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# NOTES ON A SMALL COLLECTION OF MITES (ACARI) PARASITIC ON BATS IN THE PHILIPPINES

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TAXONOMY, PARASITIC MITES,  
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**SUMMARY:** A small collection of mites parasitizing five species of bats from the Philippines, is studied. Seven species, of which two new, belonging to five genera and four families were recognized i. e. *Neolaelaps spinosa* (Berlese) (Laelapidae); *Meristaspis mindanaoensis* Delfinado and Baker, *Meristaspis jordani philippinensis* Prasad and *Ancystropus zeleborii* Kolenati (Spinturnicidae); *Whartonia diosi* n.sp. (Trombiculidae: Leeuwenhoekinae); *Teinocoptes philippinensis* Klompen and *Teinocoptes insignis* n.sp. (Sarcoptidae: Teinocoptinae).

TAXINOMIE,  
ACARIENS PARASITES,  
CHAUVES-SOURIS, PHILIPPINES

**RÉSUMÉ :** Une petite collection d'acariens (Acari) récoltés sur des chauves-souris aux Philippines est étudiée. Sept espèces, parmi lesquelles deux nouvelles, furent identifiées : *Neolaelaps spinosa* (Berlese) (Laelapidae); *Meristaspis mindanaoensis* Delfinado and Baker, *Meristaspis jordani philippinensis* Prasad et *Ancystropus zeleborii* Kolenati (Spinturnicidae); *Whartonia diosi* n.sp. (Trombiculidae: Leeuwenhoekinae); *Teinocoptes philippinensis* Klompen et *Teinocoptes insignis* n.sp. (Sarcoptidae: Teinocoptinae).

## INTRODUCTION

The mites which are studied here have been collected from bats in the Research Station of the « Philippine Endemic Species Conservation Project », of the Frankfurter Zoological Society, in Panay, Philippines. The present paper is the Publication n° 26 of the project.

The holotypes of the new species and paratypes of the other identified species have been deposited in the Philippine National Museum of Manila (PNMM). Other paratypes have been deposited in the collections of the Institut royal des Sciences naturelles de Belgique (IRSNB).

## MATERIAL AND METHODS

All the mites which are studied here had been collected by Mr S. LUFT, in the Panay Island, Philippines, from 10 to 18 March, 2000, from the following bats :

- *Harpyionycteris whiteheadi* (Pteropodidae) : Coll. n° P2002, P2004, P2007, P2009, P2010, P2011, P2012, P2016, P2017, P2020.
- *Ptenochirus jagori* (Pteropodidae) : Coll. n° P2008, P2013, P2022, P2024.
- *Megaderma spasma* (Megadermatidae) : Coll. n° P2019.
- *Cynopterus brachyotis* (Pteropodidae) : Coll. n° P2021.

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These bats were collected in the following sites : Sitio, Sibaliw, Brgy, Bagosip, Buruanga, Aklan.

Measurements in micrometers  $\mu\text{m}$ . Nomenclature of idiosomal setae follows FAIN (1963).

#### STUDY OF THE SPECIES

##### MESOSTIGMATA

##### FAMILY LAELAPIDAE

Genus *Neolaelaps* Hirst, 1926

*Neolaelaps spinosa* (Berlese, 1910)

This species is widely distributed in the Oriental and Australian regions from India and Sri Lanka to New Caledonia, in Malaysia and Australia (RADOVSKY, 1967). It is practically confined to bats of the genus *Pteropus* (Pteropodidae).

This species is represented in our material by 20 specimens, all collected from *Harpyionycteris whiteheadi*. Number of mites : bat P2002 : 2 females, 1 male ; bat P2007 : 3 females ; bat P2009 : 1 female ; bat P2010 : 3 females ; bat P2016 : 6 females ; bat n<sup>o</sup> 2017 : 4 females.

##### FAMILY SPINTURNICIDAE

The mites of this family are completely confined to the bats at all the stages of their development (RUDNICK, 1960). Their presence in the Philippines has been reported for the first time by DELFINADO & BAKER in 1963. These authors collected 7 species, among which 4 new, representing 4 genera of Spinturnicidae. PRASAD (1969a and b) described a new subspecies, *Meristaspis jordani philippinensis* from *Harpyionycteris whiteheadi* and a new species *Ancystropus nakatae* from *Eonycteris spelaea glandifera*, both from the Philippines. Moreover, this author (*loc. cit.*) synonymized two of the species of DELFINADO & BAKER (1963), *i. e.* *Spinturnix verutus* and *Ancystropus palawanensis* with *S. spix* and *A. zeleborii* respectively. (see below).

We give here the list of the species of Spinturnicidae reported from the Philippines until now :

#### LIST OF THE SPINTURNICIDAE REPORTED FROM THE PHILIPPINES

Genus *Spinturnix* von Heyden, 19021. *S. spix* (Kolenati, 1856) (= *S. verutus* Delfinado & Baker, 1963. Synonymy after PRASAD, 1969a). Host in the Philippines : "Bats".

Genus *Meristaspis* Kolenati, 1857

2. *M. calcaratus* (Hirst, 1923). From *Pteropus vampyrus*, *P. tablensis*, *P. speciosus* (from Delfinado and Baker, 1963)
3. *M. mindanaoensis* Delfinado and Baker, 1963. From *Prioniturus malindangensis* and *Cynopterus brachyotis* (from Delf. and Bak., 1963). PRASAD (1969a) also mentions *Rousettus amplexicaudatus*.
4. *M. lateralis* (Kolenati, 1856). Reported by DELF. & BAK., 1963 from *Eonycteris robusta*, *Rousettus amplexicaudatus* and *Cynopterus brachyotis*. Additional records by PRASAD (1969b) from *Eonycteris spelaea glandifera*.
5. *M. jordani philippinensis* Prasad 1969a. From *Harpyionycteris whiteheadi*.

Genus *Ancystropus* Kolenati, 1857.

6. *A. zeleborii* Kolenati, 1856 (= *A. palawanensis* Delfinado and Baker, 1963. Synonymy after Prasad, 1969b). From *Cynopterus brachyotis* and *Rousettus amplexicaudatus* (for *palawanensis*), also from *Pteropus* sp. (PRASAD, 1969b).
7. *A. eonycteris* Delfinado & Baker, 1963. From *Eonycteris robusta*.
8. *A. rudnicki* Baker & Delfinado, 1964. Described from *Rousettus* sp. from New Guinea. Recorded from the Philippines by PRASAD (1969b) on *Cynopterus brachyotis* and *Rousettus amplexicaudatus*.
9. *A. nakatae* Prasad, 1969a. Described from *Eonycteris spelaea glandifera* in the Philippines. DOMROW (1972) considers that species as a synonym of *A. eonycteris*.

Genus *Oncoscelus* Delfinado and Baker, 1963

10. *O. kanheri* (Hiregaudar and Bal, 1956). Originally described from *Rousettus laschenaulti* from India. Reported in the Philippines from *Rousettus amplexicaudatus*.

Our material includes the following species

*Meristaspis mindanaoensis* : 1 female from *Cynopterus brachyotis* (bat P2021)

*Meristaspis jordani philippinensis* : All our specimens were found on the typical host *Harpyionycteris whiteheadi* : 4 females and 1 male from bat n° P2010, 2 females from bat P2007, 1 female from bat P2002 and 1 male from bat P2004.

*Ancystropus zeleborii* : 1 female from *Ptenochirus jagori* (bat P2013)

## PROSTIGMATA

### FAMILY TROMBICULIDAE

#### SUBFAMILY LEEUWENHOEKIINAE

Genus *Whartonia* Ewing, 1944

The genus *Whartonia* includes at the present time 33 species and among them 18 have been described from the Old World. Almost all the species were collected from bats ; their occurrence on other hosts (rodents) was exceptional.

We describe here a new species collected from *Megaderma spasma*, a microchiropteran of the family Megadermatidae, in the Philippines

#### *Whartonia diosi* n.sp.

This species is named for Mr ANTONIO DE DIOS, prominent benefactor in the "Philippines Endemic Species Conservation Project".

This new species is represented only by the larval stage.

*Diagnosis* : Palpal tarsus with a basal solenidion and 7 setulose setae. Palpal tibia bearing a 3-pronged claw, 2 nude very thin and 1 thick setulose setae.

Palpal-genu and palpal-femur each with 1 nude seta. Cheliceral blade with 5 hooks along its convex surface. Eyes 2-2. Legs 6-segmented. All tarsi with 3 normal claws.

#### *Description of the larva* (figs 1-11)

*Standard measurements* of holotype (and between brackets of paratype): AW 87 (90), PW 99 (99), SB

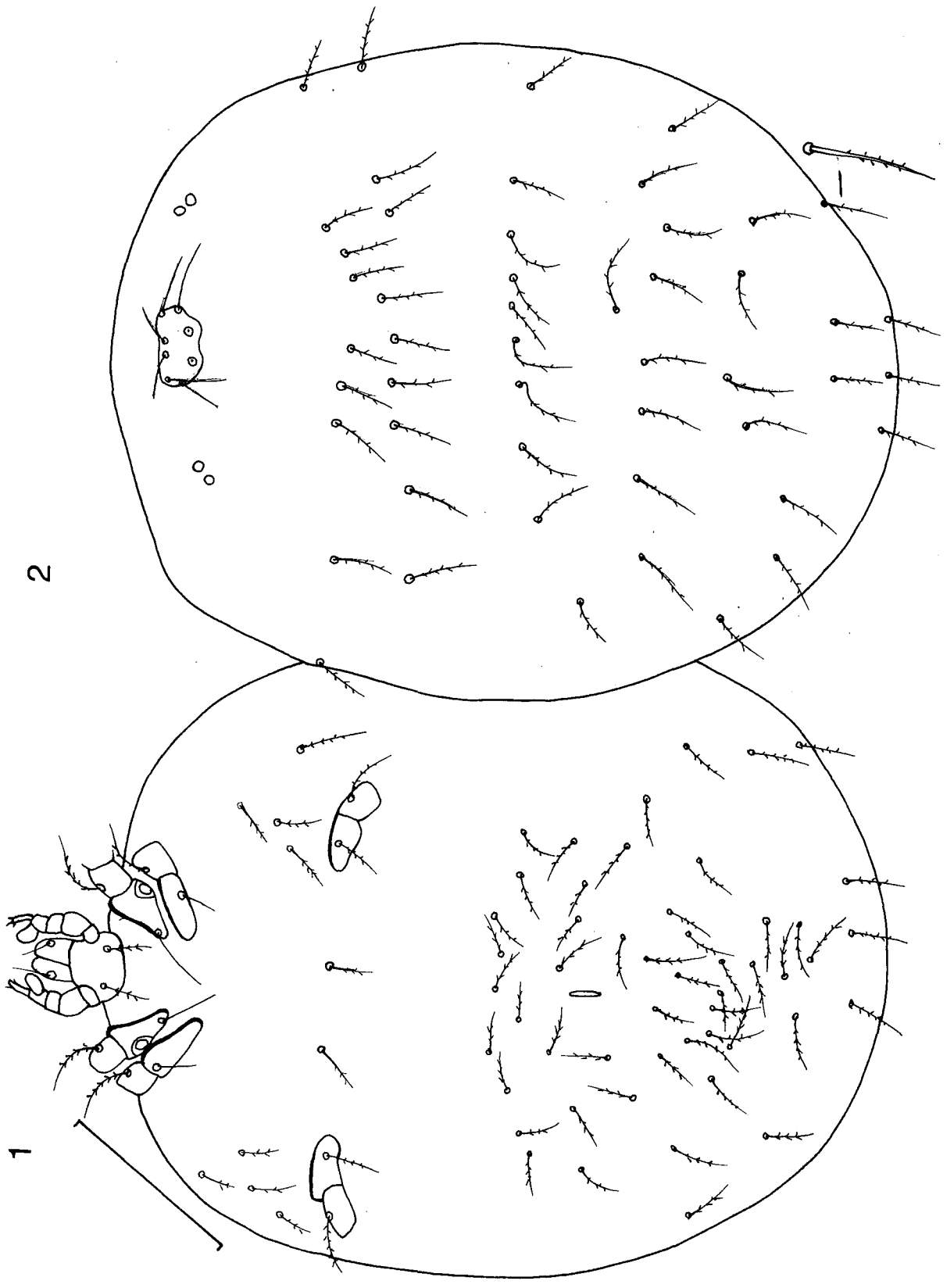
39, ASB 42 (39), PSB 15 (15), SD 57 (53), A-P 21 (18), AM 60 (63), AL 53 (51), PL 82 (80). Sensillae lacking.

*Gnathosoma* : Length (until tip of palpal-tarsus) 135, width at level of gnathobase 90, at level of palpal femora 135. Cheliceral blade very thick, 36 long, bearing 5 strong hooks along the convexity of the blade. Ventral surface of gnathobase with a pair of setae 30 long and bearing 3-5 thin setules. Palpal tarsus 18 long, 12 wide with one basal solenidion and 7 setulose setae. Palpal tibial claw with 3 unequal prongs (the laterals much smaller than the median). Galeal seta nude. *Idiosoma* : 1200 long, 900 wide (1300 × 950). Diameter of eyes 8-9. *Dorsum* : With 51 setae arranged 8-10-10-11-7-2-3. Venter with 59 setae of which 8 between coxae II and III, 2 between coxae III and 49 on opisthogaster. NDV 110. Length of setae : HS 66 (73), DS 63-84 (75-85), VS 45-80 (45-75). Almost all these setae are similar to the ventral setae except that some ventral setae are distinctly setulose in their apical third or two thirds. Uropore 18 long. Legs : Lengths : I 486, II 402, III 450. Ip 1322 (1338). Coxae I with 2 setae, a median 82 and a lateral 66; coxae II and III with 1 seta each, 42 and 65 long respectively. These setae bear a few setules apically. Leg setae with short or indistinct setules. Number of leg setae : Trochanter 1-1-1, Femora 6-6-5, Genua 5-4-4. Tibiae 8-6-6. Tarsi 26-18-16. Solenidiotaxy : Tarsus I with solenidion omega 27 long and a very small and more apical famulus. Tarsus II with omega 19 long and a famulus more basal. Tibia I with 2 solenidia phi, one apical 20 and one more basal 18. Tibia II also with 2 solenidia phi, and tibia III with only one phi 30 long. Genua I to III with one solenidion sigma each, 25-25 and 30 long respectively.

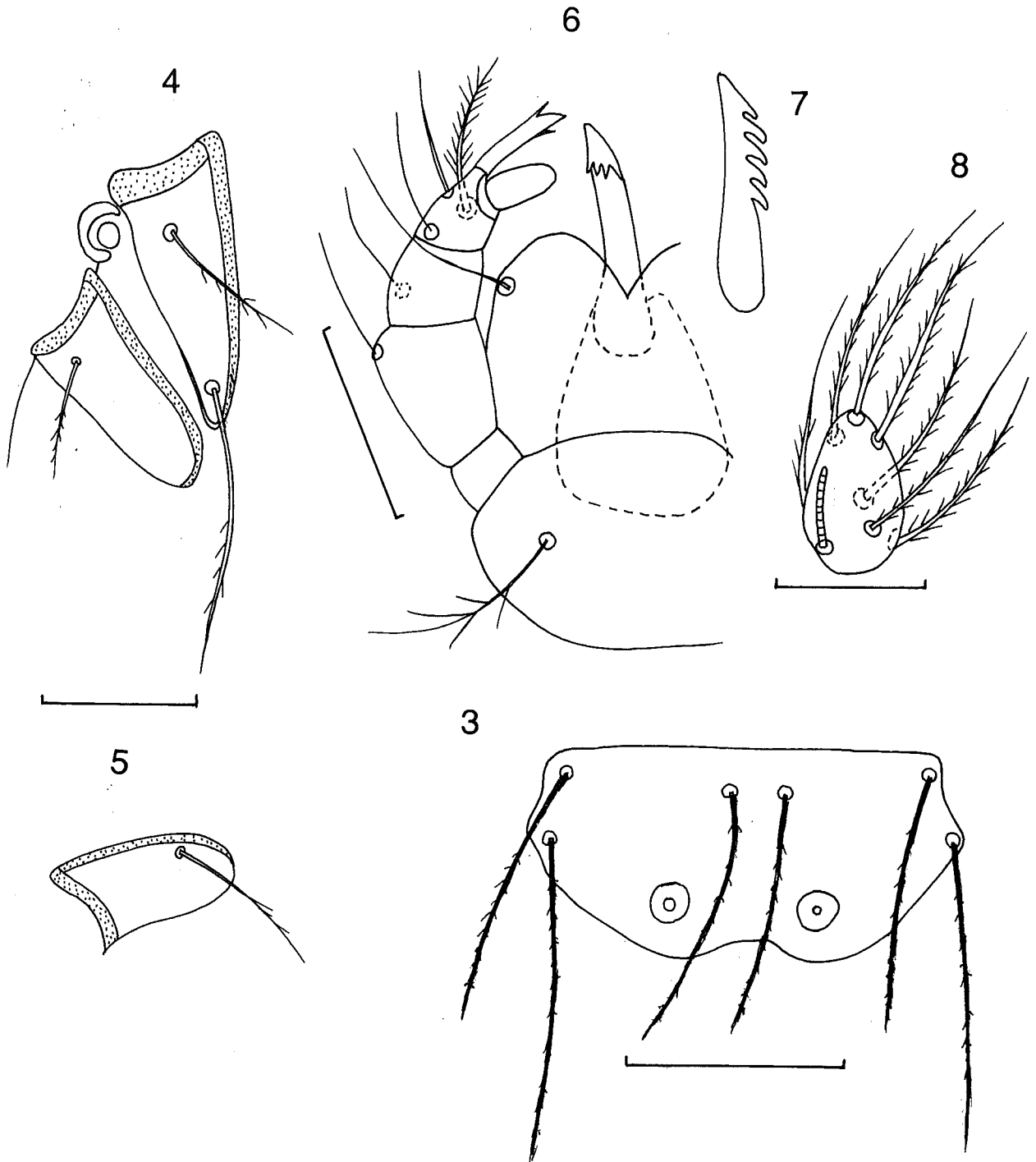
#### *Host and locality* :

Holotype and 1 paratype larvae, from *Megaderma spasma* (N° P2019). Holotype in the PNMM, paratype in the IRSNB.

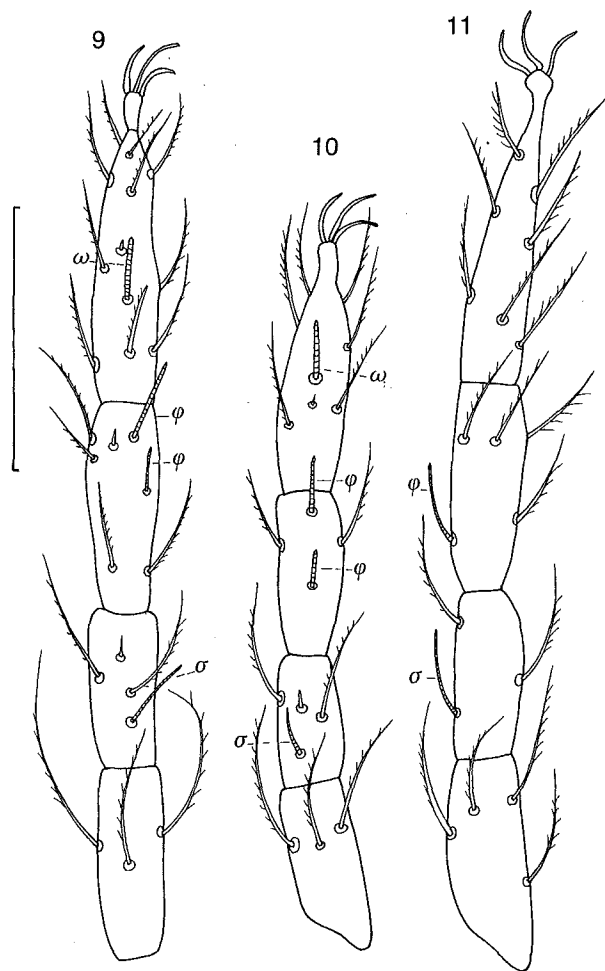
*Remarks* : The combination of the following characters distinguishes this species from all the other known species in the genus *Whartonia* : shape of the scutum with anterior border straight, presence of 5 hooks on the cheliceral blade, arrangements and number of body setae, chaetotaxy and solenidiotaxy of the legs.



Figs 1-2. — *Whartonia diosi* n. sp.. Larva in ventral (1) and dorsal (2) view. Scale line 250  $\mu$ m



FIGS 3-8. — *Whartonia diosi* n. sp. Larva : Scutum (3); coxae I-II (4) and III (5); gnathosoma ventrally (6); chelicera in lateral view (7); palpal tarsus ventrally (8). Scale lines : 50 μm (figs. 3-7) and 25 μm (fig 8)



FIGS 9-11. — *Whartonia diosi* n. sp., Larva : Leg I (9), II (10) and III (11) in dorsal or dorsolateral view. Scale line 100  $\mu$ m

ASTIGMATA

FAMILY SARCOPTIDAE

SUBFAMILY TEINOCOPTINAE

Genus *Teinocoptes* Rodhain, 1923

With the inclusion of the new species described here, the genus *Teinocoptes* comprises now 21 species all parasitic on bats of the family Pteropodidae of frugivorous bats. The Teinocoptinae constitute probably the most evolved (regressed) and specialized

group of parasitic mites infecting these hosts (FAIN, 1976).

The genus *Teinocoptes* is represented in the Philippines by the following species

1. *T. asiaticus* Fain and Domrow, 1961 Described from Malaysia from *Cynopterus brachyotis*. In 1963, Mitchell and Fain recorded this species in 4 different localities of the Philippines, from the typical host and from *Ptenochirus jagori*.
2. *T. harpyionycteris* (Klompén and Oconnor, 1987) : First described within the genus *Chirobia* Fain, this species was moved to the genus *Teinocoptes* in 1992 (Klompén). Host : *Harpyionycteris whiteheadi* from several localities in Philippines.
3. *T. vandeuseni* Mitchell and Fain, 1963. Originally described from New Guinea from *Rousettus stresemanni*. Later, was collected from *Rousettus amplexicaudatus* (KLOMPÉN, 1992).
4. *T. malayi* Fain and Nadchatram, 1962 : Described from Malaysia ex *Macroglossus* sp. Recorded from Philippines by KLOMPÉN, 1992.
5. *T. pahangensis* Fain, Lukoschus and Nadchatram, 1982 : Described from Malaysia ex *Eonycteris spelaea*. Recorded from Philippines by KLOMPÉN, 1992
6. *T. philippinensis* Klompén, 1992. Typical host: *Harpyionycteris whiteheadi* from several places in the Philippines (Negros, Camarines, Leyte). This species is also represented in our material (see below).
7. *T. eonycteris* Fain, Lukoschus and Nadchatram 1982. Described from Malaysia ex *Eonycteris spelaea* (Macroglossinae). Reported from the Philippines by KLOMPÉN, 1992 from the typical host and from *Rousettus amplexicaudatus*.
8. *T. domrowi* Fain, 1961. Described from Queensland ex *Pteropus conspicillatus*. Reported again by KLOMPÉN (1992) from several places in the Philippines (Leyte, Sulu, Negros Oriental) from *Pteropus speciosus*, *P. hypomelas* and *Acerodon jubatus*.

In our material we found 2 species of *Teinocoptes*, one is *T. philippinensis* from the typical host (P2016) (6 females) and from *Cynopterus brachyotis* (P2021) (1 female). The other is a new species that we describe here.

*Teinocoptes insignis* n. sp.

Only the female is known.

**Female** (fig 12) : Holotype 1210 long and 720 wide. It contains 9 completely developed larvae and numerous immature eggs. Length and width of 3 paratypes female : 1180 × 630, 1235 × 670 and 1380 × 770. Dorsum with a large continuous U-shaped scale area 200 long in midline and extending laterally from the level of setae *sh* (anterolateral) to setae *h* (posterolateral). Setae *sh* thicker than *h*, both 45-50 long. Distance *sh-h* 270. Anterior part of dorsum with vestigial setae *sci*, *sce*, *dl* and *ll* and, more in front, the gnathosoma, the legs and the vulva folded again in dorsal direction. Postvulvar zone strongly developed and sclerotized, 240 long and 200 wide, incompletely divided in middle by a soft and narrow band. This area is punctated in the middle and striated transversely in its lateral parts. It is prolonged laterally by 2 pairs of narrow sclerotized stripes. Verrucous zone antero-lateral to legs III with more than 100 rounded verrucae of 3 to 6 in diameter. Outside of epimera III the cuticle bears a striated conical projection 20 long. Legs I to III 45-45-42 long. Leg IV vestigial. Perianal setae 22 to 28 long, thick, slightly inflated in middle, with rounded or blunt apices. Bursa describing 9 to 12 loops, 260 long in holotype.

**Larva** : With 70-80 small triangular dorsal scales

**Host and locality** : Holotype and 4 paratypes all females, from *Ptenochirus jagori* (P2024). The mites were attached deeply into the skin around the vulva of an adult female.

Holotype and 3 paratypes female deposited in the PNMM; one paratype female in the IRSNB.

**Remarks :**

*T. insignis* is closest to *T. asiaticus*. It differs from it by the greater size of the body, the lesser development of the scale area of the dorsum which does not extent over the posterior third of the dorsum (in *asiaticus* the scales cover the posterior third of the dorsum), by the much shorter length of the perianal setae (less than 30) and the much greater distance between setae *sh* and *h*. It is distinguished from the other species of *Teinocoptes* by the presence of lateral expansions of the postvulvar sclerotized area, the great size of the

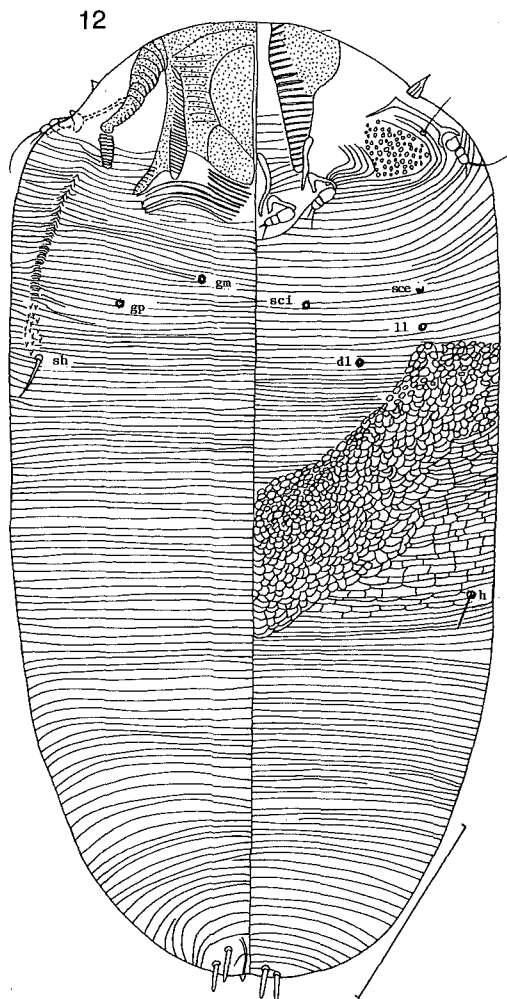


FIG. 12. — *Teinocoptes insignis* n. sp. Female in ventral (to the left) and in dorsal view (to the right). Scale line 250  $\mu$ m.

body, the presence of very numerous scales on the dorsum of the larva.

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