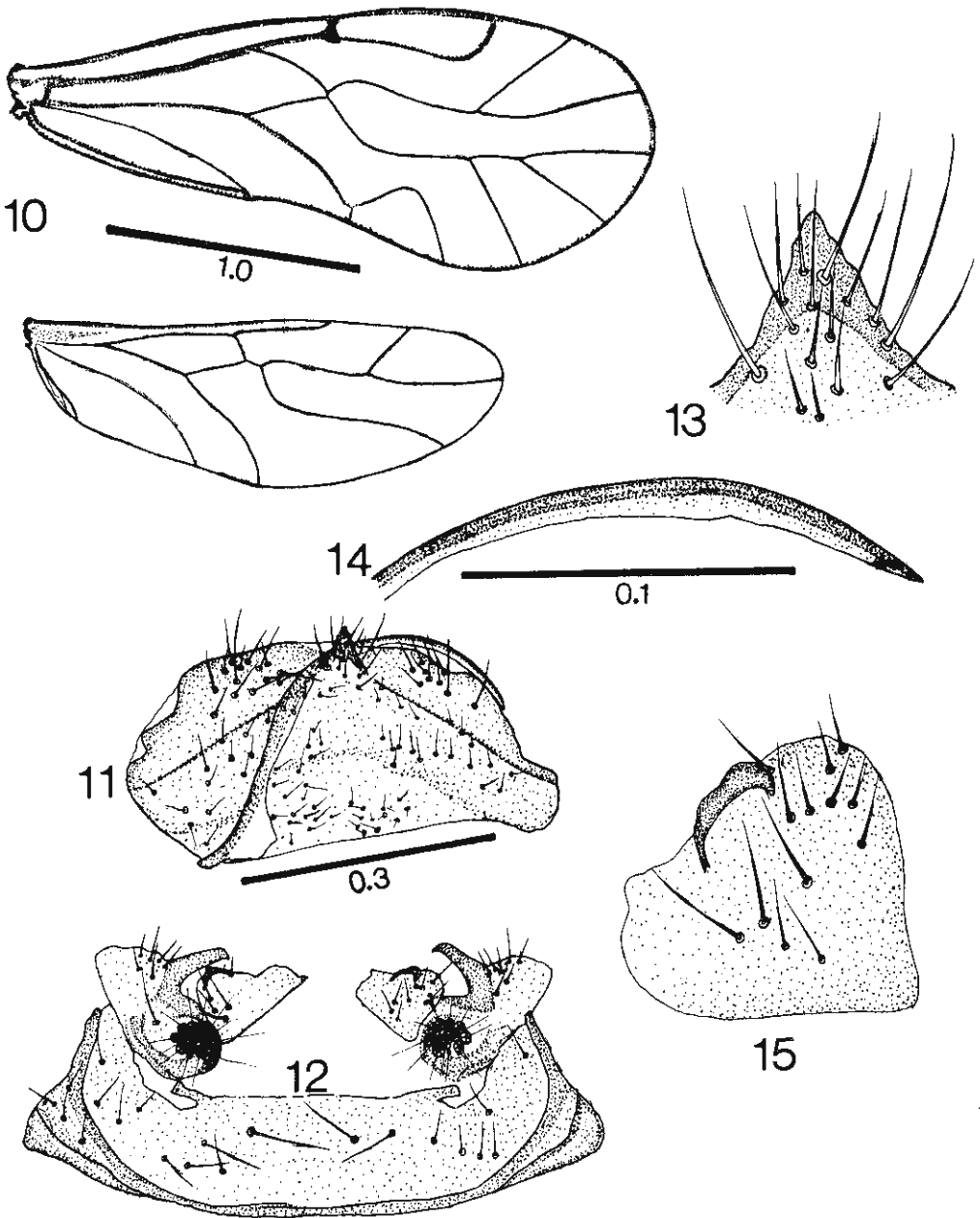


Fig. 10-15. *Lachesilla sonamarga* n. sp. ♂. Fig. 10. Fore—and hind—wings. Fig. 11. Hypandrium and one phallosome apodeme. Fig. 12. Clunium, paraprocts and epiproct. Fig. 13. Cone of hypandrium. Fig. 14. Distal end of phallosome apodeme. Fig. 15. Left half of epiproct. Scales in mm. Fig. 12 to same scale of Fig. 11. Figs. 13 and 15 to same scale of Fig. 14.