

## New Myobiidae (Acarina: Trombidiformes) from Philippine Mammals

KIMITO UCHIKAWA<sup>1</sup>, BARRY M. OCONNOR<sup>2</sup> and HANS KLOMPEN<sup>2</sup>

<sup>1</sup>Department of Parasitology, Shinshu University School of Medicine,  
Matsumoto 390, Japan, and <sup>2</sup>Museum of Zoology and Department  
of Biology, The University of Michigan, Ann Arbor,  
Michigan 48109, U.S.A.

**ABSTRACT**—Four new species of myobiid mites are described from mammals from the Philippines: *Ugandobia saccolaimis* sp. n., from *Saccolaimus saccolaimus* (Emballonuridae); *Metabinuncus obscuris* sp. n., from *Hipposideros obscurus* (Hipposideridae); *Pteracarus kervoulis* sp. n., from *Kerivoula hardwickii* (Vespertilionidae); and *Myobia apomyos* sp. n., from *Apomys littoralis* (Muridae). One new subspecies, *Ugandobia balionycteris leyteensis* ssp. n., from *Emballonura alecto* (Emballonuridae), is also described. Apparent sexual dimorphism and precocious development of female genital structures were observed in the immature stages of the two *Ugandobia* mites.

### INTRODUCTION

As part of continuing studies on the systematics and ecology of Philippine mammals initiated by Dr. L. R. Heaney, now of the Field Museum of Natural History in Chicago, USA, we have had the opportunity to examine extensive collections of fresh and fluid preserved mammal specimens in order to remove parasitic arthropods. In this paper, we report on a collection of Myobiidae (Acari) taken from bats and rodents from the islands of Negros, Leyte and Maripipi in the central Philippines. Because some of the hosts belong to groups either undergoing revision or awaiting revision, host identifications are in some cases tentative. Accurate identification of host species is absolutely essential for studies on coevolution of hosts and parasites [1, 2]. In order that future workers will be able to verify the identity of host species cited here by reexamining the actual host specimens, we provide full voucher data for each host, including museum catalogue numbers (where available), collector's field numbers and parasite voucher numbers.

### MATERIALS AND METHODS

All hosts were collected during the first half of 1987 as part of the Visayan Mammal Survey. Bats were caught in mist nets set on ridgetops and across trails (*Hipposideros*, *Kerivoula*), or in their roosts in trees (*Saccolaimus*) and caves (*Emballonura*). Rodents such as *Apomys* were collected in various types of rat traps [3]. Freshly killed hosts were examined in the field by one of us (H.K.) and mites were collected using standard watchmaker's forceps and a 20X dissecting microscope. Collections from each host individual were stored in vials with 70% ethanol until return to the U.S.A. In the laboratory, mites were mounted on slides in Berlese's medium, identified to genus, and were sent to the senior author. We all have deliberated and agreed upon the identifications below.

Mite specimens are deposited in the University of Michigan Museum of Zoology, Ann Arbor, Michigan, USA (UMMZ), the U.S. National Museum of Natural History, Washington, D.C., USA (NMNH), the Philippine national acarological collection, presently housed at Visayas State College of Agriculture, Baybay, Leyte, the Philippines (VISCA), and in the collection of the senior author (KU). Host specimens were preserved as fluid preparations (F) or skeleton preparations (S)



and are deposited in the NMNH and the Western Australian Museum, Perth, Australia (WAM).

In the following descriptions, all measurements are given in micrometers ( $\mu\text{m}$ ).

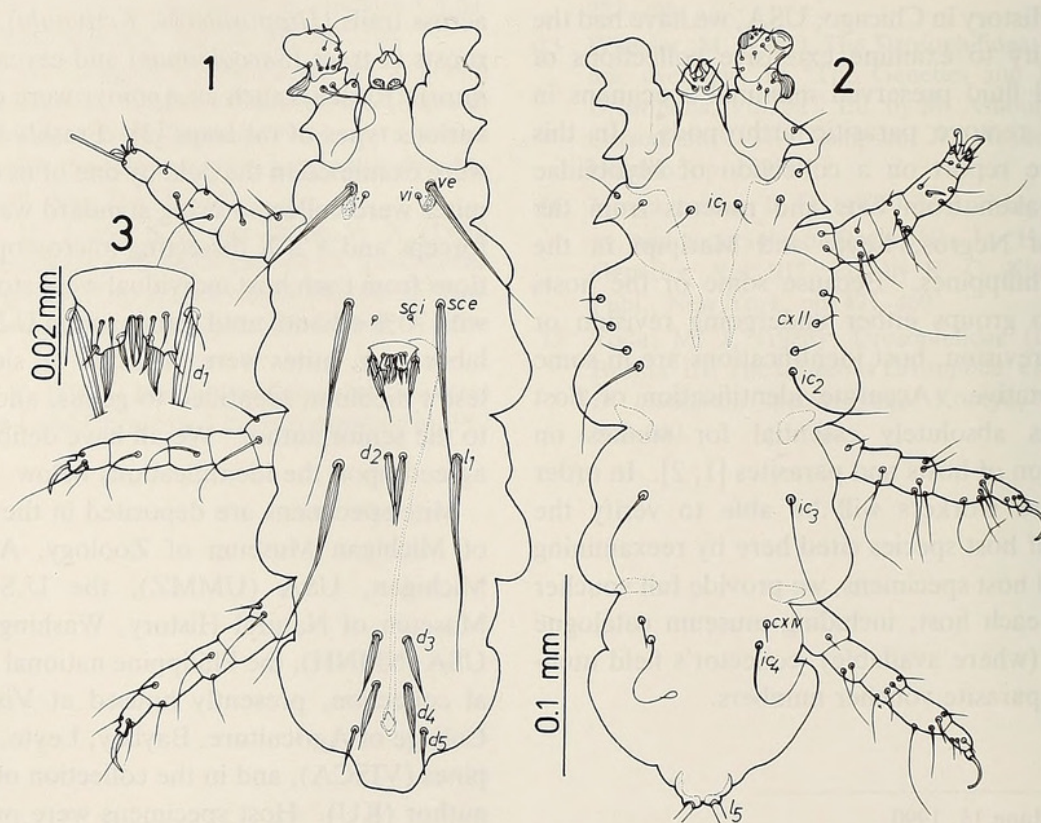
## DESCRIPTIONS

### *Ugandobia saccolaimis* sp. n. (Figs. 1–6)

Male (Figs. 1–3). Measurements for holotype and, in parentheses, for 2 paratypes are given. Body (gnathosoma and idiosoma) 370 (370–360) long by 140 (143–135) wide; idiosoma elongate. Dorsal seta *vi* setiform, 10 (10–10) long; *ve* 5 (5–5) wide and 85 (80–>75) long; *sc i* setiform, 5 (5–5) long, situated slightly posterior to basal level of *sc e*; *sc e* 6 (6–7) wide and 110 (>95–98) long; *l*<sub>1</sub> 6 (7–6) wide, about 120 (118–105) long; *d*<sub>1</sub> with base imbedded in cuticle close to genital shield, denticulate and striated, 32 (30–28) long; *d*<sub>2</sub> swollen in proximal one third, emerging slightly from basal level of *l*<sub>1</sub>, 45 (53–45) long; *d*<sub>3–4</sub> swollen, 32 (33–

32) and 35 (38–33) long, respectively; *d*<sub>5</sub> tapering, 22 (18–17) long. Genital shield situated posterior from *sc e*, bearing 6 pairs of genital setae (Fig. 3). Penis thin, about 190 (ca. 200–ca. 190) long. Ventral setae *ic*<sub>1</sub> > 23 (>25–33) long; *ic*<sub>2–4</sub> much longer than *ic*<sub>1</sub>; coxal setae 2-3-0-1; basal circle of each ventral seta clear. Leg I as in Figures 1 and 2. Chaetotaxy on legs II–IV: trochanters 3-3-3; femora 5-2-2; genua 7-6-6; tibiae and tarsi 6-6-6. Gnathosoma small, and almost circular dorsally; ventral sclerites not so prominent.

Female (Fig. 4). Measurements for allotype and, in parentheses, for 3 paratypes are given. Body 500 (490–510) long by 185 (180–190) wide; idiosoma elongate. Dorsal seta *vi* setiform, 13 (12–13) long; *ve* 5 (6–7) wide and >75 (77–83) long; *sc i* 6 (7–8) wide, 60 (55–58) long; *sc e* as wide as *sc i*, 108 (100–108) long; *l*<sub>1</sub> 8 (8–8) wide, 98 (80–90) long; *d*<sub>1–2</sub> and *l*<sub>2</sub> swollen, maximum width about 10, 53 (52–55), 47 (47–52) and 45 (45–45) long, respectively; *d*<sub>1</sub> distinctly emerging from bases of *l*<sub>1</sub>; *d*<sub>3–4</sub> swollen, but thinner than preceding setae, 48 (45–45) and 45 (44–45) long, respec-



FIGS. 1–3. *Ugandobia saccolaimis* sp. n., male. 1: Dorsal view. 2: Ventral view. 3: Genital shield.



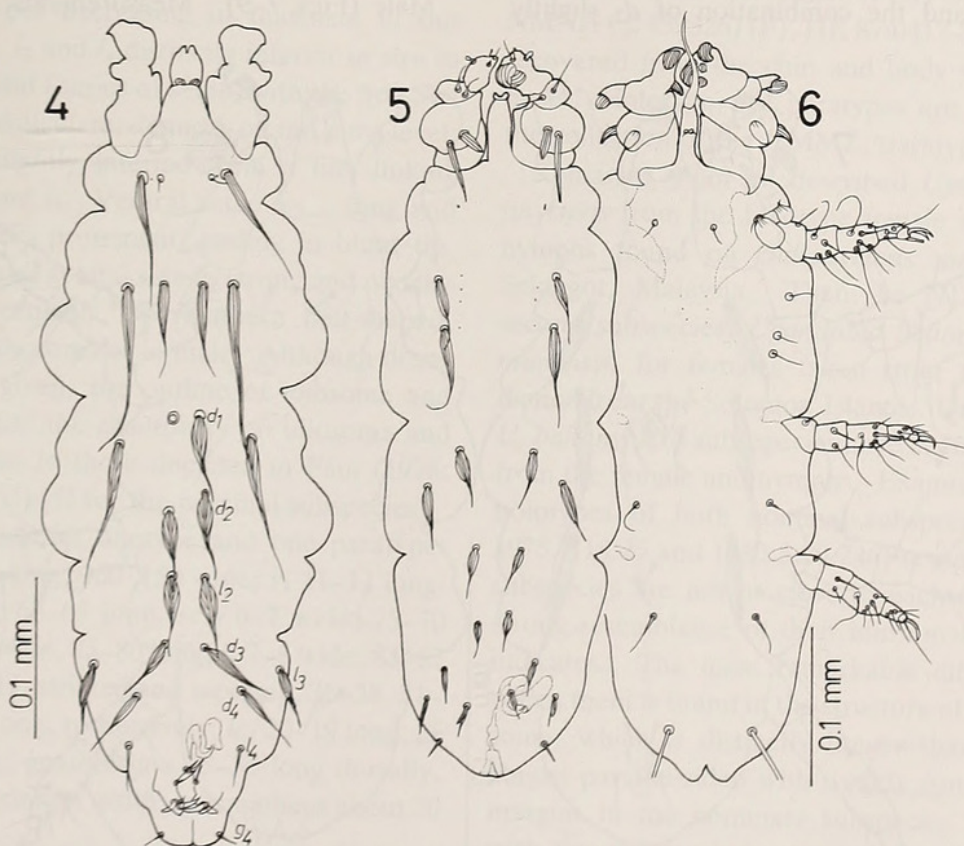
tively;  $l_3$  swollen, weakly denticulate, 38 (40–43) long;  $l_4$  thin, 36 (27–35) long. Genital seta  $g_7$  blade-like, on well-developed lobe-like structure;  $g_5$  thick;  $g_6$  minute. Spermatheca bell-shaped, 20 (22–23)  $\times$  12 (12–15). Ventral setae as in male;  $g_1$  and  $g_3$  present. Legs and gnathosoma as in male.

Tritonymph (Figs. 5–6). Body 432–360 long and 153–140 wide; idiosoma elongate. Dorsal setation as in Figure 5; only 2 pairs of propodosomal setae ( $ve$ ,  $sc$  e) and, as in female, 8 pairs of hysterosomal setae present;  $l_5$  on venter; hysterosomal setae other than  $l_4$  swollen and striated. Coxal chaetotaxy 2 (circular, transparent)-2-0-0. Legs I bilaterally asymmetric; some ventral setae of segments of leg I transparent and difficult to observe. Chaetotaxy on legs II–IV: trochanters 1-1-1; femuro-genua 4-2-2; tibiae 6-5-5; tarsi 6-6-6. Anal shield discernible only on smaller individual almost at basal level of  $l_4$  and lacking on larger individual. Spermatheca bell-shaped, 25  $\times$  12, discernible only in larger individual; genital opening subterminal on midline (Fig. 5).

Protonymph. Body 223 long by 100 wide. Two pairs of propodosomal setae and 7 pairs of hysterosomal setae presnet;  $l_4$  lacking; all setae thick and striated as in tritonymph;  $l_5$  on venter. Coxal setation 1(circular)-0-0-0. Legs I asymmetric. Chaetotaxy on legs II–VI: trochanters 0-0-0; femuro-genua 4-1-0; tibiae 5-4-4; tarsi 6-6-6.

Larva. Body 210 long by 95 wide. A pair of propodosomal and 6 pairs of hysterosomal setae present;  $l_5$  denticulate and ending in notched tip; only a single pair of setae,  $ic_1$ , present ventrally. Legs I symmetric. Chaetotaxy on legs II–III: trochanters 0-0; femuro-genua 2-0; tibiae 5-4; tarsi 6-6.

Material examined: Holotype male, paratype male, paratype female, *ex Saccolaimus saccolaimus pluto* (Chiroptera: Emballonuridae), PHILIPPINES: Negos Oriental Prov., Dumaguete City, 9°18'N, 123°18'E, elev. 5 m., 1 March 1987, collector D. Kitchener (P 79), host in WAM (F), mite collection number HK 87-0301-2; allotype female from same host and locality, 27 February



FIGS. 4–6. *Ugandobia saccolaimis* sp. n. 4: Female dorsum. 5: Tritonymphal dorsum. 6: Ventral view of Tritonymph.



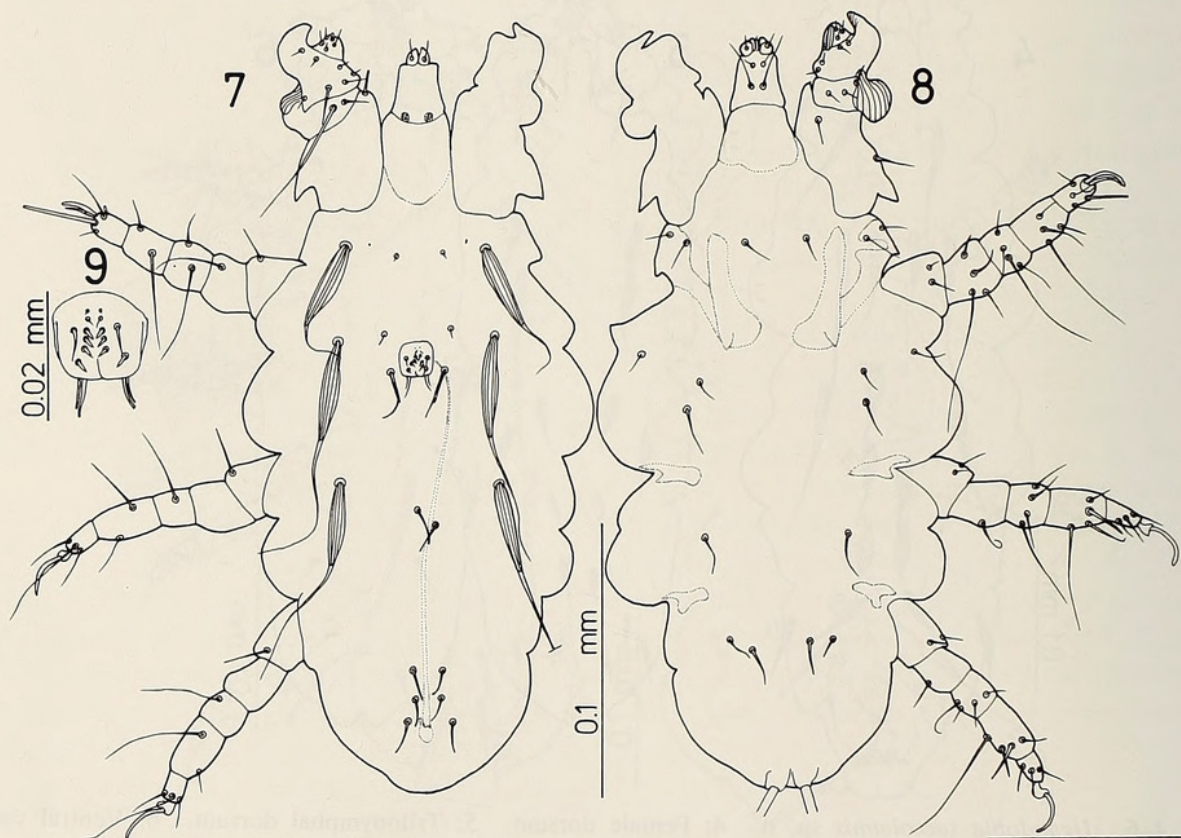
1987, collector L. R. Heaney (LRH 2956), host in NMNH (F) (catalogue number 459338), HK 87-0227-14; paratype female, protonymph, and larva from same host and locality, 27 February 1987, collector D. Kitchener (P 42), host in WAM (F), HK 87-0227-10; paratype male, paratype female, 2 paratype tritonymphs from same host and locality, 27 February 1987, collector D. Kitchener (P 43), host in WAM (F), HK 87-0227-11. Mites were recovered from the chin and body venter of the hosts. Holotype, allotype and paratypes in UMMZ, other paratypes in NMNH, VISCA, KU.

Remarks. *Ugandobia saccolaimis* sp. n. is the 8th species of the genus *Ugandobia* Dusbábek, which shows the coxal chaetotaxy 2-3-0-1. The new mite is easily separable from the 4 known species described from both sexes or male, *Ugandobia barnleyi* (Radford), *Ugandobia euthrix* Fain, *Ugandobia australiensis* Fain and Lukoschus and *Ugandobia dissimilis* Uchikawa and Kobayashi, by the nature of the genital setae, position of  $d_2$  and nature of  $d_{3-4}$ . The new species is uniquely characterized by thick and striated genital setae as in Figure 3 and the combination of  $d_2$  slightly

emerging from bases of  $l_1$  and swollen  $d_{3-4}$ . Among the three other species known only from the female, *Ugandobia vachoni* Fain and *Ugandobia taphozous* Fain share the minute and setiform  $vi$  with *U. saccolaimis*. However, the setae  $d_{1-2}$  and  $l_2$  are not as swollen in those two species as in the new species. The immature stages except the deutonymph are also described above for *U. saccolaimis*. Of the previously known species, only the deutonymph, protonymph and larva of *U. dissimilis* have been described [4]. The protonymph and larva of both species are separable from each other by the difference in form of the setae on the idiosoma and legs, suggesting the feasibility of classifying *Ugandobia* mites in the early immature stages. In the tritonymphal stage of *U. saccolaimis*, there were two morphologically different forms. One was larger than the other, lacked an anal shield and bore visible internal copulatory organs.

*Ugandobia balionycteris leyteensis* ssp. n.  
(Figs. 7-11)

Male (Figs. 7-9). Measurements for holotype



FIGS. 7-9. *Ugandobia balionycteris leyteensis* ssp. n., male. 7: Dorsal view. 8: Ventral view. 9: Genital shield.



and one paratype are given. Body 280–270 long by 135–135 wide; hysterosoma short and narrow. Dorsal setae *vi* minute (about 4 long), at level of bases of *ve*; *ve* 9–10 wide and about 80–75 long; *sc i* slightly emerging from basal level of *sc e*, 6–5 long; *sc e* 7–8 wide, 80–93 long; *l*<sub>1</sub> 8–7 wide, 90–85 long; *d*<sub>1</sub> close to genital shield, thin and denticulate, 20–23 long; *d*<sub>2</sub> situated posteriad from basal level of *l*<sub>1</sub>, thin and 12–13 long; *d*<sub>3–5</sub> short. Genital shield situated slightly posterior to basal level of *sc e*, bearing 7 pairs of minute and 2 pairs of prominent setae (Fig. 9). Penis thin, about 140–130 long. Ventral setae rather short; *ic*<sub>1</sub> and *cx* I almost on the same level; distance *ic*<sub>2</sub>–*ic*<sub>2</sub> greater than or equal to *cx* II<sub>1</sub>–*cx* II<sub>1</sub>; coxal setae 2-2-0-1. Leg I as in Figures 7 and 8. Chaetotaxy on legs II–IV: trochanters 3-3-3; femora 5-1-1; genua 6-6-5 (dorsal seta lacking); tibiae 6-6-6; tarsi 7-6-6. Gnathosoma distinctly longer than wide (Figs. 7 and 8), with concave lateral margins.

Female. Dorsal setae *ve* thick; *sc i* relatively long and slightly more slender than *sc e*; *d*<sub>1</sub> and *l*<sub>1</sub> on the same level; *d*<sub>1</sub>, *d*<sub>2</sub> and *l*<sub>3</sub> similar in form to each other, but decreasing in thickness in this order; *d*<sub>3</sub>, *d*<sub>4</sub>, *l*<sub>3</sub> and *l*<sub>4</sub> distinctly inferior in size to preceding *d* and *l* series of setae, with the first 3 of these setae denticulate; *d*<sub>3</sub> and *l*<sub>3</sub> on the same level; *d*<sub>4</sub> situated slightly interiad from a line linking bases of *d*<sub>3</sub> and *l*<sub>4</sub>. Ventral setae *ic*<sub>2–3</sub> long and distally fine; *ic*<sub>4</sub> prominent, ending in blunt tip. Anal seta *ae* and genital seta *g*<sub>7</sub> strong and needle-shaped; *g*<sub>5</sub> vestigial. Spermatheca bell-shaped. Legs and gnathosoma as in male. Although drawings are not given, the outline of idiosoma and gnathosoma and the chaetotaxy on idiosoma and legs are similar to those depicted in Fain (1978: 218, figs. 62–63) [5] for the nominal subspecies.

Measurements for allotype and one paratype: body 335–340 long, 160–150 wide; *vi* 11–12 long; *ve* 10–9 wide, 68–65 long; *sc i* 6–7 wide, 75–70 long; *sc e* 7–8 wide, 85–80 long; *l*<sub>1</sub> 7–8 wide, 83–82 long; *d*<sub>1–2</sub> and *l*<sub>2</sub> striated and tapering, 36–38, 31–30 and 26–28 long, respectively; *ic*<sub>4</sub> 20–19 long; *cx* IV 14–15 long; gnathosoma 35–35 long dorsally, with 22–20 maximum width; spermatheca about 20 × 10.

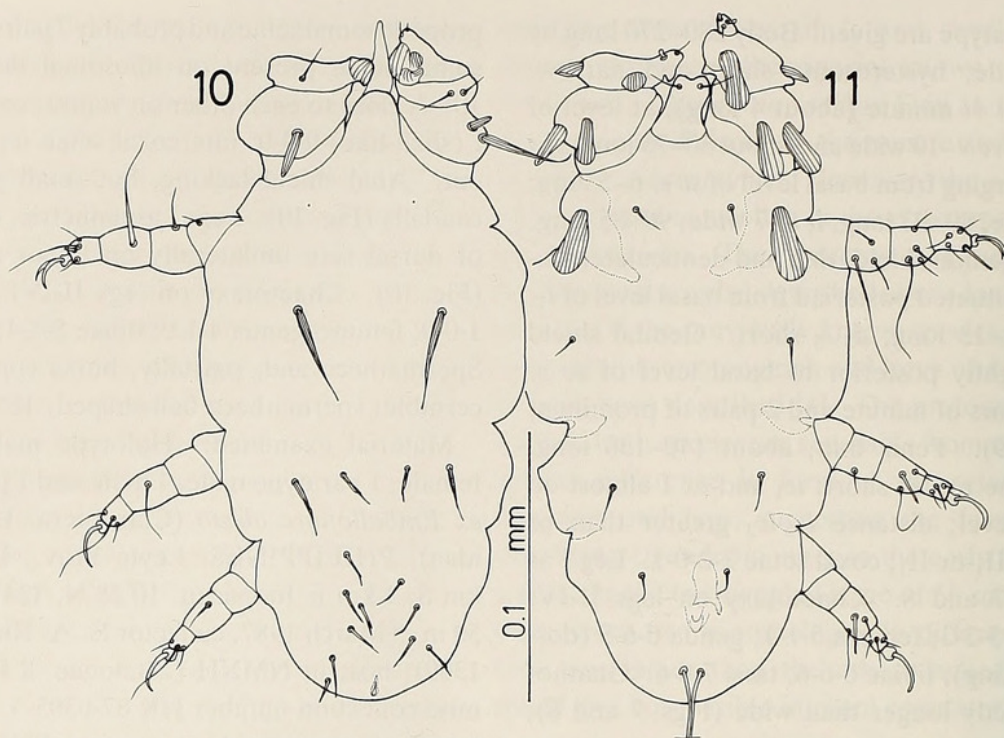
Protonymph (Figs. 10–11). Body 223 long by 118 wide. Only a single pair of well-developed

propodosomal setae and probably 7 pairs of hysterosomal setae present on idiosomal dorsum (Fig. 10); *l*<sub>5</sub> close to each other on venter; coxal setation 1 (shell-like)-0-0-0; intercoxal setae *ic*<sub>1–4</sub> prominent. Anal shield lacking, but small pore visible caudally (Fig. 10). Legs I asymmetric; unidentical of dorsal seta unilaterally on femur and genu I (Fig. 10). Chaetotaxy on legs II–IV: trochanters 1-0-0; femuro-genua 4-1-0; tibiae 5-4-4; tarsi 6-6-6. Spermatheca and, partially, bursa copulatrix discernible; spermatheca bell-shaped, 18 × 10.

Material examined: Holotype male, allotype female, 1 paratype male, 1 male and 1 protonymph *ex Emballonura alecto* (Chiroptera: Emballonuridae), PHILIPPINES: Leyte Prov., Leyte Is., 4 km S, 1 km E Inopacan, 10°28'N, 124°45'E, elev. 50 m, 5 March 1987, collector E. A. Rickart (EAR 1309), host in NMNH (catalogue #459310) (F), mite collection number HK 87-0305-3. 1 paratype female from same host species, PHILIPPINES: Leyte Prov., Maripipi Is., 3 km N, 5 km W Maripipi, elev. 50 m, 11°48'N, 124°18'E, 17 April 1987, collector P. D. Heideman (PDH 3331), host in NMNH (#459326) (F), HK 87-0417-8. Mites were recovered from the chin and body venter of the hosts. Holotype and paratypes are deposited in the collection of the UMMZ, paratypes in KU.

Remarks. Fain [6] described *Ugandobia balionycteris* from the holotype female and paratype nymphs found on *Balionycteris maculata* from Selangor, Malaysia. Then, he [7] proposed a second subspecies, *Ugandobia balionycteris salomonensis*, for females taken from *Emballonura diana* from the Solomon Islands. Until now, the *U. balionycteris* subspecies have been known only from the female and nymphs. Examination of the holotypes of both nominal subspecies (BMNH 1975.7.18.25 and 1980.5.20.246) reveals that the 2 subspecies are not as close to each other as the strong resemblance of their idiosomal chaetotaxy indicates. The most remarkable difference between them is found in the structure of the gnathosoma, which is distinctly longer than wide and almost parallel-sided with weakly concave lateral margins in the nominate subspecies and stubby with convex lateral margins in *U. b. salomonensis*. This structural difference seems unlikely to be of a subspecific ranking. Comparison of both subspe-





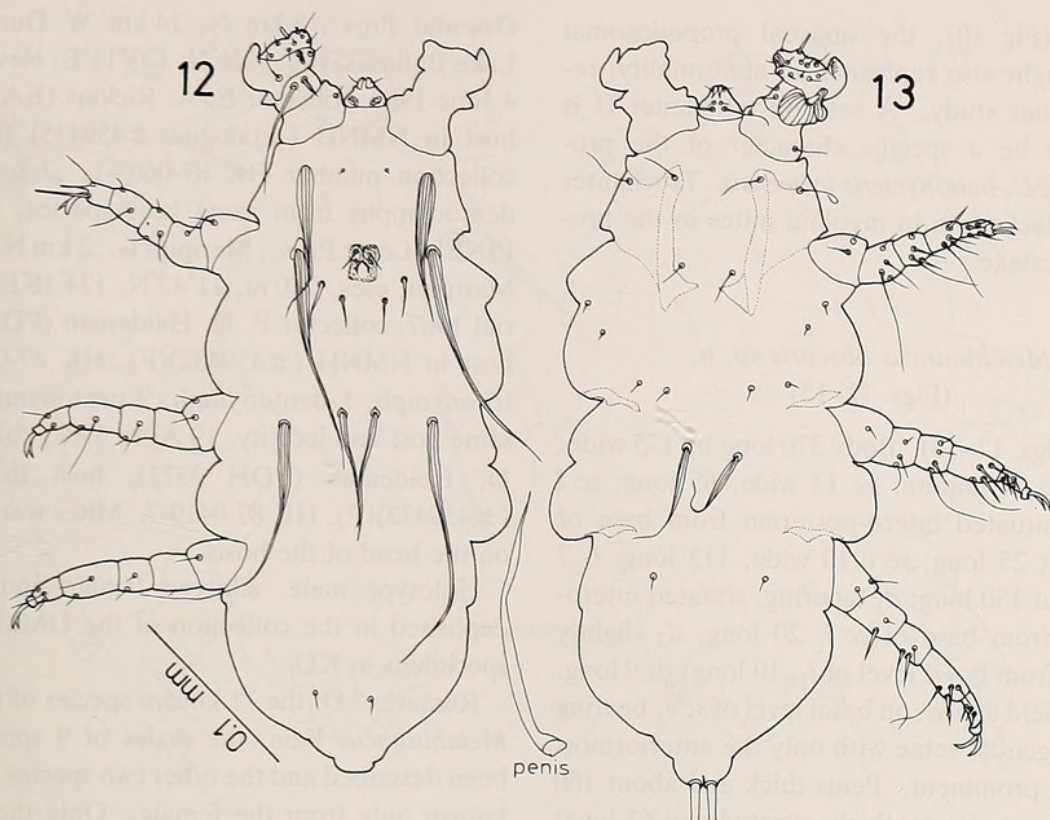
FIGS. 10-11. *Ugandobia balionycteris leyteensis* ssp. n., protonymph. 10: Dorsal view. 11: Ventral view.

cies on the basis of adults of both sexes and immature stages will be, however, necessary to resolve the specific status of these taxa. Under these circumstances, it is difficult to allocate the present mite which shares many characters with *U. balionycteris* spp. to a valid new species, so we relegate it to subspecific status. *Ugandobia balionycteris leyteensis* ssp. n. is unique in having  $l_3$  situated at the level of the base of  $d_3$  in the female. This seta is located on a level distinctly anterior to the basal level of  $d_3$  in *U. b. balionycteris* and *U. b. salomonensis*. The gnathosoma of the present new subspecies is almost the same as in the nominate subspecies, but the body is shorter, seta  $vi$  is longer, seta  $l_1$  is thicker, and seta  $cx_4$  is longer in the former than in the latter. Dorsal seta  $d_4$  is situated slightly interiad from a line linking the bases of  $d_3$  and  $l_4$  in the new subspecies, while it is located distinctly exterior to the line in the nominate subspecies. Among the males of 3 *Ugandobia* species including *U. b. leyteensis*, which show the coxal chaetotaxy 2-2-0-1, the male of *U. emballonurae* Fain is unique in having thick  $ve$  and  $d_2$ , while the males of *U. b. leyteensis* and *U. ituriensis* Fain, 1972, share many characters with each other. The males of the latter two taxa are separable from

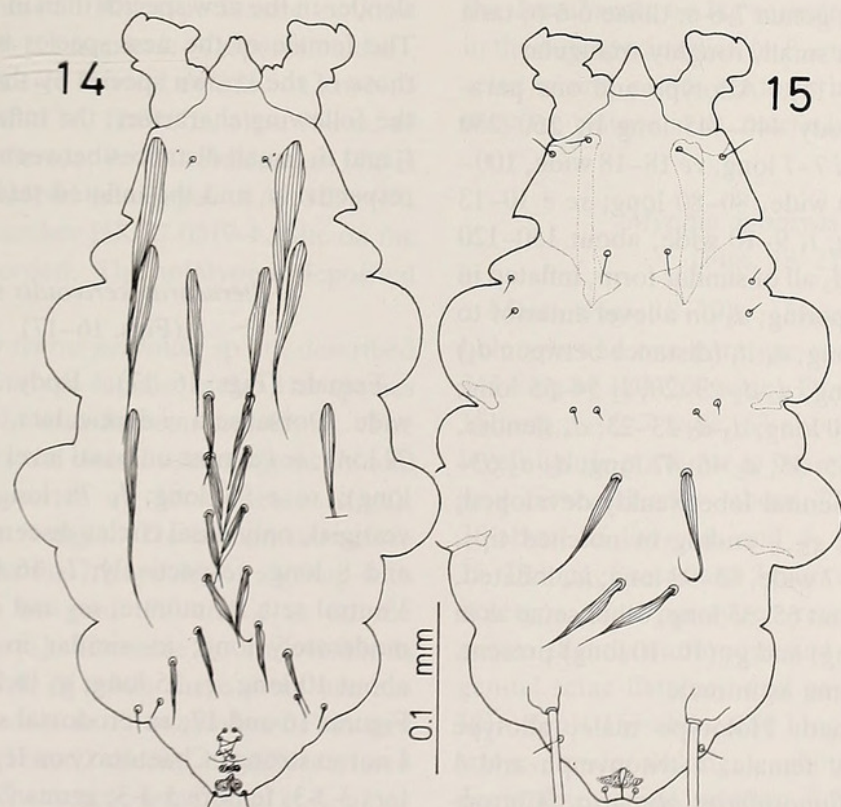
each other by the difference in size of setae  $vi$ ,  $ic_2$  and  $ic_3$ . These setae are much shorter in *U. b. leyteensis* than in *U. ituriensis*.

Only a single protonymph was available in the present study. However, this specimen shows that female genital organs are formed in the earliest nymphal stage. As was the case for the spermatheca observed in the tritonymph of *U. saccolaimis*, this protonymphal spermatheca is almost as large as that in the adult female. It will be necessary to study whether the spermatheca and other copulatory organs found in immature *Ugandobia* mites are functional or not. The anal shield is usually observed dorsally on the hysterosoma of immature stages of mites of the family Myobiidae. However, the anal shield is lacking on the specimens that bore copulatory organs. The chaetotaxy of the idiosoma and legs observed on the present protonymph is rather aberrant. The propodosomal setae consisting of only a single pair are not consistent with the protonymphal stage in Myobiidae, but are more typical of the larval stage as observed in *U. saccolaimis* and *U. dissimilis* [4]. Since the arrangement of the hysterosomal setae and bilaterally asymmetric setation on femur and genu I are irregular on the present protonymphal





FIGS. 12-13. *Metabinuncus obscuris* sp. n., male. 12: Dorsal view. 13: Ventral view.



FIGS. 14-15. *Metabinuncus obscuris* sp. n., female. 14: Dorsum. 15: Venter.



specimen (Fig. 10), the unusual propodosomal setation might also represent an abnormality, requiring further study. A seta on trochanter II is thought to be a specific character of the protonymph of *U. balionycteris leyteensis*. Trochanter II usually lacks seta in myobiid mites in the protonymphal stage.

*Metabinuncus obscuris* sp. n.  
(Figs. 12–15)

Male (Figs. 12–13). Body 370 long by 175 wide. Dorsal seta *vi* minute; *ve* 13 wide, 65 long; *sc i* tapering, situated intero-posteriad from base of *sc e*, about 25 long; *sc e* 10 wide, 113 long; *l*<sub>1</sub> 7 wide, about 150 long; *d*<sub>1</sub> tapering, situated intero-posteriad from base of *sc i*, 20 long; *d*<sub>2</sub> slightly emerging from basal level of *l*<sub>1</sub>, 10 long; *d*<sub>5</sub> 9 long. Genital shield almost on basal level of *sc e*, bearing 6 pairs of genital setae with only the anteriormost pair being prominent. Penis thick and about 160 long. Ventral seta *ic*<sub>3</sub> thick, striated and 63 long; *ic*<sub>1</sub> and *cx* I slender, 13–18 long; other setae minute; coxal setae 2-3-0-0. Leg I as in Figures 12 and 13. Chaetotaxy on legs II–IV: trochanters 3-3-3; femora 5-3-3; genua 7-6-6; tibiae 6-6-6; tarsi 6-6-6. Gnathosoma small, roughly triangular.

Female (Figs. 14–15). Allotype and one paratype measured. Body 440–445 long by 250–230 wide. Dorsal seta *vi* 7–7 long; *ve* 18–18 wide, 100–98 long; *sc i* 10–10 wide, 80–80 long; *sc e* 10–13 wide, 115–113 long; *l*<sub>1</sub> 9–10 wide, about 130–120 long; *d*<sub>1</sub>, *d*<sub>2</sub>, *l*<sub>2</sub> and *d*<sub>3</sub> all of similar form, inflated in middle and then tapering; *d*<sub>1</sub> on a level anterior to bases of *l*<sub>1</sub>, 60–62 long; *d*<sub>1</sub>–*d*<sub>1</sub> (distance between *d*<sub>1</sub>) 25–25; *d*<sub>2</sub> 60–59 long; *d*<sub>2</sub>–*d*<sub>2</sub> 23–20; *l*<sub>2</sub> 54–55 long; *l*<sub>2</sub>–*l*<sub>2</sub> 23–23; *d*<sub>3</sub> 47–50 long; *d*<sub>3</sub>–*d*<sub>3</sub> 23–23; *d*<sub>4</sub> slender, 41–40 long; *d*<sub>4</sub>–*d*<sub>4</sub> 35–35; *d*<sub>5</sub> 46–47 long; *d*<sub>5</sub>–*d*<sub>5</sub> 63–60; *l*<sub>4</sub>–<sub>5</sub> minute. Genital lobe weakly developed; *ae* longer than *g*<sub>7</sub>; *g*<sub>5</sub>–<sub>6</sub> ending in notched tips. Ventral setae *ic*<sub>3</sub> 7–7 wide, 83–93 long; *ic*<sub>4</sub> inflated, 10–10 wide and about 65–65 long; other setae as in male; *g*<sub>1</sub> (15–17 long) and *g*<sub>3</sub> (10–10 long) present. Legs and gnathosoma as in male.

Material examined: Holotype male, allotype female, 1 paratype female, 1 tritonymph and 1 protonymph *ex* *Hipposideros obscurus* (Chiroptera: Hipposideridae), PHILIPPINES: Negros

Oriental Prov., 3 km N, 14 km W Dumaguete, Lake Balinsasayao, 9°21'N, 123°11'E, elev. 850 m, 4 June 1987, collector E. A. Rickart (EAR 1642), host in NMNH (catalogue #459435) (F), mite collection number HK 87-0605-1. 2 females, 2 deutonymphs from same host species, PHILIPPINES: Leyte Prov., Maripipi Is., 2 km N, 3 km W Maripipi, elev. 740 m, 11°47'N, 124°18'E, 17 April 1987, collector P. D. Heideman (PDH 3326), host in NMNH (#459432)(F), HK 87-0417-7; 1 tritonymph, 1 deutonymph, 2 protonymphs from same host and locality, 19 April 1987, collector P. D. Heideman (PDH 3372), host in NMNH (#459433)(F), HK 87-0419-7. Mites were located on the head of the hosts.

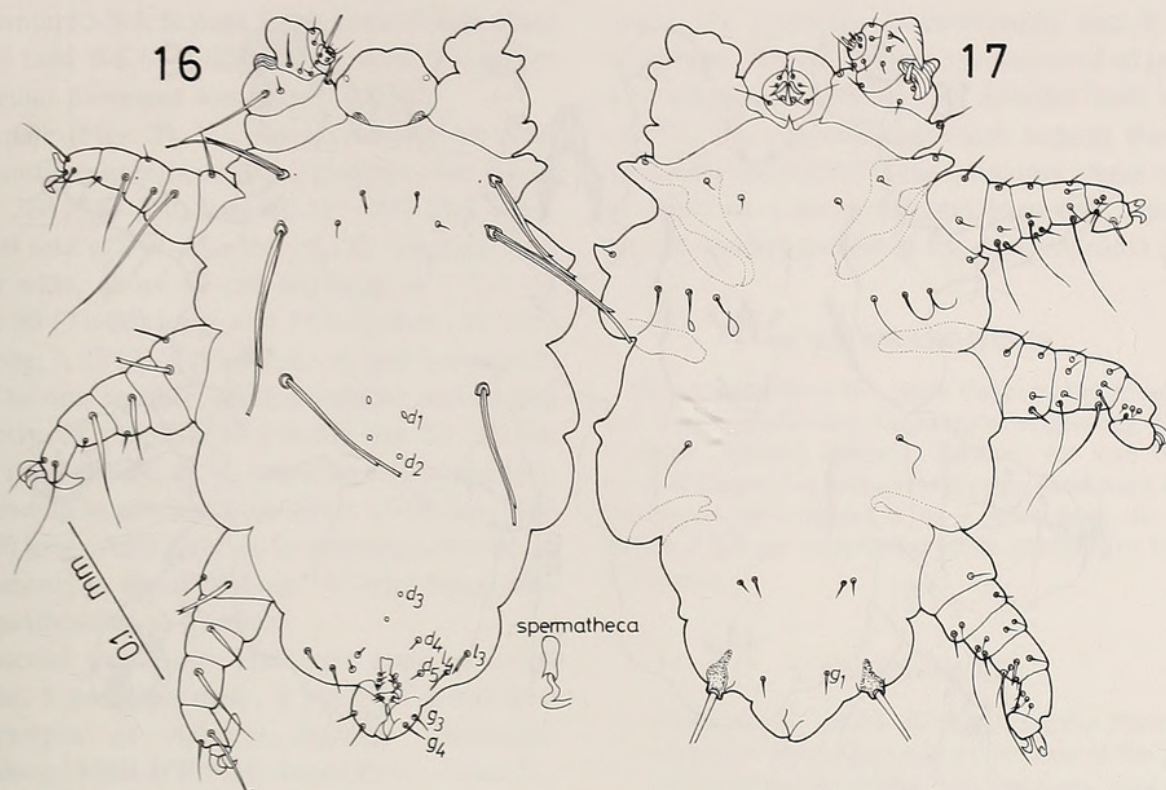
Holotype male, allotype female and nymphs deposited in the collection of the UMMZ, other specimens in KU.

Remarks. Of the 11 known species of the genus *Metabinuncus* Fain, the males of 9 species have been described and the other two species are so far known only from the female. Only the male of *Metabinuncus hipposideros* Fain bears the genital shield on the basal level of *sc e* as in *M. obscuris* sp. n. However, the setae *sc i*, *d*<sub>2</sub> are much more slender in the new species than in *M. hipposideros*. The female of the new species is separable from those of the known species by the combination of the following characters: the inflated setae *d*<sub>1</sub>, *d*<sub>2</sub>, *l*<sub>2</sub> and *d*<sub>3</sub>, small distances between *d*<sub>1</sub>, *d*<sub>2</sub>, *l*<sub>2</sub> and *d*<sub>3</sub>, respectively, and the inflated seta *ic*<sub>4</sub>.

*Pteracarus kerivoulis* sp. n.  
(Figs. 16–17)

Female (Figs. 16–17). Body 360 long by 210 wide. Dorsal seta *vi* denticulate, 14 long; *ve* about 72 long; *sc i* almost on basal level of *sc e*, minute (9 long); *sc e* 98 long; *l*<sub>1</sub> 78 long; *d*<sub>1</sub>, *d*<sub>2</sub> and *d*<sub>3</sub> vestigial, only basal circles discernible; *d*<sub>4</sub> and *d*<sub>5</sub> 5 and 8 long, respectively; *l*<sub>3</sub> 16 long; *l*<sub>4</sub> 15 long. Ventral seta *ic*<sub>1</sub> minute; *ic*<sub>2</sub> and *cx* II slender and moderately long; *ic*<sub>3</sub> similar in form to *ic*<sub>2</sub>; *ic*<sub>4</sub> about 10 long; *g*<sub>1</sub> 15 long; *g*<sub>2</sub> lacking. Leg I as in Figures 16 and 17; anterodorsal seta of trochanter I not so strong. Chaetotaxy on legs II–IV: trochanters 3-3-3; femora 5-3-3; genua 7-6-6; tibiae 6-6-6; tarsi 6-6-6. Gnathosoma broadly rounded anter-





FIGS. 16-17. *Pteracarus kerivoulis* sp. n., female. 16: Dorsal view. 17: Ventral view.

iorly.

Material examined. Holotype female *ex Kerivoula hardwickii* (Chiroptera: Vespertilionidae), PHILIPPINES: Leyte Prov., Leyte Is., 11 km N, 5 km E Baybay, 10°47'N, 124°50'E, elev. 950 m, 19 Mrach 1987, collector P. D. Heideman (PDH 3175), host in NMNH (catalogue #459513) (F), mite collection number HK 87-0319-4. Site on the host was not recorded. The holotype is deposited in UMMZ.

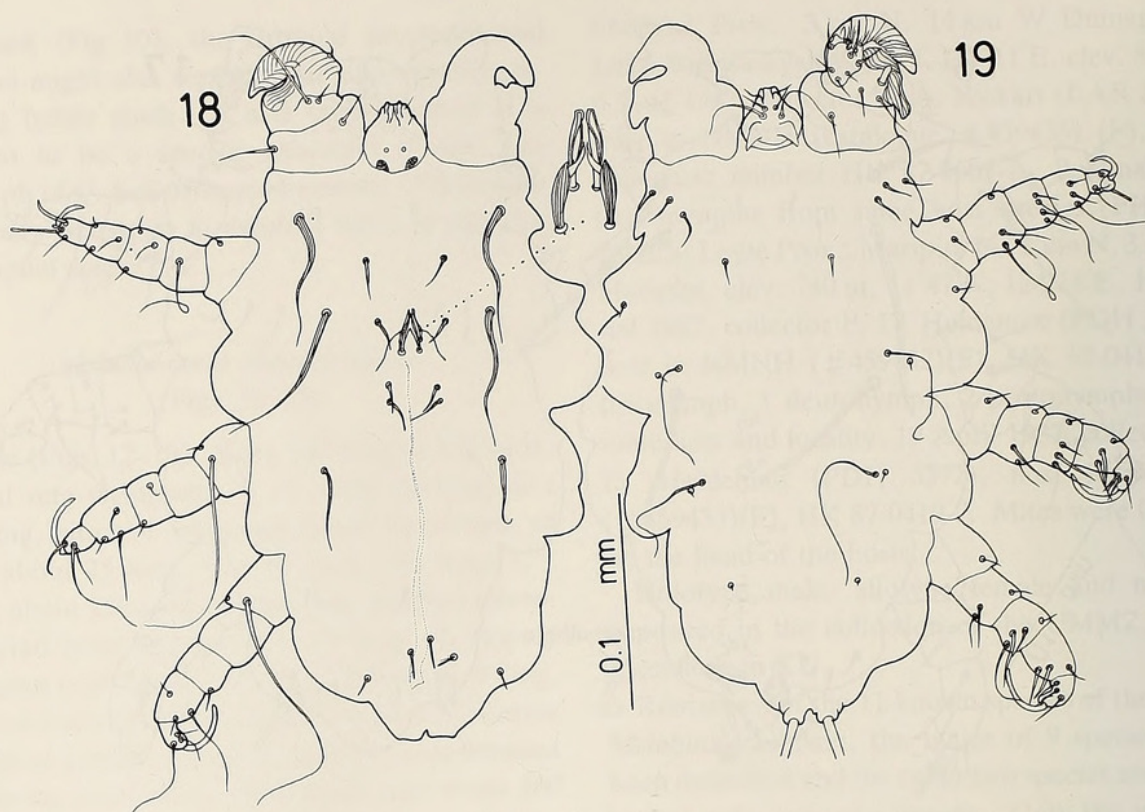
Remarks. *Pteracarus kervoulis* sp. n., described from only the holotype female, is the 31st species of the genus *Pteracarus* Jameon and Chow. The new species bears the dorsal seta on genu IV and the complete *d* series of dorsal setae ( $d_{1-5}$ ), although  $d_{1-3}$  are vestigial. These characters place the new species as the 7th species of a group with the dorsal setae on genu IV and  $d_{1-5}$  on the idiosomal dorsum [8]. The setae  $d_{1-3}$  are visible in many species [5, 8, 9] while these setae are too short to observe only in *P. macfarlanei* Fain and the new species. These 2 species are differentiated by the following characters: setae *vi*, *sc e*,  $l_1$ , *ai*, *ae* and dorsal setae on some segments of legs II-IV.

The seta *vi* is longer, *sc e* and  $l_1$  are shorter, and the dorsal setae on leg segments are much shorter in the new species than in *P. macfarlanei*. The anal setae *ai* and *ae* are setiform in *P. kerivoulis*, but they are clavate in *P. macfarlanei*.

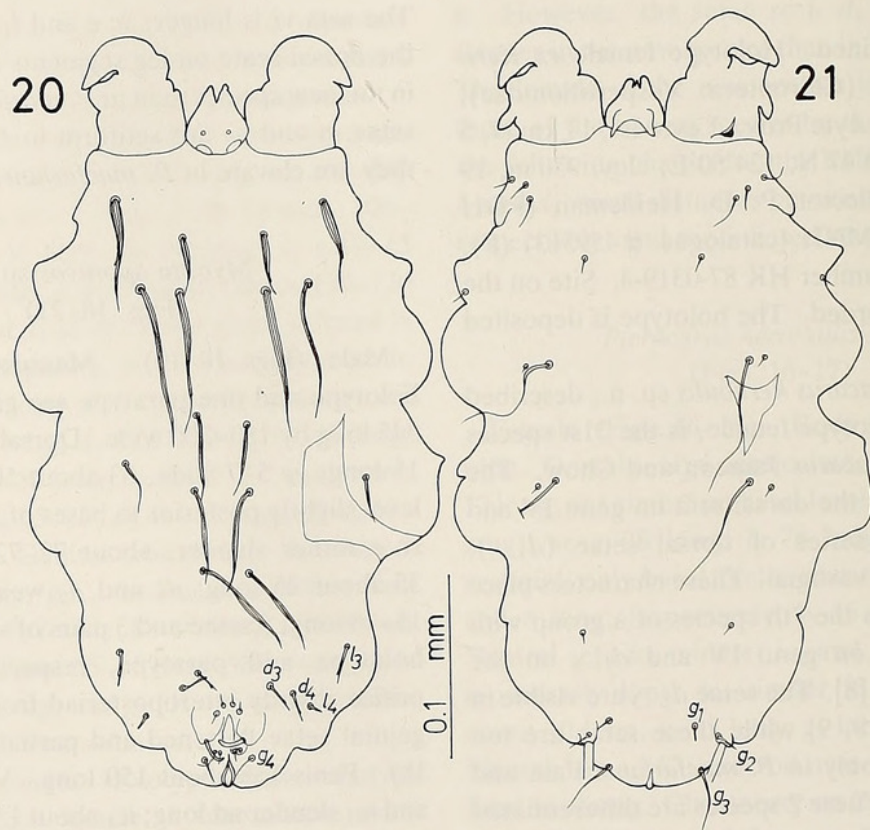
*Myobia apomyos* sp. n.  
(Figs. 18-21)

Male (Figs. 18-19). Measurements for the holotype and one paratype are given. Body 295-345 long by 180-200 wide. Dorsal seta *vi* thin, 15-15 long; *ve* 5-7 wide, 63-about 50 long; *sc i* on a level slightly posterior to bases of *sc e*, 13-15 long; *sc e* rather slender, about 72-72 long;  $l_1$  about 35-about 25 long;  $d_1$  and  $d_2$  weakly denticulate, 15-18 long; 5 setae and 3 pairs of setae caudally on holotype and paratype, respectively. Genital orifice slightly interoposteriad from bases of *sc i*; genital setae flattened and partially striated (Fig. 18). Penis 155-about 150 long. Ventral setae  $ic_2$  and  $ic_3$  slender ad long;  $ic_1$  about 13 long;  $ic_4$  barely discernible; coxal setation 3-2-1-0. Leg I as in Figures 18 and 19. Chaetotaxy on legs II-IV:





FIGS. 18-19. *Myobia apomyos* sp. n., male. 18: Dorsal view. 19: Ventral view.



FIGS. 20-21. *Myobia apomyos* sp. n., female. 20: Dorsum. 21: Venter.



trochanters 3-3-3; femora 5-3-3; genua 7-6-5; tibiae 6-6-6; tarsi 6-6-6. Gnathosoma with prominent triangular processes ventrally.

Female (Figs. 20-21). Measurements for allotype and, in parentheses, for 2 paratypes are given. Body 380 (340-350) long by 225 (205-210) wide. Dorsal seta *vi* 4 (4-5) wide, 35 (32-40) long; *ve* 8 (7-8) wide, about 57 (58-63) long; *sc i* 5 (4-5) wide, 80 (73-80) long; *sc e* 3 (3-3) wide, 68 (58-73) long; *l*<sub>1</sub> 27 (24-25) long; *d*<sub>1</sub>, *d*<sub>2</sub> and *l*<sub>2</sub> similar in form to one another, weakly inflated and ending abruptly, 33 (33-38), 47 (48-53) and 53 (48-58) long, respectively; *d*<sub>3</sub>, *d*<sub>4</sub> and *l*<sub>3</sub> weakly denticulate and ending in notched tips, about 17-18 long; *l*<sub>4</sub> 8 (8-10) long. Anal setae *ai*, *ae* minute; *g*<sub>7</sub> strong; *g*<sub>4</sub> prominent; *g*<sub>3</sub> about 50 long. Ventral setae, legs and gnathosoma as in male.

Material examined: Holotype male, allotype female, 1 paratype male, 2 paratype females, 3 tritonymphs *ex Apomys littoralis* (Rodentia: Muridae),<sup>1</sup> PHILIPPINES: Leyte Prov., Leyte Is., 11 km N, 4 km E Baybay, 10°47'N, 124°50'E, elev. 700 m, 18 March 1987, collector P. D. Heideman (PDH 3165), host in NMNH (catalogue #458755) (S), mite collection number HK 87-0318-1; 1 paratype female, 4 protonymphs, from same host species, PHILIPPINES: Leyte Prov., Leyte Is., 9 km N, 3 km E Baybay, 10°46'N, 124°49'E, elev. 500 m, collector J. S. H. Klompen (JSHK 68), host in NMNH (#459854) (F), HK 87-0402-4. All mites were collected from the head of the hosts.

Holotype and allotype in UMMZ, paratypes in NMNH, VISCA, KU.

Remarks. The known species of the genus *Myobia* von Heyden are divided into 2 groups according to the coxal setation, 3-2-1-1 and 3-2-1-0. *Myobia musculi* (Schrank), *M. otomyia* Lawrence, and *M. apomyos* sp. n. form a group with the coxal setation 3-2-1-0. Within this group, *M. apomyos* is characterized by weakly denticulate *sc i*, *sc e* and short *l*<sub>1</sub> in both sexes, inflated *d*<sub>1</sub>, *d*<sub>2</sub> and *l*<sub>2</sub> of the female and flattened genital setae of the male. Seven nymphs taken together with the

adults are probably 3 tritonymphs and 4 protonymphs. Although more specimens of all immature stages are necessary to describe each stage exactly, the available specimens suggest that the idiosomal chaetotaxy of the immature stages of the new species is quite different from that reported for the 4 other species of the genus *Myobia* [10].

#### ACKNOWLEDGMENTS

We are grateful to Dr. Anne Baker of the Arachnida and Myriapoda Section, Department of Zoology, British Museum (Natural History), London, for loan of the types of *Ugandobia balionycteris* spp. Field work in the Philippines was supported by a grant from the U.S. National Science Foundation (BSR 8514223) to Dr. L. R. Heaney.

#### REFERENCES

- 1 Uchikawa, K. (1985) Mites of the genus *Pteracarus* (Acarina, Myobiidae) taken from bats of the genus *Miniopterus* (Chiroptera, Miniopteridae). Zool. Sci., 2: 109-114.
- 2 OConnor, B. M. (1987) Host associations and coevolutionary relationships of astigmatid mite parasites of New World primates I. Families Psoroptidae and Audycptidae. Fieldiana: Zool. n. s., 39: 245-260.
- 3 Heaney, L. R., Heideman, P. D., Rickart, E. A., Utzurrum, R. B., and Klompen, J. S. H. (1989) Elevational zonation of mammals in the central Philippines. J. Trop. Ecol., 5: 259-280.
- 4 Uchikawa, K. and Kobayashi, T. (1978) A contribution to ectoparasite fauna of bats in Thailand. I Fur mites of the family Myobiidae (Acarina: Trombidiformes). Acarologia, 20: 368-384.
- 5 Fain, A. (1978) Mites of the family Myobiidae (Acarina: Prostigmata) from mammals in the collection of the British Museum (Natural history). Bull. Br. Mus. nat. Hist. (Zool.), 33: 193-229.
- 6 Fain, A. (1973) Nouveaux taxa dans la famille Myobiidae (Acarina: Trombidiformes). Rev. Zool. Bot. afr., 87: 614-621.
- 7 Fain, A. (1976) Notes sur des Myobiidae parasites de rongeurs, d'insectivores et de chiropteres (Acarina: Prostigmata). Acta Zool. Pathol. Antverp., 64: 3-32.
- 8 Uchikawa, K. (1989) Ten new taxa of chiropteran myobiids of the genus *Pteracarus* (Acarina: Myobiidae). Bull. Br. Mus. nat. Hist. (Zool.), 55: 97-108.
- 9 Dusbábek, P. (1973) A systematic review of the genus *Pteracarus* (Acarina: Myobiidae). Acarologia,

<sup>1</sup> According to Dr. L. R. Heaney (personal communication) who has examined the type specimens, the species of *Apomys* occurring on Leyte Island is *A. littoralis*, not *A. microdon* as previously reported in the literature on Philippine mammals.



15: 240-288.

- 10 Uchikawa, K., Nakata, K. and Lukoschus, F. S. (1988) Mites of the genus *Myobia* (Trombidiformes,

Myobiidae) parasitic on *Apodemus* mice in Korea and Japan, with reference to their immature stages. Zool. Sci., 5: 883-892.





Uchikawa, Kimito, O'Connor, Barry M, and Klompen, Hans. 1991. "New Myobiidae (Acarina: Trombidiformes) from Philippine Mammals (Taxonomy and Systematics)." *Zoological science* 8, 157–168.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/125169>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/71620>

**Holding Institution**

Smithsonian Libraries and Archives

**Sponsored by**

Biodiversity Heritage Library

**Copyright & Reuse**

Copyright Status: In Copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.