

## A new bat-flea from Borneo and Malaya

by

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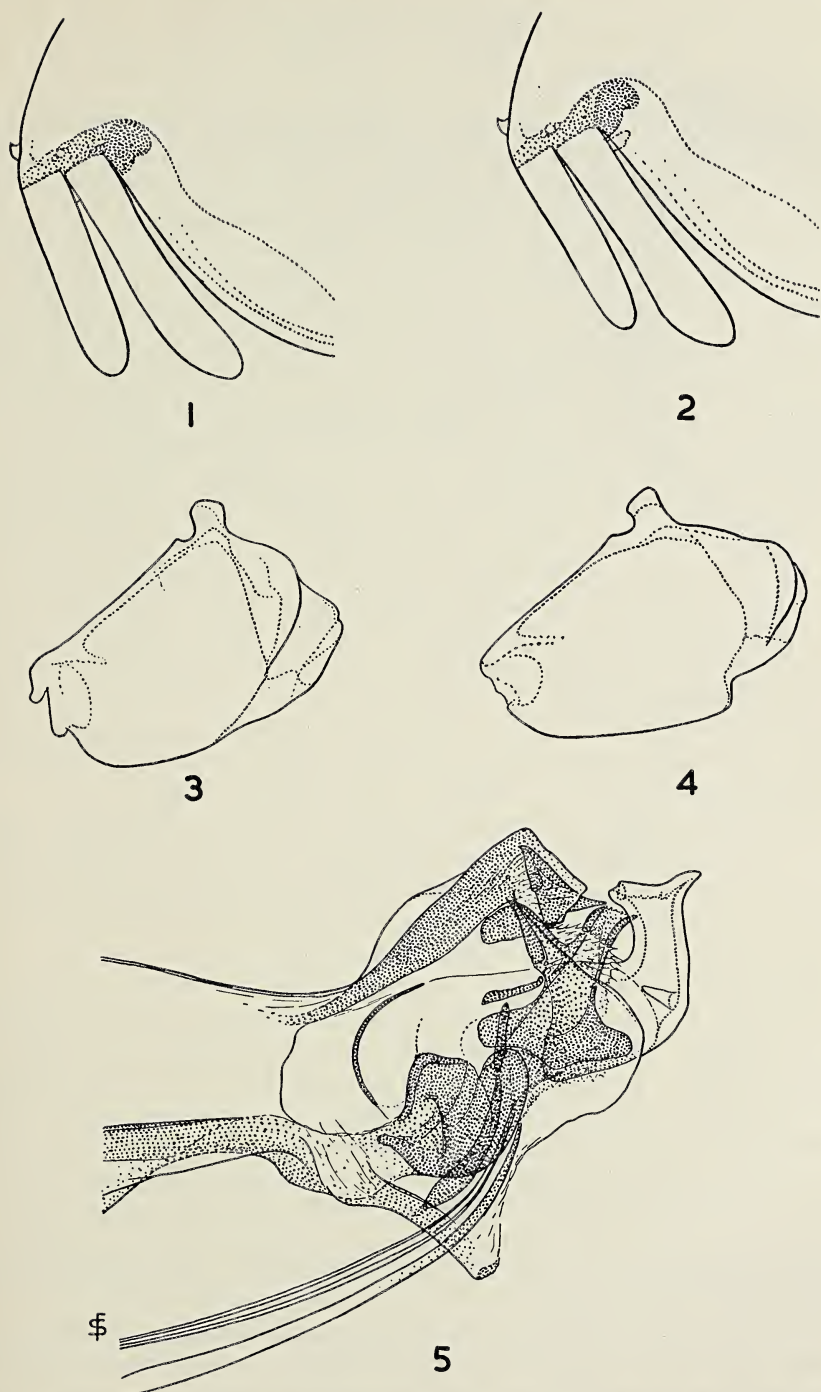
(British Museum (Natural History), The Zoological Museum, Tring, Herts.)

Dr. T. HARRISON, Curator of the Sarawak Museum, Kuching, Sarawak, recently sent us a number of fleas representing a new species of *Lagaropsylla*, a genus of Ischnopsyllidae; they were collected by Lord MEDWAY from the hairless bat (also called naked bulldog bat) in a cave at Niah, Sarawak. The hairless bat, *Cheiromeles torquatus* Horsfield (Fam. Molossidae), is the largest member of the insectivorous Microchiroptera and occurs in the Malayan Archipelago (Malaya, Sumatra, Java, Borneo). Hitherto only the peculiar earwig-like insects *Arixenia esau* and *A. jacobsoni* were known to live in association with this bat, and one would hardly expect hairless bats to be suitable hosts for ectoparasites. However, these bats are not completely hairless — there are very few hairs on the dorsum but more on the venter, although the hairs are too sparse and short to constitute fur.

Lord MEDWAY very kindly gave me the following information about the collecting of the bat-fleas: "So far I have collected fleas at Niah *only* from the naked bat. Other (furry) bats are parasitized largely by winged Diptera, which in their turn have not yet been found on *Cheiromeles*. The *Cheiromeles* roost is about 200 feet high in the roof of a very big chamber. Here the bats cluster tightly together, ousting other forms of bat and bird life. They are found nowhere else in this huge cave." The 23 fleas collected on 1.IV.1957 were all taken from one bat, a young non-flying individual which had fallen to the cave floor, and Lord MEDWAY remarks: "The naked bat does not willingly spend any time on the ground, but adults and young fall occasionally, and are then unable to rise again. Parasites and associated insects also fall from the roosting site, and live on the guano as best they can. These fleas may do the same; they are certainly widespread on the cave floor here, and, interestingly, are often found clustered on living *Arixenia*."

Droppings of bats on the floor of the roosts are an ideal medium for the development of bat-flea larvae. Therefore collecting of bat guano, in places where the abiotic factors are favourable, is often an easy and excellent source of obtaining bat-fleas, but when a roost is being used by members of more than one species of bat no reliable host-data can be given for the collected fleas.

Lt. Col. R. TRAUB, Commanding Officer, U. S. Army Medical Research Unit, Kuala Lumpur, Malaya, informed me that he had collected, in Malaya, two male bat-fleas of the genus *Lagaropsylla* from a hole in a tree frequented by *Cheiromeles torquatus*. He sent me these fleas for comparison with the new species from Sarawak and when his specimens proved to be identical with the Sarawak specimens, Col. TRAUB most generously allowed me to include the data of his two males in the description of the new species and presented one of them to the British Museum collection of fleas at Tring.



Figs. 1—3. *Lagaropsylla turba* sp. n. (paratypes, from Niah). 1. Preoral part of head, ♂; 2. The same, ♀; 3. Prosternosome, ♂. Fig. 4. *Lagaropsylla consularis* Smit, prosternosome, ♂ (holotype). Fig. 5. *L. turba* sp. n., aedeagus (paratype, Niah.).

*Lagaropsylla turba* sp. n.

(Figs. 1—3, 5—8)

TYPE MATERIAL: Male holotype, female allotype and six male and fifteen female paratypes collected from *Cheiromeles torquatus* in a cave at Niah, Sarawak, on 1.IV.1957; three female paratypes with same data but collected on 22.IV.1957; eight male and seven female paratypes with same data but collected on 20.XI.1957; two female paratypes collected from *Arixenia esau*, taken from the floor of a cave at Niah, on 4.XI.1957. All these specimens were collected by Lord MEDWAY and presented to the British Museum by Dr. T. HARRISON. Two male paratypes collected from a roosting place of *Cheiromeles torquatus* in a hollow tree near Ulu Gombak, Selangor, Malaya, on 21.I.1957, by Lt.Col. R. TRAUB; one of these two paratypes has been donated by Col. TRAUB to the British Museum collection of fleas at Tring, the other is in his own collection.

DIAGNOSIS: The new species is related to *Lagaropsylla signata* (Wahlgren), 1903 (from Java) and *L. micula* Jordan & Rothschild, 1921 (from Thailand and the southernmost part of Burma), but differs from these and all other species of the genus by (A) the virtual absence of (a) a pale submarginal band on the frons, (b) dorsal incrassations of occiput, nota and terga (tergal incrassations may be weakly developed) and (c) the 'step' in the ventral margin of the prosternosome; (B) the very large abdominal spiracular fossae; (C) more numerous pseudosetae under the mesonotal collar; (D) the presence in the female of a large, elongate, dark sclerite on each side of the ductus bursae; (E) the basal abdominal sternum bearing setae in the female while the cuticular ridges are vertical and not finger-print-like (more or less as in female *L. signata* and *L. micula*).

DESCRIPTION: Head rather short, especially in the male. Preoral tuber (Figs. 1, 2) very short and stout, pyriform to subglobular, with only a very short extension behind the ventral constriction. Hyaline submarginal frontal band virtually absent; above the mere indication of a band the frons is finely rugulose. Occiput dorsally with at most vestiges of some infernal incrassations.

Pronotum about twice as high as long dorsally, with two fully developed rows of setae and a ctenidium of 22 (in the male occasionally 23) not very sharply pointed spines. Ventral margin of prosternosome posteriorly not or only very slightly "stepped" (Fig. 3), while in all other members of the genus this margin normally shows a distinct step (Fig. 4). Mesonotum with four or five (seldom three) pseudosetae under the collar; in all other species of the genus there are three on each side, namely two subdorsal and one ventral, but in the new species there are also one or two about in the middle of the collar. Nota without any dorsal incrassations. Metanotum with two or three (rarely one or four) short and stout marginal spinelets. Setae on thorax, legs and abdomen more numerous than in other species of the genus.

Terga antero-dorsally with at most a very moderate incrassation in the male; the incrassation virtually absent in the female (Fig. 7). Numbers of subdorsal marginal spinelets on each side of terga I—IV in the male: 2, 1 or 2, 1 and 1 (occasionally 0) respectively; on terga I—III in the female: 2 or 3, 1 (occasionally 2) and 0 (occasionally 1). Cuticular ridges in upper half of basal abdominal ster-



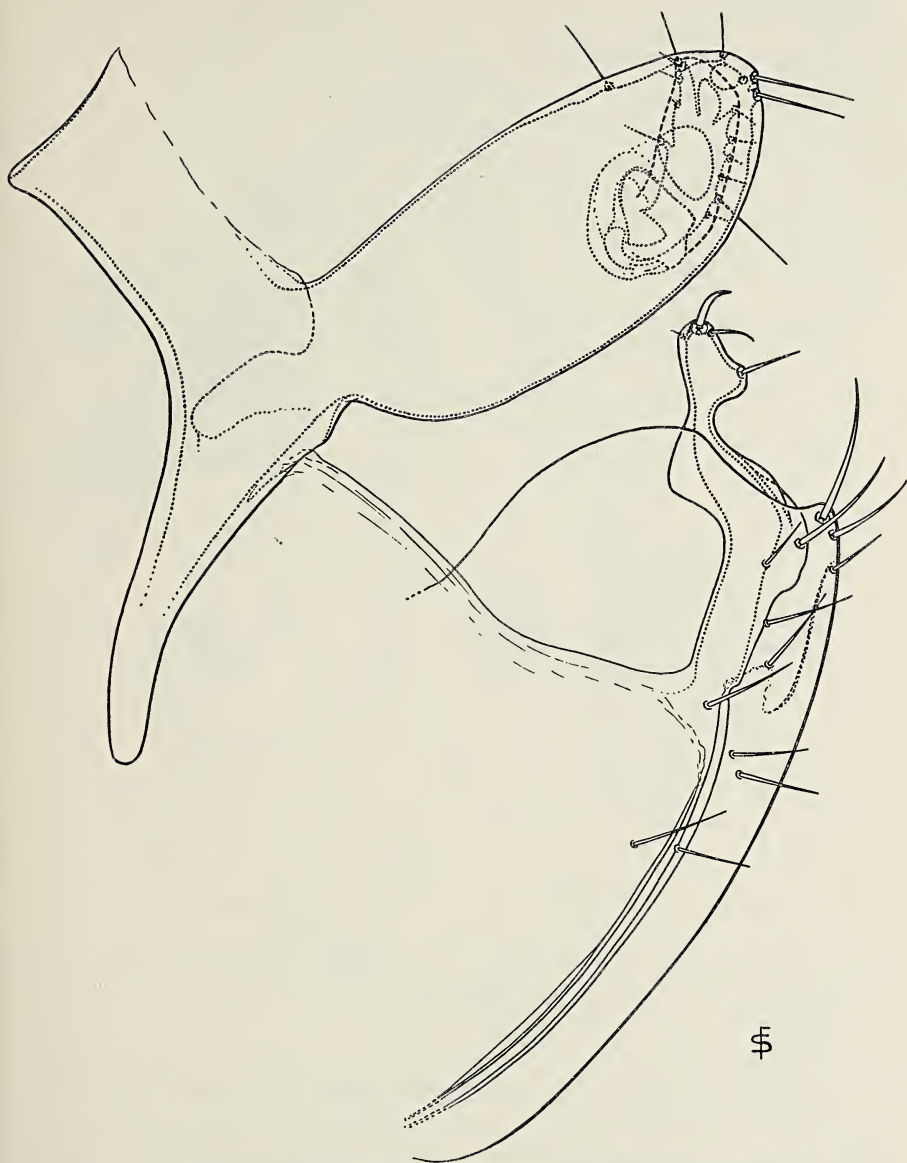


Fig. 6. *Lagaropsylla turba* sp. n., Clasper, sterna VIII and IX, holotype.

num (sternum II) all vertical in both sexes. This is the normal pattern in the males of all species of *Lagaropsylla* and was thus far known in the female sex only in *L. signata* and *L. micula*; in the females of all other species the ridges form a pattern reminiscent of a fingerprint. The female of the new species has a group of 5—8 (average 6) setae on sternum II (there is no patch of lateral setae in females of species in which the ridges of sternum II form a fingerprint pattern). Spiracular fossae of terga II—VII very large (Fig. 7).

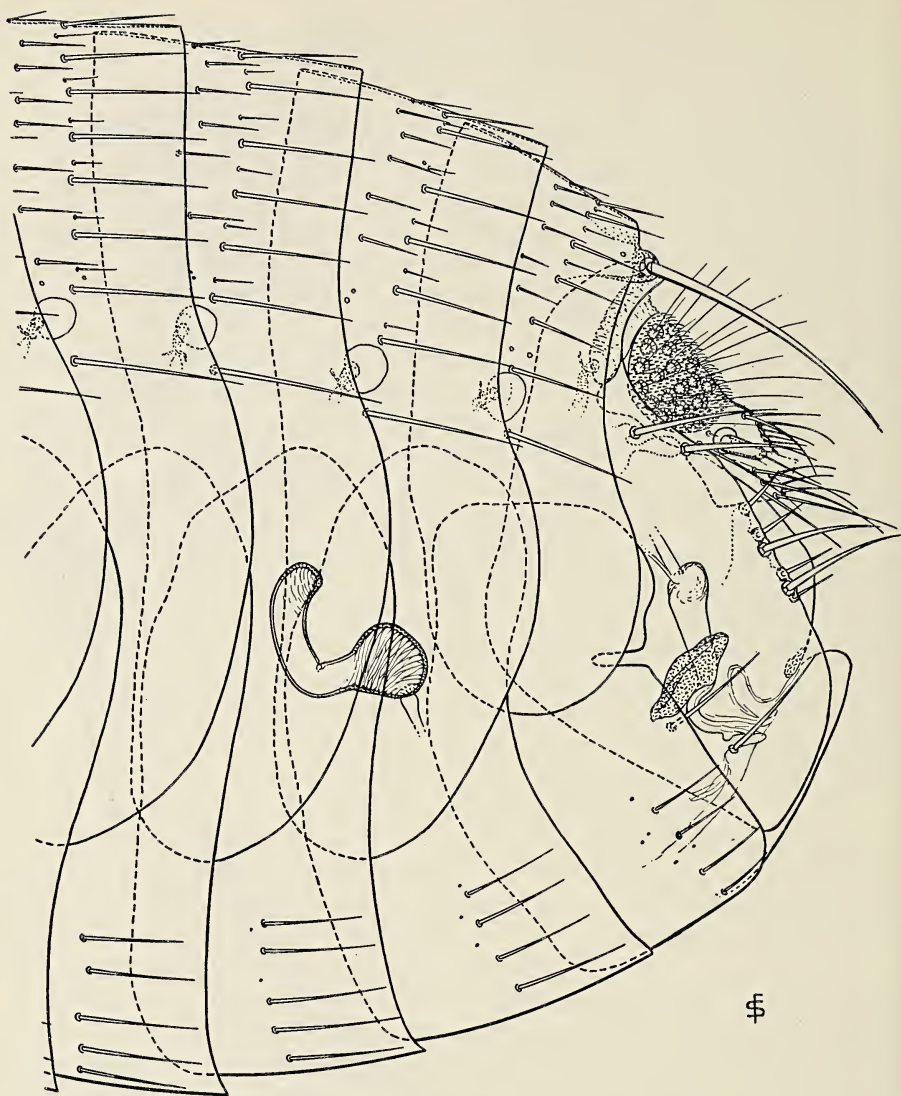


Fig. 7. *Lagaropsylla turba* sp. n., Terminal segments and genitalia, allotype.

*Male* (Figs. 5, 6): Sternum VIII as in Fig. 6. Anterior margins of apodeme of tergum IX and of manubrium forming a smooth curve (as in *L. signata* and *L. micula*); corpus of clasper just over twice as long as broad; movable process straight, with subparallel anterior and posterior margins and an obliquely truncate apex (Fig. 6). Apical setose part of sternum IX extremely short, bearing a spini-form seta at its tip; at the curve this sternum forms an irregularly shaped ventral flange and a rounded dorsal one (Fig. 6). The apodemal tendon of sternum IX makes about half a convolution. Aedeagus as in Fig. 5; dorsal wall of aedeagal inner tube beyond the large dorsal tooth a little shorter than the tooth; a separate triangular tooth-like sclerite is situated just above the apical part of the inner tube;

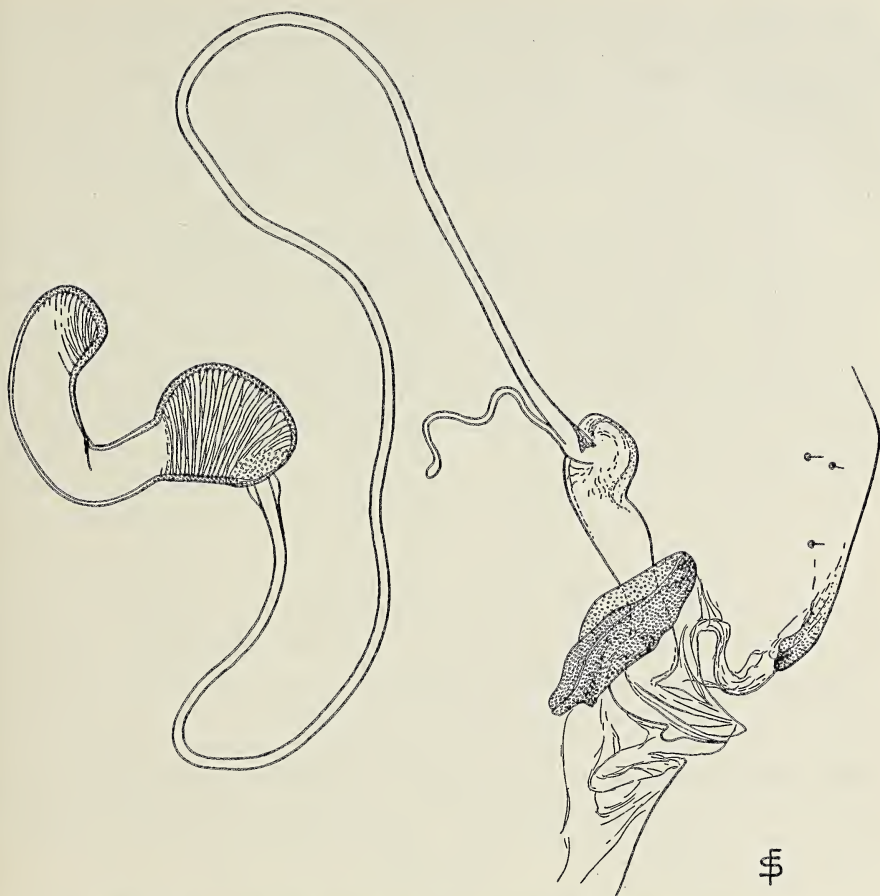


Fig. 8. *Lagaropsylla turba* sp. n., Genitalia of female paratype.

aedeagal crochet rectangular, rather broad, its dorso-posterior angle drawn out into a very short projection. The two tendons of the phallosome make about one convolution.

*Female* (Figs. 7, 8): Upper half of the posterior margin of sternum VII with a deep and very narrow sinus, below which the margin is straight, while above the sinus the margin forms an ill-developed rounded lobe; sternum VII with a row of three or four setae on each side (Fig. 7). Excluding marginal setae, tergum VIII with only two setae, placed just below the sensilium, on the dorsal half and two (rarely three) on the ventral lateral area (Fig. 7). On each side of the ductus bursae copulatricis is a large, elongate, dark sclerite (Figs. 7, 8); ductus bursae broad, ductus obturatus short and ductus spermathecae rather long (Fig. 8). Spermatheca of the usual *Lagaropsylla* type, see Figs. 7, 8.

*Length*: ♂  $1\frac{3}{4}$ —2 mm., ♀  $1\frac{1}{2}$ — $2\frac{1}{4}$  mm.

*REMARKS*: Except for *L. turba*, the association of which with *Cheiromeles* seems to be genuine, all species of *Lagaropsylla* are associated with the bat genus *Tadarida*; both *Tadarida* and *Cheiromeles* belong to the bat-family Molossidae.



Although *L. turba* differs considerably in various respects from all other known species of the genus, the differences do not justify a separation of the new species in a subgenus of its own. Any generic subdivision — if ever necessary — should await the discovery of yet other hitherto unknown species; only five species of *Lagaropsylla* were known until about a year ago, since when eight new species have been described. For the sake of convenience the species of *Lagaropsylla* can be divided into two groups:

(a) ♂ With a short spiniform seta at the tip of sternum IX; anterior margins of apodeme of tergum IX and of manubrium forming a smooth curve. ♀ Sternum II with a patch of lateral setae and vertical cuticular ridges . . . *signata*-group

Here belong *L. signata* (Wahlgren), *L. micula* J. & R. and *L. turba* Smit.

(b) ♂ None of the apical setae of sternum IX spiniform; anterior margins of apodeme of tergum IX and of manubrium forming an angle (which may be very obtuse). ♀ Sternum II without lateral setae and the cuticular ridges forming a fingerprint-like pattern . . . *incerta*-group

Here belong *L. incerta* (Roths.), *L. putilla* J. & R., *L. mera* J. & R., *L. idae* Smit, *L. consularis* Smit, *L. obliqua* Smit, *L. lipsi* Smit, *L. hoogstraali* Smit, *L. anciauxi* Smit and *L. leleupi* Smit.

I wish to draw attention to the fact that in 16 out of the 28 available females of *L. turba* the ventral portion of tergum VII overlaps the dorsal part of sternum VII (Fig. 7); in some of the remaining 12 females the reverse is true (the normal arrangement), whilst in the others the condition could not be made out with certainty. It has always been assumed that the dorsal part of sternum VII invariably overlaps the ventral part of tergum VII in female fleas, but we now know that the reverse condition (which is the normal one in abdominal segments II—VI) may occur in certain specimens. I have also seen the reversed arrangement in the holotype of *Stenischia mirabilis* (Fam. Hystrichopsyllidae) and in females of several other species.

## De vliegtijd van *Maniola jurtina* L.

door

M. P. PEERDEMAN

*Maniola jurtina* heeft in het seizoen 1958 mijn bijzondere belangstelling gehad in verband met de in de soort voorkomende vormen. Einde maart ben ik reeds begonnen een mij bekende vliegplaats, namelijk het stuk spoordijk, liggende vóór de Westlandgracht te Amsterdam, te inspecteren. Dit is een goede plaats, omdat *jurtina* er altijd overvloedig vliegt en de temperatuur meestal aan één zijde van de dijk wel goed is. Omdat het dicht bij mijn woning is, was ik in staat de dijk veelvuldig te bezoeken met hoogstens enkele dagen onderbreking. Ik heb dan ook duizenden exemplaren onderzocht en niet alleen van genoemde dijk, doch ook van de Strabrechtse heide en uit de Amsterdamse Waterleidingduinen. In totaal heb ik 87 stuks geprepareerd.

De eerste *jurtina*'s werden echter pas op 17 juni gezien. Hierna volgt een lijstje van vangdata en aantallen. Deze data en aantallen zijn genomen uit de