

A Contribution to the Ectoparasite Fauna of Bats in Thailand
II. Blood-Sucking Acari (Argasidae, Spinturnicidae
and Macronyssidae)

Kimito UCHIKAWA and Tsuneaki KOBAYASHI

Abstract

Argas pusillus KOHLS*, *Ornithodoros batuensis* HIRST*, *Spinturnix cheingmai* PRASAD, *Ancystropus eonycteris* DELFINADO and BAKER*, *Ancystropus taprobanius* (TURK)*, *Meristaspis lateralis* (KOLENATI)*, *Eyndhovenia euryalis* (CANESTRINI) (s. lat.)*, *Paraperiglischrus rhinolophinus* (KOCH) *Paraperiglischrus analis* PAN and TENG, *Bewseilla fledermaus* DOMROW, *Macronyssus tieni* (GROKHOVSKAYA and NGUEN-HUAN-HOE)*, *Macronyssus* sp. (protonymph), *Steatonyssus faini* DELFINADO*, *Steatonyssus* sp. 1 (male and protonymph), sp. 2 (protonymph) and sp. 3 (protonymph) are recorded as the blood-sucking parasites in this paper. The asterisked species are already listed in HILL and McNEELY (1975).

The host animals examined in the present study had been collected by the junior author in his faunal survey of Thai mammals carried out in 1975.¹⁾ The first report on the taxonomic results (UCHIKAWA and KOBAYASHI in press), in which were dealt with 12 species of fur-mites belonging to the family Myobiidae, was also based on the same host sample.

The present report is restricted only to the blood-sucking acari. As in the previous paper, some specimens might be found on aberrant hosts, because a number of bat individuals of different species had been preserved together in only the three containers.

Synoptic List of the Parasites Collected

I. Argasidae (Ixodoidea)

1. **Argas (Carios) pusillus KOHLS, 1950**
Material examined: 16 larvae, ex *Scotophilus kuhlii*, Yala, Thailand.
2. **Ornithodoros (Reticulinasus) batuensis HIRST, 1929**
Material examined: 3 larvae, ex *Rousettus leschenaulti*, Saraburi, Thailand.

II. Spinturnicidae (Mesostigmata)

1. **Spinturnix chiengmai PRASAD, 1969**
The original description of this species was based on 7 females and a nymph from

1) This survey was supported financially by the Center for Southeast Asian Studies of Kyoto University and co-operated with the Applied Scientific Research Corporation of Thailand.

uncertain bats taken at Huai, Mae Sanam, Hod, Chiangmai (PRASAD, 1969).

Material examined: 2 females, ex *Scotophilus kuhlii*, Yala, Thailand.

2. *Ancystropus eonycteris* DELFINADO and BAKER, 1963

Only a single female specimen, the holotype, from *Eonycteris robsta* from Mindanao represented this species in the original description. Recently, HILL and McNEELY (1975) recorded the mite from Thai *Cynopterus sphinx agulatus* and *Eonycteris spelaea*.

This least known species resembles *Ancystropus zelevatorii* KOLENATI, which is recorded from Uganda, Cyprus, Egypt, India, Philippines, Thailand, Vietnam, Malaya, Laos, New Guinea and Solomon Islands (RUDNICK, 1960; BAKER and DELFINADO, 1964;

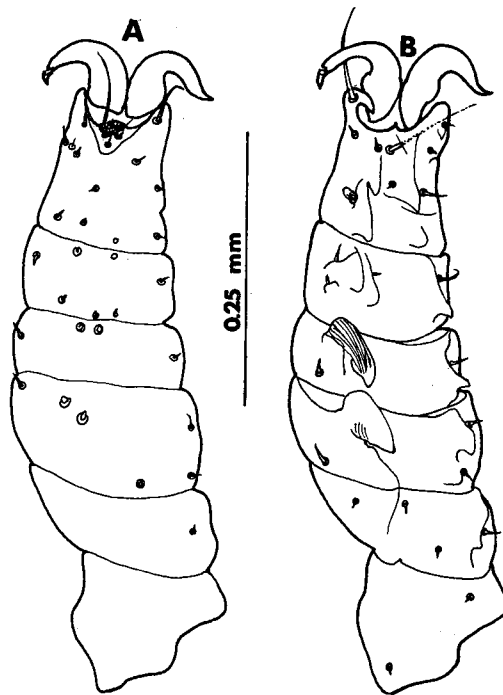


Fig. 1. *Ancystropus eonycteris*, holotype female. Leg I: A; dorsal view, B; ventral view.

PRASAD, 1969; DOMROW, 1972; HILL and McNEELY, 1975). As the construction and setation of leg I are distinctive, the leg of the holotype is depicted again in Fig. 1. Antero-dorsal seta ad_1 and postero-dorsal seta pd_1 on femur I, genu I and tibia I are barely discernible as circles in bases on both the holotype and present specimen. These setae are probably very minute and distinctly shorter than those of *A. zelevatorii*. The form of the tritosternum differs from one another on the holotype and the present specimen (Fig. 2). The presternal area of the holotype is complicated according to over clearing, while that of the present specimen is compressed by coxae I. The tritosternum of *A. eonycteris* seems to be a remarkable structure consisting of a well sclerotized area

with antero-lateral projections followed by shallow lateral depressions and more weakly sclerotized, marginal parts.

Material examined: 1 female, ex *Eonycteris spelaea*, data uncertain.

3. *Ancystropus taprobanius* (TURK, 1950)

Ancystropus indicus HIREGAUDAR and BAL, 1955, from Indian *Rousettus leschenaulti*, which had been suggested to be identical with *A. taprobanius* by RUDNICK (1960), and *Ancystropus rudnicki* BAKER and DELFINADO, 1964, from *Rousettus*, *Cynopterus* and unidentified bats (BAKER and DELFINADO, 1964; PRASAD, 1969) were synonymized as *A. taprobanius* by DOMROW (1972).

Material examined: 2 females, ex *Rousettus leschenaulti*, Saraburi, Thailand; 1 female, ex *Scotophilus kuhlii*, Yala, Thailand.

4. *Meristaspis lateralis* (KOLENATI, 1856)

PRASAD (1969) recorded this mite from *Rousettus amplexicaudatus* in Thailand.

Material examined: 1 male, ex *Rousettus leschenaulti*, Saraburi, Thailand; 2 males and 1 female, ex *Eonycteris spelaea*, data uncertain; 1 male free in alcohol in the container.

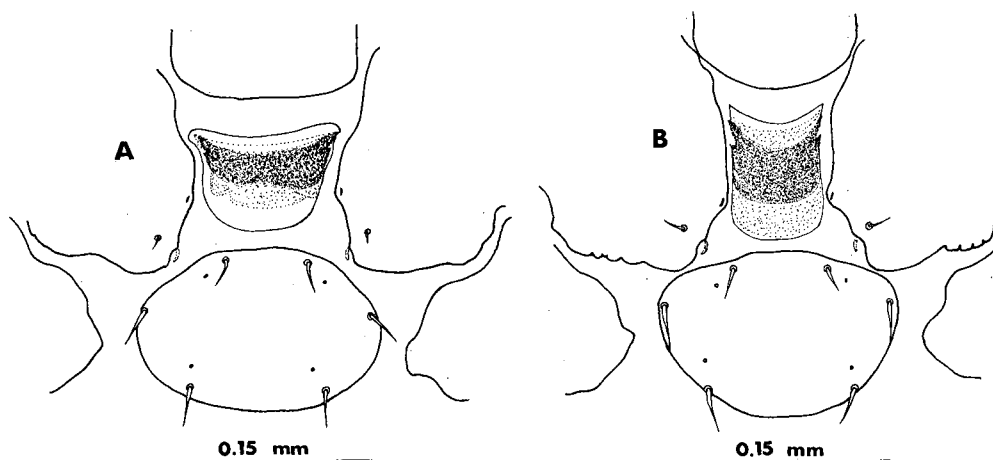


Fig. 2. *Ancystropus eonycteris*. Presternal and sternal areas: A; holotype female, B; Thai female.

5. *Meristaspis mindanaoensis* DELFINADO and BAKER, 1963

Sternal shield of male is large and flask-shaped, and bears only 3 pairs of setae. Metasternal and genital setae are situated very close to but clearly off the shield.

Material examined: 2 males and 4 deutonymphs, ex *Rousettus leschenaulti*, Saraburi, Thailand; 1 male, ex *Eonycteris spelaea*, data uncertain; 1 male and 1 deutonymph free in alcohol in the host container.

6. *Eyndhovenia euryalis* (CANESTRINI, 1884) (s. lat.)

Only a single male was examined. It was very small-sized specimen, and its all measurements fell within the range of those for DOMOROW's *Eyndhovenia* mites parasitic on *Rhinolophus megaphyllus* in New South Wales.

Material examined: 1 male, ex *Hipposiderosis lavatus*, Tam Tur Toa, Thailand, September 1, 1975.

7. Paraperiglischrus rhinolophinus (C.L. KOCH, 1841)

Material examined: 1 male, ex *Rhinolophus yunaensis*, Muang Ngai, Thailand, September 1, 1957; 1 male, ex *Rhinolophus shamelli*, Muang Ngai, September 2, 1975.

8. Paraperiglischrus analis PAN and TENG, 1973

Paraperiglischrus hipposideros BAKER and DELFINADO, 1964, has been recorded as the parasite of *Hipposideros armiger armiger* (HILL and McNEELY, 1965) and *Hipposideros* sp. (PRASAD, 1969) from Thailand. The status of *P. hipposideros* BAKER and DELFINADO is obscure as discussed in UCHIKAWA (in press), and all the Thai specimens are tentatively identified as *P. analis* PAN and TENG.

Material examined: 1 male and 1 female, ex *Hipposideros lavatus*, Muang Ngai, Thailand, September 2, 1975; 1 female, ex *Hipposideros armiger*, Muang Ngai, September 2, 1975; 1 female, ex *Cynopterus sphinx*, Cheing Mai, September 10, 1975; 1 male and 1 female free in alcohol in the host container.

III. Macronyssidae (Mesostigmata)

1. Bewsiella fledermaus DOMROW, 1958

Material examined: 7 males, 7 females and 1 protonymph, ex *Rhinolophus yunaensis*, Muang Ngai, Thailand, September 1, 1975; 1 male and 1 female, ex *Rhinolophus triphoriatus*, Muang Ngai, September, 1975; 1 female, ex *Hipposiderosis lavatus*, Muang Nagi, September 2, 1975; 2 females, ex *Cynopterus sphinx*, Cheing Mai, September 10, 1975; 1 female, free in alcohol.

2. Macronyssus tieni (GROKHOVSKAYA et NGUEN-HUAN-HOE, 1945)

The type host of this mite is *Hipposideros armiger* from Vietnam.

Material examined: 1 female, ex *Rhinolophus yunaensis*, Muang Ngai, Thailand, September 1, 1975; 1 female, ex *Hipposideros lavatus*, Muang Ngai, September 2, 1975; 4 males, 2 females and 3 protonymphs, ex *Hipposideros lylei*, Muang Ngai, September 2, 1975; 4 males, 3 females, and 2 protonymphs, ex *Hipposideros armiger*, Muang Ngai, September 2, 1975; 1 protonymph, ex *Cynopterus sphinx*, Cheing Mai, September 2, 1975; 2 protonymphs, ex *Tylonycteris* sp., Yala; 1 male and 1 female free in alcohol in the container.

3. Macronyssus sp. (Protonymph)

Idiosoma 340–370 μ long by 205–223 μ wide at level of stigma. Podosomal shield 160–165 μ long, 125–130 μ wide at level between setae s_4 and s_6 , granulated finely, bearing 10 pairs of setae; setae j_{4-6} and z_5 minute and marginal setae long. Pygidial shield with 7 pairs of setae; J_3 and J_5 minutes; J_4 very minute and barely discernible; S_4 and Z_4 slightly longer than J_3 and J_5 ; S_5 considerably long and Z_5 being longest. Eleven pairs, including j_1 , of setae on unarmed dorsum. A pair of caudal, marginal and 4 pairs of ventral setae on soft cuticle.

Material examined: 2 protonymphs, ex *Tylonycteris* sp., Yala, Thailand.

4. *Steatonyssus faini* DELFINADO, 1960

Material examined: 1 female, ex *Scotophilus kuhlii*, Yala, Thailand.

5. *Steatonyssus* sp. 1 (Male and protonymph)

This male mite is distinctive in having very minute opisthosomal dorsal setae both on and off the dorsal shield. The protonymphs, posterodorsal setae of which were considerably weaker than those on podosomal region, were taken together with the male. Both forms are tentatively dealt with as the same species.

Material examined: 1 male and 3 protonymphs, ex *Myotis* sp. Yala, Thailand.

6. *Steatonyssus* sp. 2 (Protonymph)

All dorsal setae, exclusive of J₅ on pygidial shield, and posteriormost 2 pairs of ventral setae are well developed, though they are not even (38–78 μ long). A single specimen was taken together with the female of *S. faini*, but the identity of the both forms was not confirmed.

Material examined: 1 protonymph, ex *Scotophilus kuhlii*, Yala, Thailand.

7. *Steatonyssus* sp. 3 (Protonymph)

This mite is very close to *S. javensis brevisetosus* TILL and EVANS, 1964, but is not identified.

Material examined: 2 protonymph, ex *Scotophilus kuhlii*, Yala, Thailand.

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References

- BAKER, E. W. and M. D. DELFINADO, 1964. Spinturnicidae of South East Asia and the Pacific region. *Pacific Insect*, 6: 571–584.
- DELFINADO, M. D. and E. W. BAKER, 1963. Mites of the family Spinturnicidae from the Philippines (Acarina). *Pacific Insect*, 5: 905–920.
- DOMROW, R., 1972. Acari Spinturnicidae from Australia and New Guinea. *Acarologia*, 13: 552–584.
- HILL, J. E. and J. A. McNEELY. 1975. The bats and bat's parasites of Thailand. 87 pp.
- PRASAD, V., 1969. Bat mites (Acarina: Spinturnicidae) mainly from Southeast Asia and the Pacific region. *Acrologia*, 11: 657–677.

- RUDNICK, A., 1960. A revision of the mites of the family Spinturnicidae. Univ. Calif. Publ. Ent., 17: 157-283.
- UCHIKAWA, K. and T. KOBAYASHI, A contribution to the ectoparasite fauna of bats in Thailand. I. Fur mites of the family Myobiidae (Acarina: Trombidiformes) (in press).
- UCHIKAWA, K. Studies on mesostigmatid mites parasitic on mammals and birds in Japan. VII. Bat mites of the genus *Paraperiglischrus* RUDNICK, 1960, with descriptions of males of protonymphs of *Paraperiglischrus sternalis* TETROVA and TASKEVA and *Paraperiglischrus hipposideros* BAKER and DELFINADO and male of *Paraperiglischrus analis* PAN and TENG, 1973 (in press).

Addresses of the Authors:

Dr. Kimito UCHIKAWA (内川公人)

Department of Parasitology, Faculty of Medicine, Shinshu University (信州大学医学部寄生虫学教室)
Asaki-Machi, Matsumoto, Nagano Prefecture
JAPAN 390

Dr. Tsuneaki KOBAYASHI (小林恒明)

Biological Laboratory, Yoshida College, Kyoto University (京都大学教養部生物学教室)
Yoshida, Sakyo-Ku, Kyoto
JAPAN 606



Southwestern face of Mt. Kinabalu viewed from Kundassang (ca. 1,300 m); the foot-hill of the mountain is covered with a montane oak forest.

Tsuneaki KOBAYASHI & Mitsuru HOTTA

FRONTISPIECE