

A new species of *Ljunghia* Oudemans, 1932 (Arachnida, Acari, Laelapidae) from a mygalomorph spider

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ABSTRACT

Ljunghia (Ljunghia) luciae n. sp., associated with mygalomorph spiders, is described on the basis of material from *Cyclosternum fasciatum* (Cambridge, 1892) (Araneae, Theraphosidae) kept in captivity. Adults with dorsal shield reaching the posterior margin of dorsum and bearing 31 or 32 pairs of setae long and slightly serrate, except setae *J5* short (21 podonotal and 11 opisthonotal); 15 or 16 pairs of ventral setae. Male sterno-genito-ventrianal shield with 11 pairs of ventral setae. A key to species of the genus, based on adult females and males, is given.

KEY WORDS

Arachnida,
Acari,
Mesostigmata,
Laelapidae,
Ljunghia luciae n. sp.,
Araneae,
Theraphosidae,
new species.

RÉSUMÉ

Une nouvelle espèce de Ljunghia Oudemans, 1932 (Arachnida, Acari, Laelapidae) d'araignées mygalomorphes.

Ljunghia (Ljunghia) luciae n. sp., associé aux araignées mygalomorphes est décrit sur la base de matériel de *Cyclosternum fasciatum* (Cambridge, 1892) (Araneae, Theraphosidae) élevé en captivité. Les adultes possèdent un bouclier dorsal atteignant le bord postérieur du dorsum, et portant 31 ou 32 paires de soies, longues et légèrement dentées, excepté soie *J5*, courte (21 du podonotum et 11 opisthonotales); 15 ou 16 paires de soies ventrales. Le bouclier sterno-génito-ventrianal mâle porte 11 paires de soies ventrales. Une clé des espèces du genre, basée sur des adultes mâles et femelles est donnée.

MOTS CLÉS

Arachnida,
Acari,
Mesostigmata,
Laelapidae,
Ljunghia luciae n. sp.,
Araneae,
Theraphosidae,
espèce nouvelle.

INTRODUCTION

The nine species described in the genus *Ljunghia* Oudemans, 1932 (Laelapidae Berlese, 1892) are obligate parasites (non-protelean) of mygalomorph spiders from Indonesia, Australia (Womersley 1956; Domrow 1975; Welbourn & Young 1988; Fain 1991c) and Africa (Fain 1991a). Fain (1989) created the subgenus *Metaljunghia* to accommodate *Ljunghia rainbowi* Domrow, 1975 and justified the separation based on morphological characters exhibited by Australian species (reduced size of dorsal shield, reduced dorsal and opisthogastric chaetotaxy in both sexes, female with fixed cheliceral digit distinctly shorter than movable digit and metasternal setae absent). One year earlier, *Copriphhis (Pelethiphis) bristowi* Finnegan, 1933 was transferred to *Ljunghia* by Welbourn & Young (1988). *Ljunghia bristowi* lacks metasternal setae in females and males (see Finnegan 1933: figs 2, 5). However, the female cheliceral digits are equal in length and similar in shape to other *Ljunghia* species. Deletion and subsequent reduction of idiosomal setae are observed in species included in the subgenus *Ljunghia* (i.e. *L. minor* Fain, 1989 with 35–40 pairs of ventral setae, no more than 20 in *L. selenoscopiae* Oudemans, 1932). The small size of the dorsal shield referred to by Fain (1989) for *Metaljunghia* is not a character present in all species included in the subgenus (e.g., dorsal shield of *L. (M.) hoggi* Domrow, 1975 and *L. (M.) bristowi*). We conclude that the validity of *Metaljunghia* may be upheld on the basis of the unequal development of the cheliceral digits.

In this paper we describe a new species of *Ljunghia* (*Ljunghia*) from a Central American mygalomorph (Theraphosidae Thorell, 1870) spider, *Cyclosternum fasciatum* (Cambridge, 1892), kept in captivity in Spain.

MATERIAL AND METHODS

Most of the mites were located on the cephalothorax and basal segments of the legs of *Cyclosternum fasciatum* (Cambridge, 1892). Mites were removed from the spider with forceps, kept in 70% alcohol, mounted in Hoyer's medium and sealed with Glyptal

insulating varnish. Measurements are in μm , as ranges (minimum to maximum size) or as approximations. Idiosomal setal notation follows Lindquist & Evans (1965), with modifications for the caudal region as given by Lindquist (1994) and Lindquist & Moraza (1999); leg chaetotaxy follows Evans (1963). Idiosomal notation of glands and lyrifissures follows Johnston & Moraza (1991).

ABBREVIATIONS

MNHN Muséum national d'Histoire naturelle, Paris;
MZUN Museum of Zoology, University of Navarra, Pamplona.

SYSTEMATICS

Casanueva (1993) reviewed free-living and arthropod-associated Laelapidae mites in an attempt to determine the phylogeny of the family. As a result, *Ljunghia* was included in the family Iphipsididae Kramer, 1886 (dermanyssoid mites associated with Chilopoda, Diplopoda, Araneae and Crustacea), which had lost the *av2* seta on tibiae I. Also forming part of this family would be *Scorpionyssus* Fain & Rack, 1988, parasitic on Scorpionida and closely related to *Ljunghia*. However, *Ljunghia* does not lack subcapitular seta *hyp3*, which absence is a diagnostic character for group VIII. It also exhibits the apomorphic loss of seta *pl2* on genua IV for the family Laelapidae. Other characters used to define the genus in this work (one or no teeth on movable cheliceral digit, podonotal seta *z3* absent, *J3* absent and *Z2* absent) are shared with other genera of Laelapidae. In this paper, we accept *Ljunghia* as a member of the subfamily Iphipsinae Kramer, 1886 within the family Laelapidae.

Family LAELAPIDAE Berlese, 1892
Subfamily IPHIOPSINAE Kramer, 1886

Genus *Ljunghia* Oudemans, 1932

DIAGNOSIS. — Nymphs and adults of *Ljunghia* share the following apomorphies with other genera in the family Laelapidae: female fixed digit reduced, half as long as movable digit, and movable digit with 1 tooth (in *L. (Metaljunghia)*); palpal claw with 2 tines; 2 to 5

opisthotal setae *J* absent; *Z1* always absent; setae *st4* on soft cuticle or absent; female anal shield free; genua I, seta *av2* absent; genua II, seta *ad3* absent; genua IV, setae *pl2* and *pv1* absent; tibiae I, seta *av2* absent; tibiae III, setae *ad2* and *pl2* absent; tibiae IV, setae *ad2* and *pd3* absent.

They are distinguished apomorphically from those of other laelapid genera by the following attributes: corniculi with slight apical cleft; genital setae absent; genua IV, seta *ad3* absent.

Other attributes include: tectum denticulate, rounded, bifid or trifid; deutosternum with 6 multidenticulate rows; hypostomal processes normal and fimbriate; corniculi not longer than palpfemur; female cheliceral fixed digit normally developed, movable digit with 2 teeth (in *L. (Ljunghia)*). Dorsal shield with 15 to 36 pairs of dorsal setae; opisthogastric hypertrichia may be present. Peritreme long, reaching anterior margin of coxae I; peritrematal shields reduced, not fused to exopodal elements and free from dorsal shield; setae *st1* on sternal shield; female anal shield suboval with 3 setae; endopodal III and parapodal elements present; metapodal plates present; legs I subequal in length to other legs; both sexes with dorsal shield complete with different degrees of development; male with sterno-genital, sterno-genito-ventral or sterno-genito-ventrianal shield; male with fixed cheliceral digit shorter than movable digit; protonymph with 2 dorsal shields.

Ljunghia (Ljunghia) luciae n. sp.
(Figs 1-3)

TYPE MATERIAL. — Holotype: ex *Cyclosternum fasciatum* (Cambridge, 1892), 9.II.2007, C. Alemany coll., V. Iraola leg., adult ♀ (mounted, permanent slide) (MZUN).

Paratypes: same data as holotype, 10 adult ♀♀, 5 adult ♂♂, 4 deutonymphs, 1 protonymph (MZUN); 2 adult ♀♀, 1 adult ♂, 1 deutonymph (MNHN).

TYPE LOCALITY. — No type locality given since the type specimens were collected from a spider kept in captivity.

TYPE HOST. — *Cyclosternum fasciatum* (Cambridge, 1892).

ETYMOLOGY. — The species is named in honour of Lucia Esteban, spouse of the second author of this paper.

DIAGNOSIS. — Dorsal shield well sclerotized, reaching the posterior margin of dorsum and bearing 31 pairs of setae (20 podonotal and 11 opisthotal); dorsal setae of idiosoma long, slightly serrate, their tips extended beyond the bases of the following setae, except setae *J5* short; 15 or 16 pairs of ventral setae. Male sterno-genito-ventrianal shield with 11 pairs of ventral setae.

DESCRIPTION

Adult female (holotype)

Dorsum (Fig. 1A). Dorsal shield 628 (622-633) long, 431 (408-452) at its greatest width at level of setae *S2* ($n = 3$), shield reticulate over entire surface. Idiosoma dorsum with long and slightly serrate setae, 31 pairs inserted on dorsal shield: *j1* (46), *j2* (94), *j3-j6*, *J3* and *J4* (208-215), *J5* (25); *z1* (58), *z2-z6*, *Z2* and *Z3* (100); *Z4* and *Z5* (150); *s1* (125), *s2* (146), *s3* (152), *s4* (198), *s5* (219), *S2-S4* (c. 194), *S5* (178); *r1* (146), *r2* (133), *r4* (219); 19 pairs of dorsal setae on soft cuticle: *s6* (146), *S1* (67); *r3* (158), *r5* (146), *r6* (125), *R1-R7* and *UR1-UR7* (145-167). Dorsal poroidotaxy with 23 pairs of discernible pore-like structures, of which 8 (5 podonotal and 3 opisthotal) appear to be gland pores and 15 (6 podonotal and 9 opisthotal) are non-secretory (lyrifissures). Peritrematal shields abbreviated, free from dorsal shield, and bearing 1 lyrifissure and 1 gland at the distal end; sometimes a minute peritrematal sclerite with gland and lyrifissure and free from the peritrematal shield is present (Fig. 2A, right side); peritremes extending to level of setae *z1* (length including the stigmata 308).

Venter (Fig. 2A). Presternal area weakly sclerotized, with unpaired, narrow lightly-sclerotized platelet in front of tritosternum. Sternal shield well-sclerotized, with reticular ornamentation from anterior concave margin to level of lyrifissures *iv2*; strongly concave posterior margin; the sternal shield extends posterolaterally as far as $\frac{1}{3}$ the length of coxae III. Length of shield at medial region level, 65, width at level of *st2*, 135; width at level of *st3*, 200; shield with 3 pairs of slightly serrate setae, *st1* (115 long), *st2* (171 long) and *st3* (150 long); setae *st4* (150 long) on soft cuticle; 2 pairs of lyrifissures on the shield (*iv1* medad posterior to *st1*); *iv3* on soft cuticle, mesad and posterior to *st3*. Endopodal sclerites well developed and free from the sternal shield flanking coxae III and IV. Genital shield reticulate, with few large cells, long (283), its lateral margins slightly concave at level of genital setae (87); width at level of genital sigillae 122; hyaline anterior margin broadly rounded and not overlapping posterior margin of sternal shield; posterior margin convex; genital setae 144 long, inserted on margin of the shield; poroids *iv5* inserted on soft cuticle

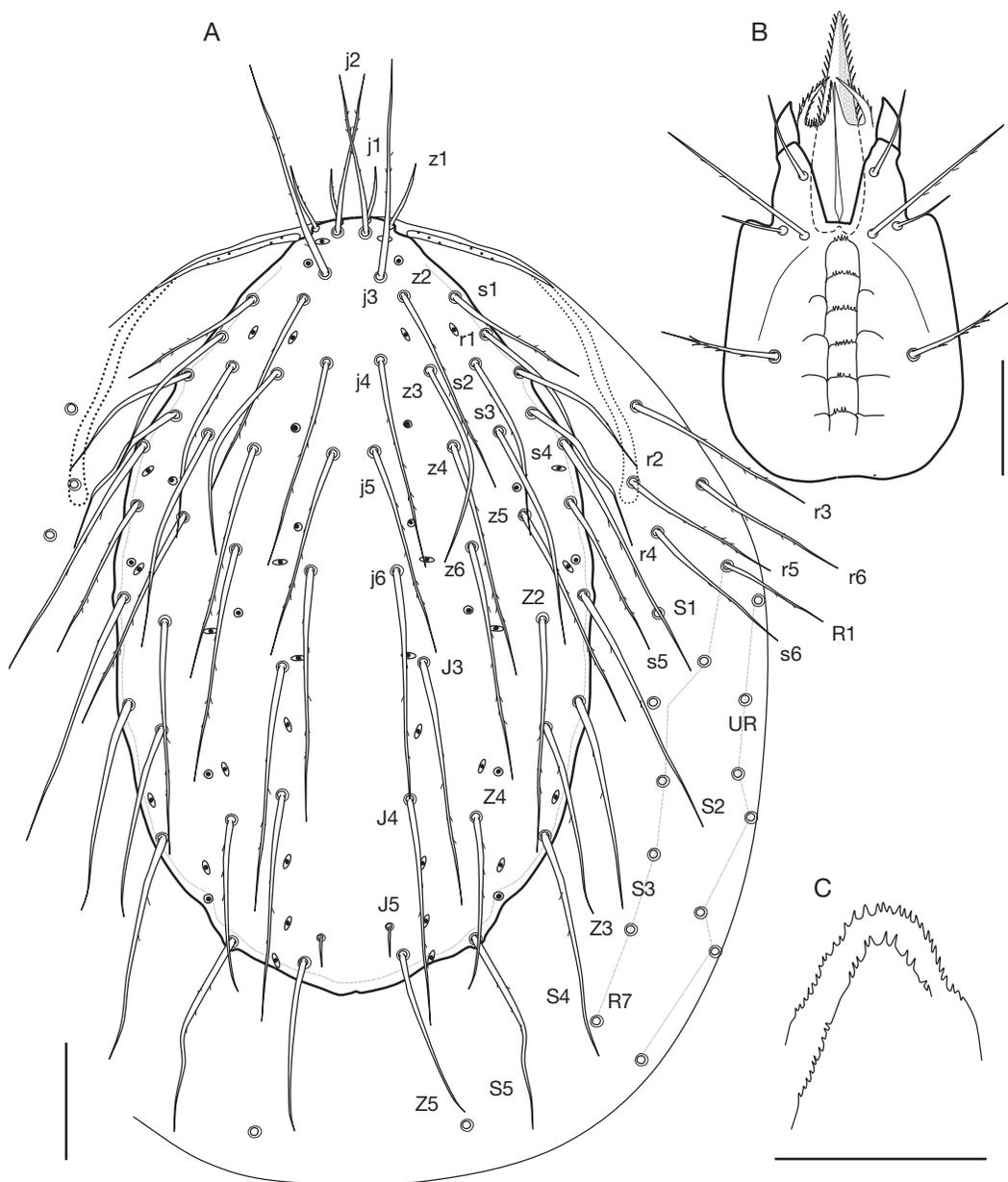


FIG. 1. — *Ljunghia (Ljunghia) luciae* n. sp., ♀ (holotype): **A**, idiosomal dorsum; **B**, subcapitulum; **C**, gnathotectum dorsal. Scale bars: A, 100 µm; B, C, 50 µm.

flanking shield. Small, weakly sclerotized platelets flanking genital shield. Inguinal region with 1 or 2 pairs of rounded metapodal platelets, the smaller pair difficult to discern, and *gv2* on exopodal ring

mesad to coxae IV. Anal shield (Fig. 2D) obovate, longer (153) than greatest width (89), with striae on the anterior region; distinct cribrum normally developed; anal valves with pair of euanal lyrifissures;

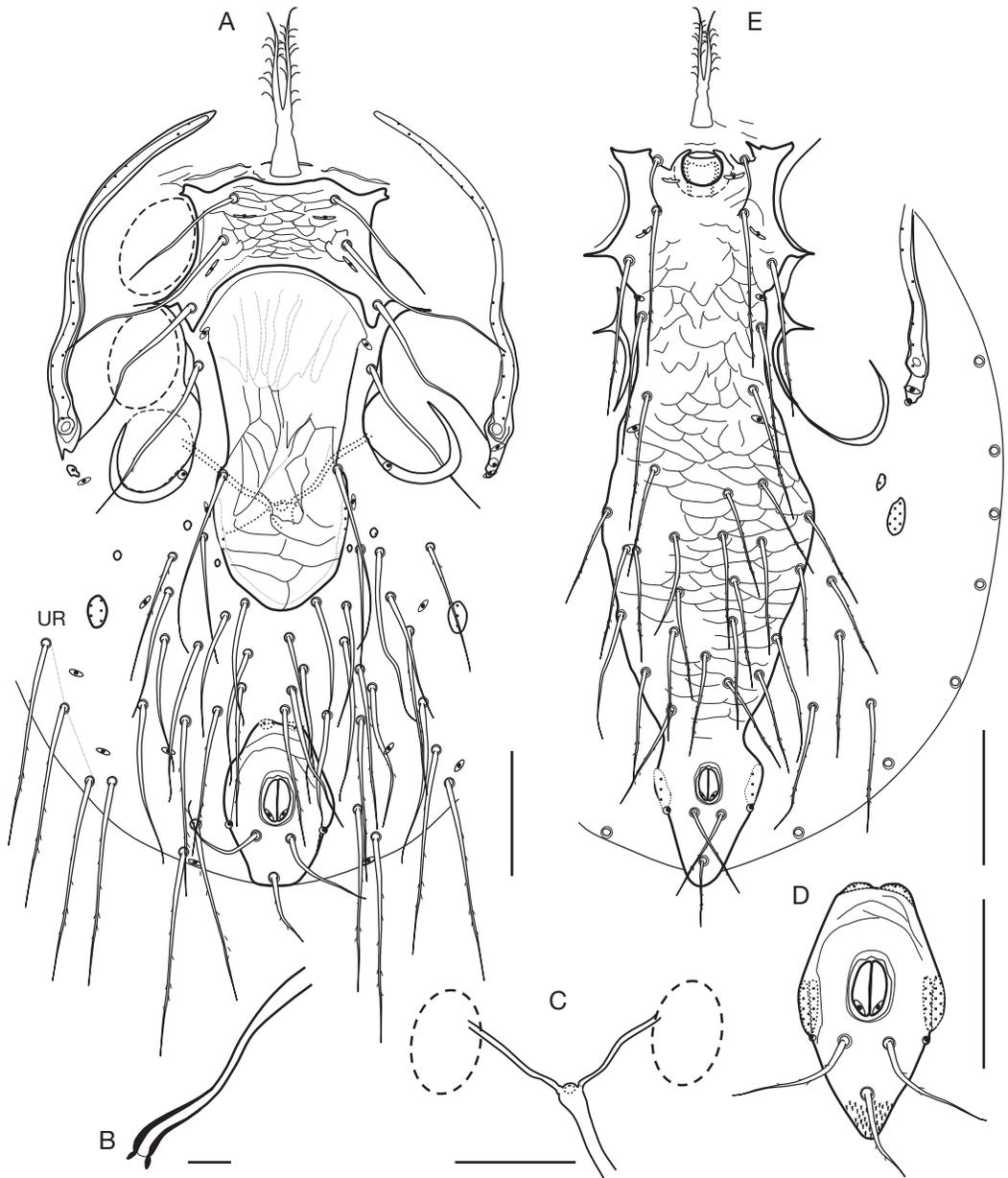


FIG. 2. — *Ljunghia (Ljunghia) luciae* n. sp.: **A**, ♀ (paratype), idiosomal venter; **B**, ♀, detail of the spermatheca; **C**, detail of the spermathecal ducts; **D**, ♀, anal shield; **E**, ♂ (paratype), idiosomal venter. Scale bars: 100 µm.

circumanal setae slightly pilose, paranal setae (87 long) inserted posterior to anal opening and postanal setae 58 long; pair of anal glands (*gv3*) present. Five pairs of ventral lyrifissures as in Figure 2. Opisthogaster

hypertrichous, with 15 or 16 pairs of long (106-150 long), slightly serrate setae. Spermathecal apparatus easy to discern, with distinct long tubular conduit and narrow calyx (Fig. 2B, C).

Gnathosoma. Tectum (Fig. 1C) with anterior margin denticulate, triangular. Cheliceral digits straight and subequal in length; fixed digit (44 long) bidentate, the more apical tooth smaller, and with well-developed *pilus dentilis*; movable chela (43 long) with 2 subdistal teeth; cheliceral seta (13 long) and lyrifissures normal (Fig. 3C). Corniculi slightly curved inward, short (27 long), not reaching the long and acute apex of the fringed internal malae. Deutosternal groove with 6 transverse rows of denticles, evenly multidenticate (4-8 denticles); groove (Fig. 1B) with smooth anterior margin discernible between bases of *hp2*. Subcapitular setae slightly serrate; anterior pair *hp1* 39 long, *hp2* 73 long, *hp3* is the shortest (27 long) and posterior pair *c* (52 long) thicker than the other setae. Labrum large (96 long), with margin pilose and ventral surface pitted. Palpal chaetotaxy, trochanter to tibia: 2-5-6-14; pal genu with seta *al1* and *al2* smooth and spatulate; palp tarsal claw with 2 tines similar in length. Tritosternum (Fig. 2A) with elongated trapezoidal base (53 long) and paired barbed laciniae, which are free from each other for about 0.5 of entire length (77 long excluding base).

Legs. Measurement of legs (from base of the leg to base of the pretarsus) as follows: leg I 599 (587-605), leg II 481 (459-495), leg III 498 (472-514) and leg IV 640 (610-657). Setation of trochanters of legs, respectively, 6-5-5-5; that of femora, 2 2/1 3/2 2 (12), 2 3/1 2/2 1 (11), 1 2/1 1/0 1 (6), 1 2/1 1/0 1 (6); that of genua, 2 3/2 3/1 2 (13), 2 2/1 3/1 2 (11), 2 2/1 2/1 2 (9), 2 2/1 3/0 1 (9); that of tibia, 2 3/1 3/2 2 (13), 2 2/1 2/1 2 (10), 2- 1/1 2/1 1 (8), 2 1/1 3/1 2 (10). Tarsi of legs II-IV, 3 3/2 1/1 3/2 3 (18); pretarsi of legs I-IV with well-developed pretarsus (65 long).

Adult male

Dorsum. Dorsal shield length 558 (542-577); 374 (352-389) at its greatest width at level of setae *S2* ($n = 6$). Dorsal chaetotaxy, adenotaxy and poroidotaxy as in the female.

Gnathosoma. Tectum as in female. Chelicera (Fig. 3D) with fixed digit short, 26 long, cylindroconical, with short *pilus dentilis* and one subapical tooth; movable digit longer, 37 long, and spermatodactyl

digitiform, dorsally bend, 15 long. Capitular and palpal structures similar to those in female.

Venter. Sterno-genito-ventrianal shield (Fig. 2E) vase-shaped, with a reticulate ornamentation except at level of anal shield; shield (including anal region) 510 long, 96 wide at level of coxae IV, and greatest width at level of metapodal shields 167. Sterno-genital region with 5 pairs of slightly serrate setae (*st1-st5*): *st1* 42; *st2* 121; *st3* 117; *st4* and *st5* 104; distance *st3-st3* one and a half times longer than distance *st1-st1*; 4 pairs of lyrifissure, *iv1* mesad and posterior to *st1* and *iv5* posterior to *st5*. Ventral region with 11 pairs of setae similar in shape to sternal setae (73-83 long), 58 wide at the juncture with anal shield. Anal region 83 wide at level of anal opening; paranal setae (67 long) posterior to anal opening, and postanal setae shorter (48 long). Six pairs of opisthogastric setae on soft cuticle flanking the shield. Endopodal sclerites well developed and free alongside coxae III and IV. Two pairs of metapodal platelets (first pair reduced).

Legs. Leg chaetotaxy as in female. Measurement of legs (from base of the leg to base of the pretarsus) as follows: leg I 534, leg II 426, leg III 449 and leg IV 557.

Deutonymph

Dorsum. Dorsal shield length 471 (434-499); 305 (256-336) at its greatest width at level of setae *S2* ($n = 5$). Idiosoma with lightly sclerotized, fully reticulated dorsal shield. Dorsal chaetotaxy and poroidotaxy as in adult. Peritrematal shields abbreviated as in adult, do not extend beyond the stigmata; 2 small peritrematal sclerites bearing one lyrifissure and one gland are present; peritremes extending to level of setae *r1*. Sternal shield extends to posterior margin of coxae IV, with sternal setae (*st1-st4*) and 3 pairs of lyrifissures (*iv*); 4 minute post-sternal sclerites; endopodal sclerites well developed and free from the sternal shield flanking coxae II and III and between coxae III and IV; exopodal ring IV present; 2 pairs of metapodals present; glands *gv2* distinctive. Ventral chaetotaxy and poroidotaxy as in adult female.

Legs. Leg chaetotaxy as in adult. Measurement of legs (from base of the leg to base of the pretarsus) as follows:

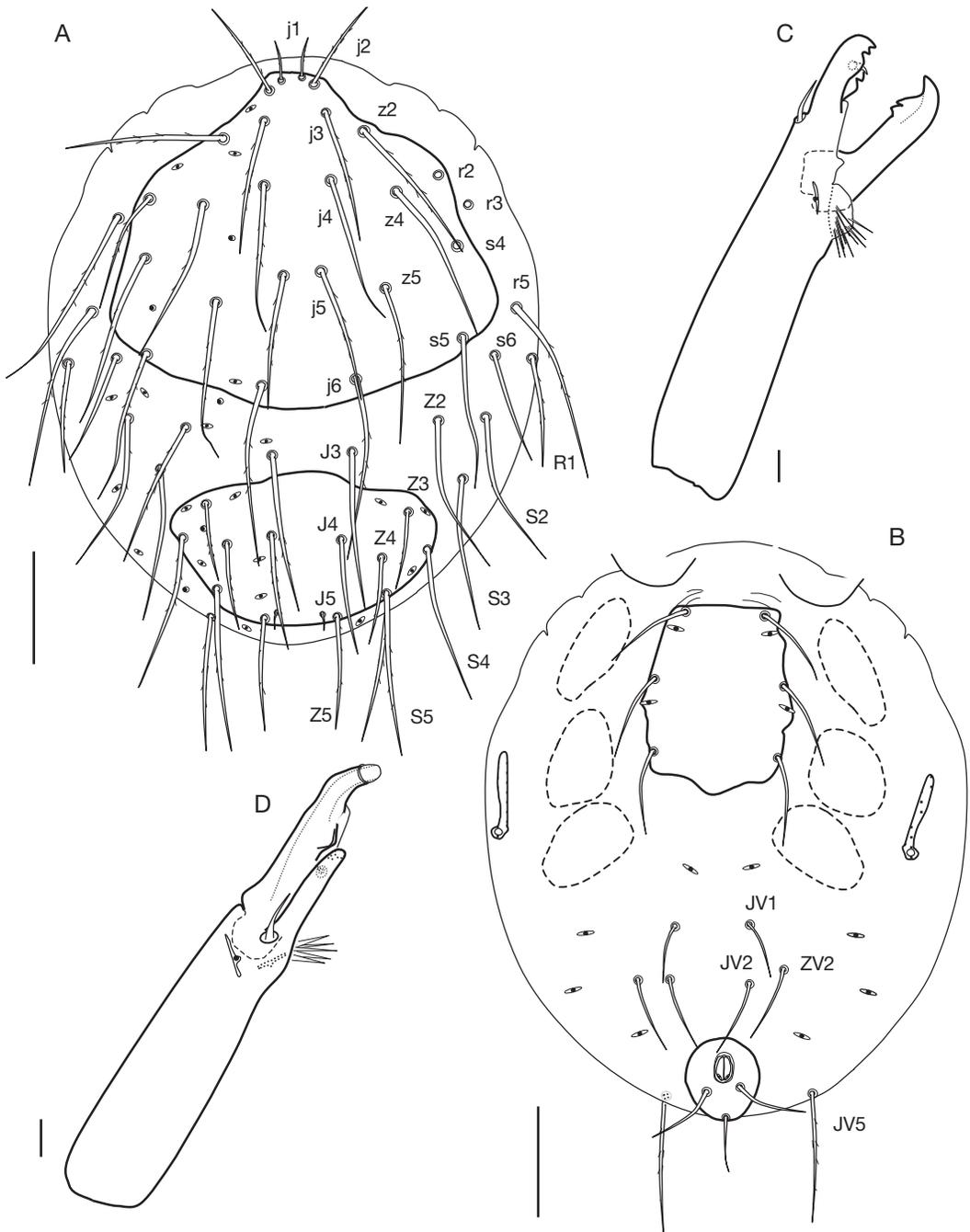


FIG. 3. — *Ljunghia (Ljunghia) luciae* n. sp.: **A**, protonymph, idiosomal dorsum; **B**, protonymph, idiosomal venter; **C**, ♀, chelicera, posterolateral view; **D**, ♂, chelicera antiaxial view. Scale bars: A, B, 100 µm; C, D, 10 µm.

leg I 514, leg II 430, leg III 449 and leg IV 544.

Protonymph (Fig. 3A, B)

Dorsum. Idiosoma with lightly sclerotized, fully reticulated podonotal and pygidial shields (Fig. 3A); podonotal shield 250 long, 292 wide at widest level near posterior convex margin; pygidial shield, 113 along midlength, 200 at widest level near *S4*, with anterior margin convex. Dorsal setae of similar length and serrate; podonotum with 15 pairs of setae, 12 pairs (*j1-j6*, *z2*, *z4*, *z5*, *s4*, *s5*, *r2*) on podonotal shield and 3 (*s6*, *r3*, *r5*) on soft cuticle: *j1* (38) < *j2* (77) < *j3* = *j5* (102) < *j4* (115) < *j6* (127); *z2* (108) < *z4* = *z5* = *s4* = *s5* (125) > *s6* (83) < *r2* (94) < *r3* = *r5* (125); opisthonotum with 13 pairs of setae, 7 on the pygidial shield: *J3* (119) > *J4* (88) > *J5* (11); *Z2* (113) > *Z3* (60) ≤ *Z4* (65) < *Z5* (83); *S2* (117) ≥ *S3* (113) < *S4* = *S5* (123); *R1* (104).

Idiosomal venter (Fig. 3B). Sternal shield with 3

pairs of setae (*st1-st3*) 71 long, and 2 pairs of lyrifissures (*iv1*, *iv2*); setae *st5* absent. Opisthogaster with 4 pairs of setae and 4 pairs of lyrifissures: *JV1* (42), *JV2* (56), *JV5* (100), *ZV2* (54). Peritreme short, reaching the middle of coxae III.

Legs. Measurement of legs (from base of the leg to base of the pretarsus) as follows: leg I 420, leg II 344, leg III 345 and leg IV 406. Setation of coxae of legs, respectively, 2-2-2-1; that of trochanters, 4-4-4-4; that of femora, 2 2/1 2/1 2 (10), 1 2/1 2/1 1 (8), 1 2/1 1/0 0 (5), 1 2/1 1/0 0 (5); that of genua, 1 2/1 2/1 1 (8), 1 2/0 2/0 1 (6), 1 2/0 2/0 1 (6), 1 2/0 2/0 1 (6); that of tibiae, 1 2/1 2/1 1 (8), 1 1/1 2/1 1 (7), 1 1/1 2/1 1 (7), 1 1/1 2/1 1 (7). Tarsi of legs II-IV, 3 3/2 1/0 3/2 3 (17); pretarsi of legs I-IV with well-developed pretarsus.

Differences among the species are highlighted in the following key to adult females and males.

KEY TO THE SPECIES OF *LJUNGHIA* OUDEMANS, 1932

1. Female with fixed cheliceral digit half as long as movable digit; adult metasternal setae always absent; dorsal shield with 15-25 pairs of setae; setae *J5* present or absent subgenus *Metaljunghia* 2
- Female cheliceral digits equal or subequal; adults metasternal setae present or absent; dorsal shield with 32-36 pairs of setae; setae *J5* present subgenus *Ljunghia* 7
2. Setae *J5* absent; dorsal shield with 24 pairs of long and serrate setae, 4 pairs on the opisthonotal region of the shield; genital setae absent in both sexes; 10 pairs of ventral setae; male with sternogenital shield with sternal setae *st1-st3*; palps: 2(1)-5-10-13; pretarsal claws very short and poorly sclerotized; corniculi with apical cleft; dorsal shield: 483 long, 284 wide; on *Barychelus* sp. (*Barychelidae* Simon, 1889); from New Caledonia *L. (M.) novaecaledoniae*
- Setae *J5* present; dorsal shield with 17-25 pairs of setae; genital setae present 3
3. Dorsal shield with 25 pairs of setae; opisthonotal region of dorsal shield with 8 pairs of setae; *J5* reduced; sternal shield short, 7 times wider than long; genital shield narrow, more than 3 times longer than wide at level of *st5*; male with genital setae off the sternogenital shield; femora I with reduced chaetotaxy; palps: 2-5-6-14; dorsal shield: 662 long, 428 wide; on *Aganippe* Pick & Cambridge, 1877 (*Ctenizidae* Thorell, 1887); from South Australia *L. (M.) hoggi*
- Dorsal shield with fewer than 25 pairs of setae; opisthonotal region with 2-4 pairs of setae 4
4. Dorsal shield with 16 pairs of setae (setae *j5* present), 2 pairs on the opisthonotal region (*J5* and *Z5*); setae *j5* and *z5* short, *j6* hardly longer than *j5* and similar in length to *s1*; *j4* reach the tips of *j6*; dorsal shield: 495 long, 270 wide; on *Aname* sp. (*Dipluridae* Simon, 1889) and unknown diplurid; from South Australia *L. (M.) aname*
- Dorsal shield with 3 or 4 pairs of opisthonotal setae 5

5. Dorsal shield with 15 pairs of setae, 4 pairs on the opisthonotal region; setae *Z4* longer than *Z5*; *J5* similar to other setae *J*; sternal shield quadrangular, reduced, with concave posterior margin; genital setae off small shield; 7 pairs of ventral setae; palps: 2-5-5-14; trochanter I, 1-0/3-1 (5); dorsal shield: 600 long, 353 wide; on unidentified spiders from South Australia *L. (M.) rainbowi*
 — Dorsal shield with 17 or 18 pairs of setae, 3 pairs on opisthonotal region 6
6. Dorsal shield with 17 pairs of setae heterogeneous in length; setae *j5* absent, setae *j6* short, as long as *z5*; sternal shield wider than long, with concave posterior margin; soft cuticle with 10 pairs of setae; palpal tibia with 14 setae; males unknown; dorsal shield: 610 long, 350 wide; on unidentified mygalomorph spiders from Zaire *L. (M.) africana*
 — Dorsal shield with 18 pairs of setae; setae *j5* present; setae *j5* and *z5* short and sub-equal; *j6* 3 times longer than the latter; setae *j4* do not reach the tips of *j6*; genital setae on the shield; palps: 2-5-6-14; femora I (12) and III (5), genu I (12) and tibia I (12) lacking one seta, tibia II (8, 9 or 10), genu III (9 or 10), tibia IV (7); male with sternogenital shield: 480-605 long, 270-340 wide; on *Selenocosmia stirlingi* (Theraphosidae) and *Aname* sp. from South Australia and Queensland and on *Encyocrypta* sp. (Barychelidae), from New Caledonia *L. (M.) pulleini*
7. Dorsal shield with 16 pairs of setae (11 pairs podonotal and 5 opisthonotal); setae *J5* absent; sternal shield with deeply concave posterior margin; 9 to 11 pairs of ventral setae; male with long sterno-genito-ventral shield with 3 pairs of opisthogastric preanal setae (*st1-st5*, *JV1* and *JV2*) and extending back to meet the anal shield; tectum blade-like, narrow and sharply pointed; dorsal shield: 575 long, 480 wide; on *Liphistius malayanus* Abraham, 1923; from Malaya *L. (L.) bristowi*
 — Dorsal shield with more than 16 pairs of setae; males with sterno-genito-ventral or sterno-genito-ventrianal shield with more than one pair of ventral setae 8
8. Dorsal shield with 36 pairs of setae (22 pair of podonotal and 14 pairs of opisthonotal setae); setae *j1* = *z1* and $\frac{1}{3}$ of *j2*; opisthogaster with 35 to 40 pairs of setae; male sternogenital shield with 5 pairs of setae (*st1-st5*); tectum dentate, bifid or trifid; palps chaetotaxy 2-5-6-14; body size: 559 long, 362 wide; on *Selenocosmia javanensis* (Walckenaer, 1837); from Java and Sumatra *L. (L.) minor*
 — Dorsal shield with fewer than 36 pairs of setae; tectum not bifid 9
9. Seta *J5* as long as other dorsal setae; 31 pairs of dorsal setae (11 opisthonotal); female sternal shield with straight or slightly convex posterior margin; male with sterno-genito-ventral shield bearing 5 to 7 ventral setae (*st1-st5* and 5-7 ventral setae); palps chaetotaxy: 2-5-6-14?; idiosoma 745 long, 510 wide; on *Selenocosmia javanensis*; from Indonesia (Java and Sumatra) *L. (L.) selenocosmiae*
 — Seta *J5* reduced, at least 6 times shorter than setae *Z5*; 32 pairs of dorsal setae (11 opisthonotal); sternal shield with deeply concave posterior margin; male with sterno-genito-ventrianal shield bearing more than 7 preanal setae (*st1-st5* and 20 to 21 ventral setae); palp chaetotaxy: 2-5-6-14; dorsal shield: 628 long, 431 wide; on *Cyclosternum fasciatum* (Cambridge, 1892) *L. (L.) luciae* n. sp.

DISCUSSION

The presence of mites parasitizing spiders kept in captivity is a common occurrence, though the real impact of these parasites on the spiders is

a matter of controversy. *Cyclosternum fasciatum* (Costa Rican Tiger Rump Tarantula) is a terrestrial Centro American mygalomorph spider, and is a common pet in the world of the spider breeders. However, the presence of *L. (L.) luciae* n. sp. on

a Central American spider, does not mean that it has an American origin. The exchange and trade of spiders between different continents, with the consequent mite transport and spider contamination, prevent us from giving an authentic origin for this mite species.

The spider on which were collected the mites, was purchased from Germany, where the import and subsequent breeding of exotic spiders is a thriving business. According to the current owner, apparently the spider did not have mites when it arrived from Germany to Spain. The Spanish breeder refers he had detected similar mites, along years, in other mygalomorph spiders (from different origins) on his property.

Until now, all the *Ljunghia* (*Ljunghia*) species have been described from African and Australian spiders. Only future studies of the mites parasitizing spiders in nature can resolve this matter.

Although 10 species of this genus have been described, their habits are unknown. In the case of *L. (L.) luciae* n. sp., we have found adults and immature instars on the spider host with hemolymph in their guts, suggesting that all instars of the mite are true parasites. Although it is common to find *Ljunghia* deutonymphs on the spiders, the protonymphal instar was unknown until Fain (1991b) reported the presence of one protonymph of *L. novaecaledoniae*. Neither is there information about location of the mites on the spiders, although Fain (1989) states that *L. minor* adults were fixed at the bases of legs I and II. Most of the *L. (L.) luciae* n. sp. specimens were located on spider's cephalothorax, and on the basal segments of the legs.

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