

## SOME PHILIPPINE RAPHIGNATHOIDEA (ACARI). IV. THE GENERA *LEDERMUELLERIOPSIS* WILLMANN AND *ZETZELLIA* OUDEMANS (STIGMAEIDAE)

L.C. Rimando & L.A. Corpuz-Raros<sup>1</sup>

### ABSTRACT

One new species of *Ledermuelleriopsis* and two new species of *Zetzellia* are described and illustrated.

**Key words:** Philippine Raphignathoidea, Stigmaeidae, *Ledermuelleriopsis*, *Zetzellia*.

### INTRODUCTION

This is the third report on the family Stigmaeidae. So far, Philippine species of the genera *Eustigmaeus* Berlese, *Ledermuelleria* Oudemans, *Makilingeria* Rimando & Corpuz-Raros, *Mullederia* Wood, *Mullederiopsis* Rimando & Corpuz-Raros and *Wooderia* Rimando & Corpuz-Raros have been described and illustrated (Rimando & Corpuz-Raros 1996, 1997). Although there are no Philippine species of *Chaudhria* Rimando & Corpuz-Raros, the genus was described as part of the revision of *Eustigmaeus* (Rimando & Corpuz-Raros 1997).

All type materials of these species are deposited with the UPLB Museum of Natural History, College, Laguna.

### Genus *LEDERMUELLERIOPSIS* Willmann

*Ledermuelleriopsis* Willmann 1953: 487.

*Ledermuelleriopsis*: Summers, 1957: 53, 1966: 235; Wood, 1967: 133; Soliman, 1975: 243; Tseng, 1982: 42; Ueckermann & Meyer, 1987: 390; Meyer & Ueckermann, 1989: 50. Type species:

*Ledermuelleriopsis triscutata* Willmann 1951.

This genus is recognized by having the chelicerae unfused, and palptibial claw slender and developed, usually longer than palptarsus. Idiosoma almost completely covered by 3 unpaired shields: propodosomal, metapodosomal and opisthosomal (zonal of some authors). Propodosoma bearing 3 pairs of setae, metapodosoma 3 pairs, opisthosoma 4 pairs. Suranal plate almost always located posteroventrally. Humeral plate displaced lateroventrally, may or may not be independent.

Summers (1957, 1966) recounted the taxonomic history of this genus and for students of systematics, it is worth noting that Willmann (1951) described *L. triscutata* and *L. plumosus* and designated the former species as the type of *Ledermuelleriopsis* without description of the new genus. Willmann, however, gave the definition of the genus in 1953, some two years later.

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<sup>1</sup> Department of Entomology, College of Agriculture, University of the Philippines Los Baños, College, Laguna, Philippines.

A key to world species is proposed here except *L. taylori* (Habeeb) 1961 and *L. triscutata* Willmann 1951 as we are not familiar with them. Previously, Soliman (1975) proposed a world key, which, while certainly helpful, was sadly incomplete. Furthermore, the extant species descriptions of this genus have been rendered broadly generic through the years. Before this genus becomes large, it is hoped that those workers with access to type materials will update descriptions that will disclose more quantitative characters.

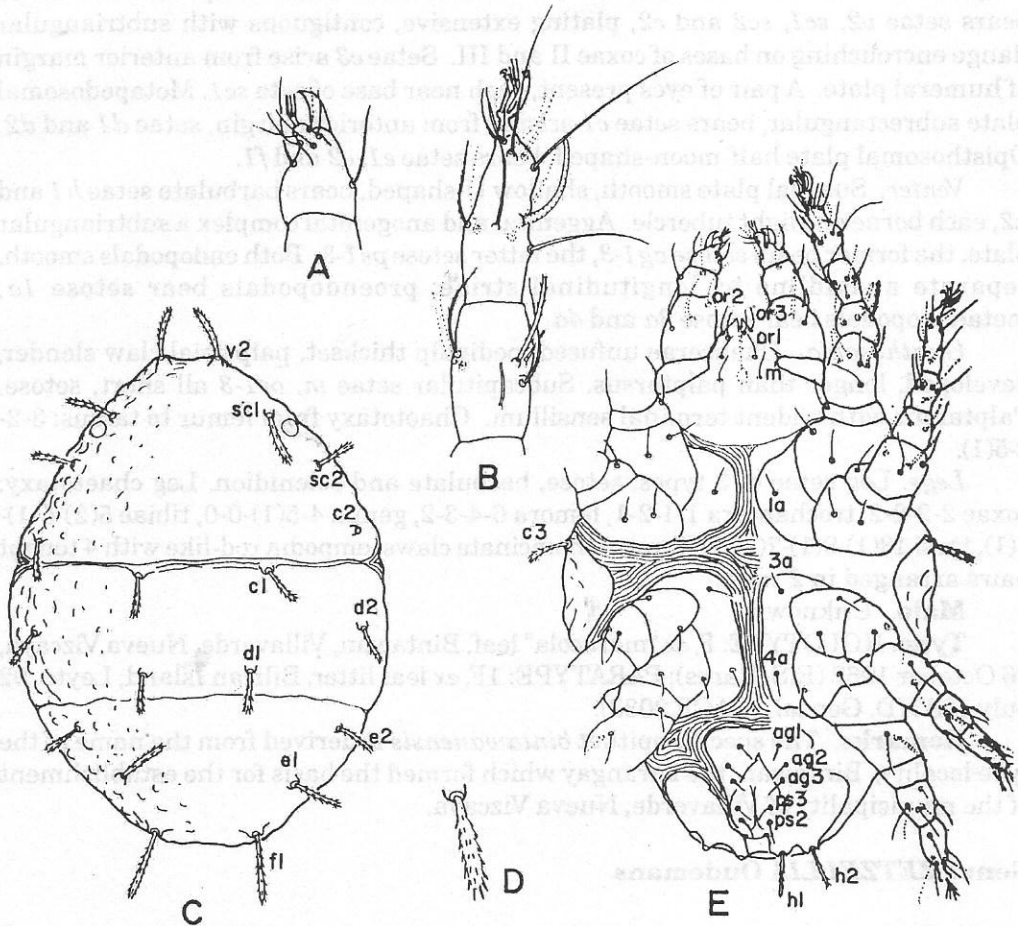
#### KEY TO SOME WORLD SPECIES OF *LEDERMUELLERIOPSIS* WILLMANN

1. Dorsal setae simple and setose, endopodals separate at midline; aggenital setae less than 3 pairs ..... 2  
     Dorsal setae club-shaped, coarsely spinulate or barbulate; endopodals fused or separate at midline; aggenital setae 3 pairs (*ag1-3*) ..... 3
2. Propodosomal shield entire anteriorly; dorsal setae simple, long and surpass setae of next row, longest about 100 $\mu$ ; aggenital setae 2 pairs (*ag1-2*) .....  
     ..... *L. simplexus* Soliman 1975 (Syria)  
     Propodosomal shield with antero-lateral incisions, dorsal setae simple and short, very faintly barbed, longest about 28 $\mu$ ; aggenital setae 1 pair (*ag1-0*) .....  
     ..... *L. incisa* Wood 1967 (New Zealand)
3. Dorsal shields with punctate ornamentation .... *L. punctata* Soliman 1975 (Syria)  
     Dorsal shields not as above ..... 4
4. Aggenital plate reticulate ..... 5  
     Aggenital plate smooth ..... 6
5. Setae *d1* located on posterior margin of metapodosomal shield .....  
     ..... *L. ornata* Tseng 1982 (Taiwan)  
     Setae *d1* well within metapodosomal plate ..... *L. armata* Tseng 1982 (Taiwan)
6. Femoral chaetotaxy 6-4-3-2; genual chaetotaxy variable ..... 7  
     Femoral chaetotaxy not as above; genual chaetotaxy 3(1)-3(1)-1-1 .....  
     ..... *L. plumosus* Willmann 1951 (Austria, California)
7. Endopodals separate; genual chaetotaxy 4-5(1)-0-0 .....  
     ..... *L. bintawanensis* Rimando & Corpuz-Raros n. sp. (Philippines)  
     Endopodals fused; genual chaetotaxy not as above ..... 8
8. Endopodals smooth ..... *L. spinosa* Wood 1967 (New Zealand)  
     Endopodals reticulate ..... *L. terrulenta* Ueckermann & Meyer 1987 (South Africa)

#### 1. *LEDERMUELLERIOPSIS BINTAWANENSIS* Rimando & Corpuz-Raros, new species Fig. 1A-E

Among all the species that possess club-shaped setae that are either spinulate or barbulate, it is only *Ledermuelleriopsis bintawanensis* n. sp. that has its endopodals separated at midline by longitudinal striae. Besides, its genual chaetotaxy is unique: 4-5(1)-0-0.

**Female.** *Dimensions of holotype in microns.* Length of idiosoma 226, greatest width 173; leg I 160, leg II 133, leg III 120, leg IV 146. Dorsal setae: *v2* 24, *sc1* 24, *sc2* 20, *c1* 20, *c2* 17, *c3* 20, *d1* 20, *d2* 17, *e1* 24, *e2* 24; ventral setae: *h1* 20, *h2* 17, *ps1* 10, *ps2* 8, *ps3* 8, *ag3* 7, *ag2* 7, *ag1* 7; intercoxals *4a* 10, *3a*, 14, *1a* 12; subcapitulars *m* 7, *or1* 10, *or2* 7, *or3* 10.



**Figure 1.** *Ledermuelleriopsis bintawanensis* Rimando and Corpuz-Raros, n. sp., female: A. palp tibiotarsus, B. tibia and tarsus I, C. dorsal shield, D. idiosomal seta, E. venter.

*Dorsum.* Idiosomal plates lightly sclerotized, ornamentation undiscernible except on downcurved lateral margins of body, consisting of sparse rounded dimples. Otherwise, dorsal area smooth. Dorsal setae all borne on slight tubercles, each club-shaped like a softball bat obscured by whorls of short barbs. Propodosomal shield bears setae *v2*, *sc1*, *sc2* and *c2*, plating extensive, contiguous with subtriangular flange encroaching on bases of coxae II and III. Setae *c3* arise from anterior margin of humeral plate. A pair of eyes present, each near base of seta *sc1*. Metapodosomal plate subrectangular, bears setae *c1* arising from anterior margin, setae *d1* and *d2*. Opisthosomal plate half-moon-shaped, bears setae *e1*, *e2* and *f1*.

*Venter.* Suranal plate smooth, shallow U-shaped, bears barbulate setae *h1* and *h2*, each borne on slight tubercle. Aggenital and anogenital complex a subtriangular plate, the former bears setose *ag1-3*, the latter setose *ps1-3*. Both endopodals smooth, separate at midline by longitudinal striae; proendopodals bear setose *1a*, metaendopodals bear setose *3a* and *4a*.

*Gnathosoma.* Chelicerae unfused; pedipalp thickset, palptibial claw slender, developed, longer than palptarsus. Subcapitular setae *m*, *or1-3* all short, setose. Palptarsus with trident terminal sensillum. Chaetotaxy from femur to tarsus: 3-2-2-5(1).

*Legs.* Leg setae of 3 types: setose, barbulate and solenidion. Leg chaetotaxy: coxae 2-2-2-2, trochantera 1-1-2-1, femora 6-4-3-2, genua 4-5(1)-0-0, tibiae 5(2)-5(1)-5(1), tarsi 13(1)-9(1)-7(1)-7. Tarsi with uncinata claws, empodia rod-like with 4 tenent hairs arranged in 2 rows.

**Male.** Unknown.

**Type.** HOLOTYPE: F, *ex* "maracola" leaf, Bintawan, Villaverde, Nueva Vizcaya, 26 October 1962 (R.S. Raros); PARATYPE: 1F, *ex* leaf litter, Biliran Island, Leyte, 02 July 1983 (D. Gonzal) (LACR 2033).

**Remarks.** The specific epithet *bintawanensis* is derived from the name of the type locality, Bintawan, the barangay which formed the basis for the establishment of the municipality of Villaverde, Nueva Vizcaya.

## Genus *ZETZELLIA* Oudemans

*Zetzellia* Oudemans, 1927: 263; Summers, 1969: 240; Gonzalez-Rodriguez, 1965: 15; Summers, 1966: 24; Wood, 1967: 125 (in part); Ueckermann & Meyer, 1987: 372; Meyer & Ueckermann, 1989: 44; Type species: *Zetzellia methlagli* Oudemans 1927.

This genus is defined as follows: Idiosoma with 12 pairs of dorsal setae; propodosoma usually with triangular dorsal shield bearing three pairs of setae, *v2*, *sc1* and *sc2*, the latter pair at times each borne on independent platelet disconnected from main plate. Setae *c2* apparently absent; a pair of eyes and postocular bodies present; humeral plates located laterally each bearing seta *c3*. Metapodosomal shield entire or integra, bearing *c1*, *d1*, *e1* and *e2*; or shield may be divided by striae longitudinally into 2 sections; or shield may be reduced to platelets each bearing a seta. Setae *d2* each borne on platelet laterally almost aligned with *d1*. Posterior to metapodosomal shield is a pair of intercalary plates each bearing seta *f1*; setae *f2* absent. Opisthosomal caudum with transverse suranal plate bearing setae *h1-2*. Chelicerae independent. Palptarsus generally as long as palptibial claw. Accessory claw may or may not be present. Terminal sensillum of palptarsus a trident or spur-

like eupathid. Empodium rod-like from which arise three pairs of diverging branches (raylets).

Wood (1967) proposed an expanded definition of *Zetzellia* to include *Agistemus* Summers following the suggestion of Gonzalez-Rodriguez (1965) that "...*Agistemus* represents an evolutionary line apparently evolved from the *Zetzellia maori* group of species." While we agree with this contention, we prefer to sustain the integrity of *Zetzellia* s. str. if only to maintain the ease of identification as these two genera are fast becoming large, but at the same time not losing sight of the fact that *Agistemus* may indeed be a derivative from *Zetzellia*. In line with this stand, we consider the Taiwan species of *Zetzellia* (Tseng 1982) as belonging to *Agistemus* Summers.

#### KEY TO PHILIPPINE SPECIES OF *ZETZELLIA* (including related species)

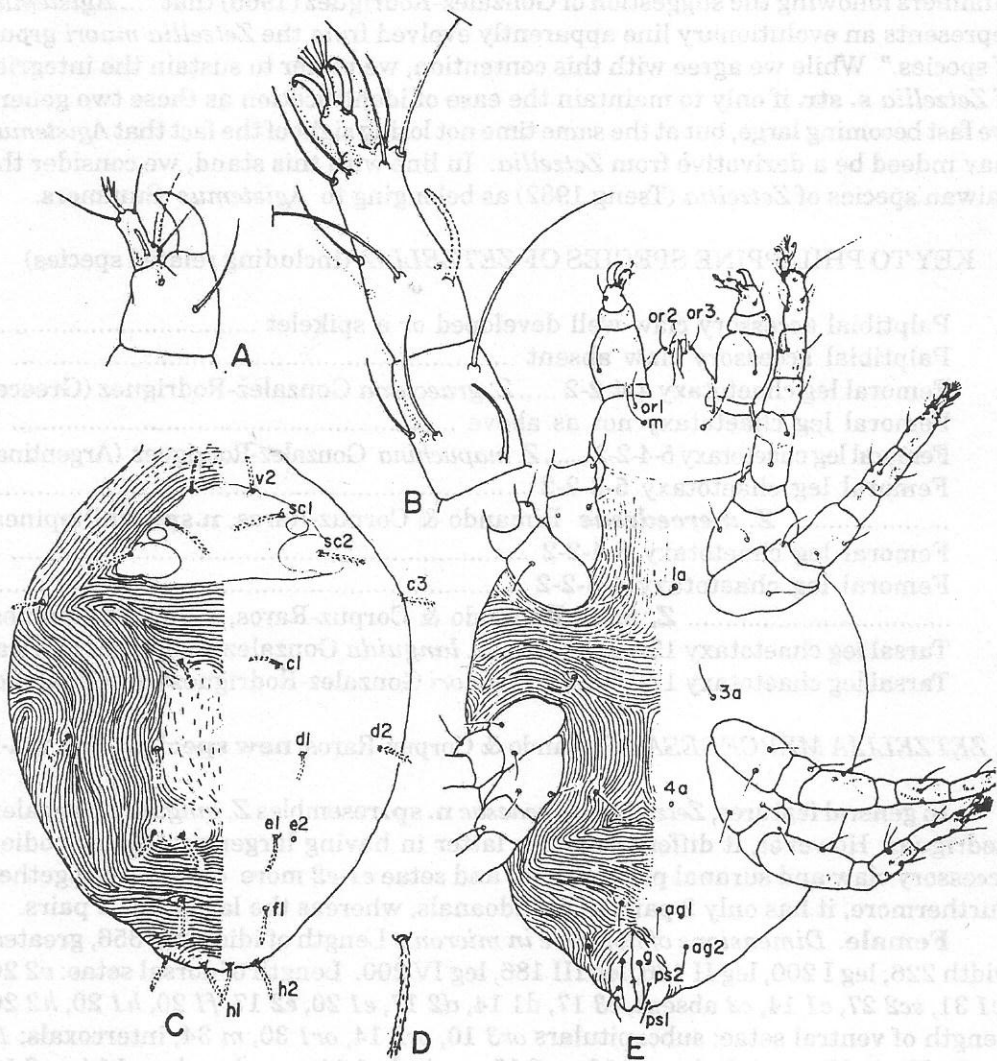
1. Palptibial accessory claw well developed or a spikelet ..... 4  
Palptibial accessory claw absent ..... 2
2. Femoral leg chaetotaxy 4-4-2-2 ..... *Z. graeciana* Gonzalez-Rodriguez (Greece)  
Femoral leg chaetotaxy not as above ..... 3
3. Femoral leg chaetotaxy 5-4-2-2 ..... *Z. mapuchina* Gonzalez-Rodriguez (Argentina)  
Femoral leg chaetotaxy 5-3-2-2 .....  
..... *Z. mercedesae* Rimando & Corpuz-Raros, n.sp. (Philippines)
4. Femoral leg chaetotaxy 5-4-2-2 ..... 5  
Femoral leg chaetotaxy 4-3-2-2 .....  
..... *Z. mori* Rimando & Corpuz-Raros, n.sp. (Philippines)
5. Tarsal leg chaetotaxy 13-10-8-6 ..... *Z. languida* Gonzalez-Rodriguez (Africa)  
Tarsal leg chaetotaxy 12-10-8-7... *Z. maori* Gonzalez-Rodriguez (New Zealand)

#### 2. *ZETZELLIA MERCEDESAE* Rimando & Corpuz-Raros, new species Fig. 2 A-E

In general features, *Zetzellia mercedesae* n. sp. resembles *Z. languida* Gonzalez-Rodriguez. However, it differs from the latter in having larger postocular bodies, accessory claw and suranal plate absent, and setae *e1-e2* more closely set together. Furthermore, it has only 2 pairs of pseudoanals, whereas the latter has 3 pairs.

**Female.** *Dimensions of holotype in microns.* Length of idiosoma 356, greatest width 226, leg I 200, leg II 186, leg III 186, leg IV 200. Length of dorsal setae: *v2* 20, *sc1* 31, *sc2* 27, *c1* 14, *c2* absent, *c3* 17, *d1* 14, *d2* 17, *e1* 20, *e2* 17, *f1* 20, *h1* 20, *h2* 20. Length of ventral setae: subcapitulars *or3* 10, *or2* 14, *or1* 30, *m* 34; intercoxals: *1a* 20, *3a* 20, *4a* 17; aggenitals: *ag1* 10, *ag2* 10, genital *g1* 24, pseudanals *ps1* 14, *ps2* 14.

*Dorsum.* Idiosoma subovate; dorsal setae all short and weakly serrate or slightly barbulate. Propodosomal shield smooth, subtriangular in outline with rounded margin anteriorly, bearing a pair of eyes and large postocular bodies, incompletely rounded surrounding setae *v2*, *sc1* and *sc2*. Metapodosomal plate a raised area overlaid with longitudinal striae, subrectangular, slightly emarginate anteriorly and posteriorly, twice as long as wide. Setae *c1* each on platelet loosely adnate to anterior corner of metapodosomal shield. Setae *d1* each on platelet, also loosely adnate midway to lateral margin of metapodosomal shield. Setae *d2* each on platelet mediolaterally located slightly anterior to position of setae *d1*. Setae *e1* and *e2* closely set at corner of posterior margin of metapodosomal shield. Setae *f1* set on small weak platelets; setae *h1*, *h2* set on faint platelets.



**Figure 2.** *Zetzellia mercedesae* Rimando & Corpuz-Raros, n. sp., female: A. palpi and tibiotarsus, B. tibia and tarsus I, C. dorsum of idiosoma, D. idiosomal seta, E. venter.

*Venter.* Intercoxal setae *1a*, *3a* and *4a* setose, set on faint platelets, in normal positions. Aggenitals *ag1* and *ag2* setose, equal in length, set on faint platelets. Anogenital shield bearing genital setae *g1* anteriorly, *g1* long, reaching tip of shield. Toward posterior area of shield are borne two pairs of pseudoanal setae *ps1* and *ps2*, both shorter than *g1*, slightly barbate.

*Gnathosoma.* Chelicerae unfused; pedipalp slightly thickset, palptibial claw developed, as long as tarsus. Accessory claw absent. Subcapitular setae *m* longer than *or1*, *or2* and *or3*; all setose. Palptarsus with trident terminal sensillum. Chaetotaxy from femur to tarsus 3-1-2-5(2).

*Legs.* Leg setae of two types: setose and solenidion. Tarsi with uncinatae claws, empodia rodlike with three pairs of raylets. Leg chaetotaxy: coxae 2-1-2-2, trochantera 1-1-1-1, femora 5-3-2-2, genua 4-1-0-0, tibiae 5(1)-5(1)-5(1)-5(1), tarsi 12(1)-9(1)-7(1)-7.

**Male.** Unknown.

**Type.** HOLOTYPE: F, ex unknown plant, Mt. Makiling, Kapos, San Rafael, Sto. Tomas, Batangas, 08 July 1993 (R.C. Garcia).

**Remarks.** The species is named in honor of Dr. Mercedes Delfinado-Baker, dipterist and acarologist, formerly with the Systematic Entomology Laboratory, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland, USA, now retired and residing in Alabang Hills, Muntinlupa City, Metro Manila.

### 3. *ZETZELLIA MORI* Rimando & Corpuz-Raros, new species

Fig. 3A-E

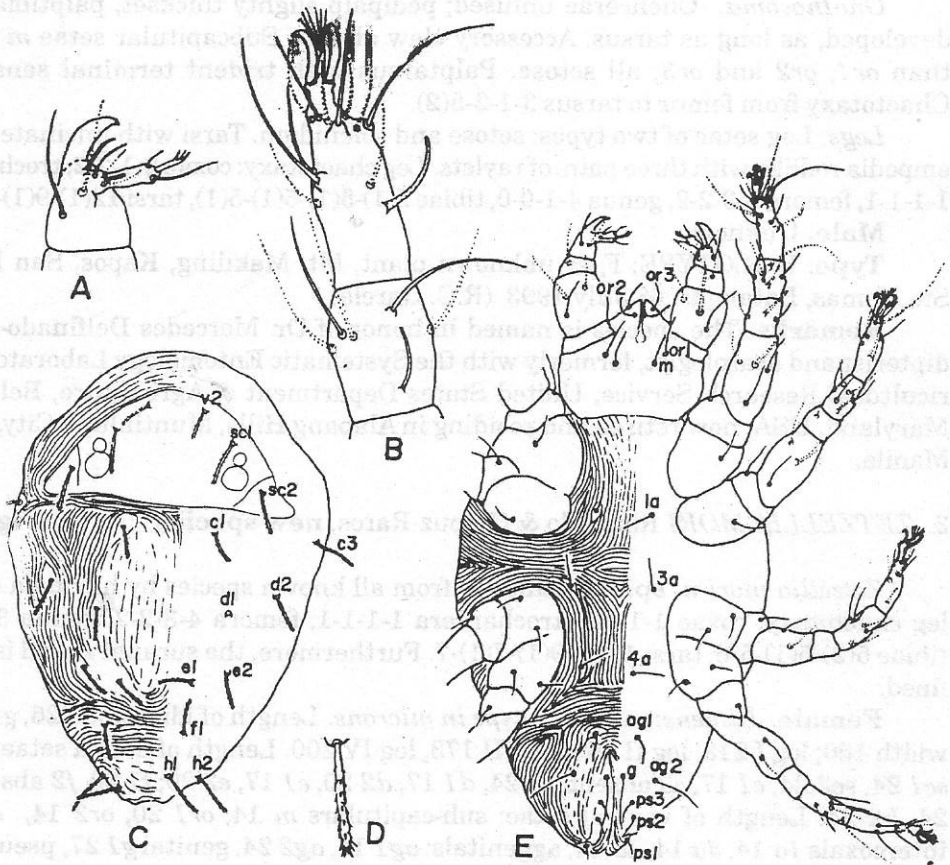
*Zetzellia mori* n. sp. is distinctive from all known species by having a unique leg chaetotaxy: coxae 1-1-2-2, trochantera 1-1-1-1, femora 4-3-2-2, genua 3-1-0-0, tibiae 5(2)-5(1)-5-6, tarsi 12(1)-9(1)-7(1)-7. Furthermore, the suranal shield is ill-defined.

**Female.** *Dimensions of holotype in microns.* Length of idiosoma 226, greatest width 160; leg I 213, leg II 160, leg III 173, leg IV 200. Length of dorsal setae: *v2* 17, *sc1* 24, *sc2* 24, *c1* 17, *c2* absent, *c3* 24, *d1* 17, *d2* 20, *e1* 17, *e2* 20; *f1* 20, *f2* absent, *h1* 24, *h2* 24. Length of ventral setae: sub-capitulars *m* 14, *or1* 20, *or2* 14, *or3* 14; intercoxals *1a* 14, *3a* 14, *4a* 14, aggenitals: *ag1* 14, *ag2* 24, genital *g1* 27, pseudanals *ps1* 10, *ps2* 10, *ps3* 10.

*Dorsum.* Idiosoma broadly fusiform, dorsal setae short, sparsely barbate. Propodosomal shield smooth, subtriangular, rounded margin anteriorly, bearing setae *v2*, *sc1*, *sc2*, a pair of eyes and a pair of round postocular bodies between *sc1* and *sc2*. Metapodosomal plate ill-defined like *Z. maori* Gonzalez, leaving setae *c1* and *d2* each borne on independent ill-defined platelet, *c2* absent, *c3* on platelet at humeral position, *d2* on obvious platelet sublaterally slightly anterior to level of position of *d1*. Setae *e1* and *e2* seemingly share an ill-defined platelet. Setae *f2* borne on independent intercalaries suranal shield very faint bearing *h1* and *h2*.

*Venter.* Intercoxal setae *1a*, *3a*, *4a*, setose, coequal in length, borne on tiny platelets. Aggenital setae *ag1* and *ag2* have minute platelets. Anogenital shield bears *g1* anteriorly and pseudanals *ps1-3* toward posterior; *g1* notably longer than *ps1-3*.

*Gnathosoma.* Chelicerae unfused, pedipalp slightly thickset, palptibial class developed, as long as tarsus. Accessory claw a spikelet. Palp tarsus with trident terminal sensillum. Chaetotaxy from femur to tarsus 3-1-2-5(2).



**Figure 3.** *Zetzellia mori* Rimando & Corpuz-Raros, n. sp., female: A. palp tibiotarsus, B. tibia and tarsus I, C. dorsum of idiosoma, D. idiosomal seta, E. venter.

*Legs.* Leg setae mostly setose and solenidion. Tarsi with uncinata claws, empodia rodlike, terminating with three pairs of raylets. Leg chaetotaxy: coxae, 1-1-2-2, trochantera 1-1-1-1, femora 4-3-2-2-, genua 3-1-0-0, tibiae 5(2)-5(1)-5-6, tarsi 12(1)-9(1)-7(1)-6.

**Male.** Unknown

**Type.** HOLOTYPE: F, *ex Morus alba*, College, Laguna, 04 November 1962 (L.A. Corpuz).

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