

PARASITIC MITES OF SURINAM
XXX. NEW OBSERVATIONS ON THE GENERA *CHIRNYSSOIDES*
AND *NOTOEDRES* FROM BATS ⁽¹⁾
(SARCOPTIFORMES: SARCOPTIDAE)

by A. FAIN (2) and F.S. LUKOSCHUS (3)

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In a previous paper (FAIN and LUKOSCHUS, 1971) we have studied a collection of Sarcoptidae collected on various bats of Surinam.

New investigations conducted by the junior author during the year 1971 in the same country allowed us to discover on these hosts numerous new specimens of Sarcopitids.

This important material contains four new species and two new subspecies of *Chirnyssoides* and one new species and one new subspecies of *Notoedres* (*Bakeracarus*). Moreover it gives us the opportunity to complete or correct our previous observations on some of the known species in these genera. It has led us to place *Chirnyssoides carolliae* FAIN 1962 in synonymy of *Chirnyssoides amazonae* FAIN, 1959 and to consider provisionally *Chirnyssoides* (*Carollicoptes*) *zanderyensis* FAIN and LUKOSCHUS, 1971 as a species inquirenda, probably synonym of *Ch. (C.) surinamensis* FAIN and LUKOSCHUS, 1971.

The types of the new species and specimens of the known species are deposited in the Rijksmuseum van Natuurlijke Historie in Leiden, one paratype in the National Collection of Surinam, other paratypes in the collections of the authors.

FAMILY SARCOPTIDAE MURRAY, 1877
SUBFAMILY NOTOEDRINAE FAIN, 1968

Genus *Chirnyssoides* FAIN, 1959
Subgenus *Chirnyssoides* FAIN, 1959

If one includes the four new species described hereunder, the subgenus *Chirnyssoides* comprises a total of 8 species. Most of these species are morphologically closely allied and their identification requires generally the examination of the nymphal or even the larval stages.

- (1) Investigations conducted by Dr. F. LUKOSCHUS and Dr. N.J.J. KOK, Department of Zoology, Catholic University of Nijmegen, Nederland, with the aid of Grant W 83-14 by Netherlands Foundation for the Advancement of Tropical Research (WOTRO).
- (2) Professor of Parasitology, Institute of Tropical Medicine, Antwerp, Belgium.
- (3) Wetenschappelijk hoofdamtenaar, Department of Zoology, University of Nijmegen, Nederland.

In order to make this identification more easy we give here a key of the immature stages and of the adult females and males.

KEY TO THE GENUS *Chirnyssoides*
 Subgenus *Chirnyssoides*

Larvae

(N.B. The larva of *Ch. brasiliensis* is unknown)

- | | |
|---|---|
| 1. With 6 pairs of perianal setae | 2 |
| With 4 pairs of perianal setae | 4 |
| 2. Perianal setae strong and from 19 to 39 μ long . . . | <i>Ch. vampyrops</i> spec. nov. |
| Perianal setae not longer than 15 μ | 3 |
| 3. Perianal setae from 3 to 9 μ long. Basal prolongation of epimera III branched | <i>Ch. amazonae</i> FAIN, 1959 (= <i>Ch. carolliae</i> FAIN, 1962) |
| Perianal setae from 7 to 15 μ long. Basal prolongation of epimera III not branched | <i>Ch. caparti</i> FAIN, 1959 |
| 4. Basal prolongation of epimera III branched | <i>Ch. parvisuctus</i> spec. nov. and <i>Ch. stenoderma</i> spec. nov. |
| Basal prolongation of epimera III not branched | 5 |
| 5. Perianal setae from 3 to 5 μ long | <i>Ch. venezuelae</i> FAIN, 1959 |
| Perianal setae from 6 to 15 μ long | <i>Ch. phyllostomus</i> spec. nov. |

Protonymphs

(N.B. The protonymphs of *S. stenoderma* and *S. phyllostomus* are unknown)

- | | |
|--|---|
| 1. Perianal area with 8 pairs of setae | 2 |
| Perianal area with 5 or 6 pairs of setae | 6 |

2. Perianal setae strong and long (27 to 42 μ) and spatulate apically. Basal prolongation of epimera III not branched *Ch. vampyrops* spec. nov.
- Perianal setae thinner and shorter (maximum 30 μ) and attenuate apically 3
3. Basal prolongation of epimera III branched. Perianal setae 6 to 20 μ long, finely attenuate apically *Ch. amazonae* FAIN, 1959 (= *Ch. carolliae* FAIN, 1962)
- Basal prolongation of epimera III not branched. Perianal setae 12 to 30 μ long 4
4. With at least 20 verrucae in front of anus. Perianal setae from 15 to 30 μ long 5
- Without a verrucous area or with at maximum 6 verrucae in front of anus. Perianal setae from 12 to 18 μ long *Ch. caparti cinereus* ssp. n.
5. The verrucous area is divided by a longitudinal septum into two paramedian fields and bears on total 50-70 verrucae *Ch. caparti caparti* FAIN, 1959
- The verrucous area is either formed of 2 small paramedian fields with on total 25-30 verrucae or of one median field bearing about 70 verrucae *Ch. caparti urodermae* ssp. n.
6. With 6 pairs of perianal setae 7
- With 5 pairs of perianal setae 8
7. Basal prolongation of epimera III branched. Perianal setae from 8 to 13 μ long *Ch. parvisuctus* spec. nov.
- Basal prolongation of epimera III not branched. Perianal setae very short (less than 8 μ) *Ch. sp.* (FAIN, 1959)

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8. Perianal setae from 2 to 9 μ long. Epimera IV 30 μ long *Ch. venezuelae*
FAIN, 1959
- Perianal setae from 12 to 14 μ long. Epimera IV 36
to 38 μ long *Ch. brasiliensis*
FAIN, 1959

Tritonymphs

1. With 8 pairs of perianal setae 2
With 5 or 6 pairs of perianal setae 5
2. Basal prolongation of epimera III either forked or with
an anterior branch 3
Basal prolongation of epimera III without fork or branch 4
3. The posterior pair of perianal setae very thin and short
(1-2 μ) ; other perianal setae 15 to 18 μ long, cylindrical.
Basal prolongation of epimera III with a short and
straight branch. Tarsal suckers I-II very small *Ch. parvisuctus*
spec. nov.
- All the perianal setae from 15 to 28 μ long. The two or
three posterior pairs have an inflated base. All these
setae are very finely attenuated apically. Epimera III
with a long, curved branch on its basal prolongation.
Tarsal suckers I-II normally developed *Ch. amazonae*
FAIN, 1959
(= *Ch. carolliae*
FAIN, 1962)
4. Perianal setae strong and long (40 to 58 μ) and spatulate
apically *Ch. vampyrops*
spec. nov.
- Perianal setae from 18 to 30 μ long, attenuated apically *Ch. caparti*
FAIN, 1959
5. With 5 pairs of perianal setae 6
With 6 pairs of perianal setae 7
- 6 Perianal setae from 2 to 12 μ long *Ch. venezuelae*
FAIN, 1959

- Perianal setae from 2 to 21 μ long *Ch. phyllostomus*
spec. nov.
7. Basal prolongation of epimera III branched. Setae *a i*
very short (1 to 2 μ) and thin ; other perianal setae
15-20 μ long *Ch. stenoderma*
spec. nov.
- Without a branch on the basal prolongation of epimera
III. Setae *a i* from 10 to 14 μ long ; other perianal
setae from 2 μ to 18 μ long *Ch. brasiliensis*
FAIN, 1959

Females

1. The *d I* setae are strong cylindrical rods from 27 to 30 μ
long 2
The *d I* setae are thin and not longer than 8 μ 3
2. Ovigerous female less than 300 μ long and 250 μ wide.
Perianal setae from 15 to 25 μ long. The setae *sc i* and
l I are 10 and 9 μ long *Ch. venezuelae*
FAIN, 1959
- Ovigerous female 405 μ long and 375 μ wide. Perianal
setae from 21 to 36 μ long. The setae *sc e* and *l I* are
3 μ long *Ch. phyllostomus*
spec. nov.
3. Basal prolongation of epimera III either forked or with
an anterior branch 4
Basal prolongation of epimera III without fork or an-
terior branch 6
4. Suckers of tarsi I and II very small (4 to 5 μ in diameter)
and carried on a very short stalk. Perianal setae 21
to 30 μ long *Ch. parvisuctus*
spec. nov.
- Suckers of tarsi I-II normally developed (diameter 13-15
 μ) and with longer stalks (8-9 μ). Perianal setae from
25 to 40 μ long 5

5. Basal prolongation of epimera III with a short an straight branch. Epimera II and IV respectively 63 and 56-69 μ long. Body of the female (non ovigerous) very short. Perianal setae from 25 to 33 μ long. There are approximately 15 striae between *d 1* and *d 3* *Ch. stenoderma* spec. nov.
- Basal prolongation of epimera III long and curved. Epimerae II and IV 75 μ and 42 μ long. Perianal setae from 30 to 40 μ long. Body of the gravid female strongly elongate. There are approximately 25-30 μ striae between *d 1* and *d 3* *Ch. amazonae* FAIN, 1959 (= *Ch. carolliae* FAIN, 1962)
6. Perianal setae spatulate apically and 36-60 μ long. Epimerae II and IV respectively 75 and 63 μ long. There are 10-12 striae between *d 1* and *d 3* *Ch. vampyrops* spec. nov.
- Perianal setae not spatulate but finely attenuate apically. Striae more numerous between *d 1* and *d 3* 7
7. Epimera IV relatively very long, approximately as long (75 μ) as the epimera II (83 μ). Perianal setae 25 to 50 μ , subcylindrical, not inflated basally. With 17-19 striae between *d 1* and *d 3* *Ch. brasiliensis* FAIN, 1959
- Epimera IV relatively shorter, maximum 53 μ long (for epimera II 78 to 87 μ long). Perianal setae from 24 to 54 μ long, the posterior setae slightly inflated at their base *Ch. caparti* FAIN, 1959 (8)
8. Perianal setae 30-54 μ long. Epimerae II and IV respectively 84-87 μ and 48-53 μ long. There are 16-19 striae between *d 1* and *d 3* *Ch. caparti caparti* FAIN, 1959

Perianal setae 25 to 42 μ long. Epimerae II and IV 87 and 51 μ long. With 20 striae between *d 1* and *d 3* *Ch. caparti urodermae* spec. nov.

Perianal setae 24-30 μ long. Epimerae II and IV 78 and 45 μ long. With 13-17 striae between *d 1* and *d 3* *Ch. caparti cinereus* spec. nov.

Males

(N.B. 1. The males of *Ch. phyllostomus*, *Ch. parvisuctus* and *Ch. vampyrops* are unknown)

2. The male of *Ch. stenoderma* is known only from a very poorly sclerotized specimen

- | | |
|--|---|
| 1. The setae <i>h</i> are strong spines, 25-30 μ long | 2 |
| The setae <i>h</i> are very thin and short (6 μ) | 3 |
| 2. Aedeagus long (75 μ) and narrow (6-7 μ) | <i>Ch. caparti</i> FAIN, 1959 |
| Aedeagus shorter (50 μ long) and thicker (10 μ) | <i>Ch. brasiliensis</i> FAIN, 1959 |
| 3. Aedeagus inflated in its medium part and with very broad posterior arms | <i>Ch. amazonae</i> FAIN, 1959 (= <i>Ch. carolliae</i> FAIN, 1962) |
| Aedeagus parallel-sided and with smaller posterior arms | <i>Ch. venezuelae</i> FAIN, 1959 |

STUDY OF THE SPECIES

1. *Chirnyssoides (Chirnyssoides) caparti* FAIN, 1959
Chirnyssoides caparti FAIN, 1959 : 4, 1962 : 98
(Fig. 1, 2, 3, 15, 22, 36)

The typical specimens of this species have been found on *Artibeus jamaicensis* from Brazil.

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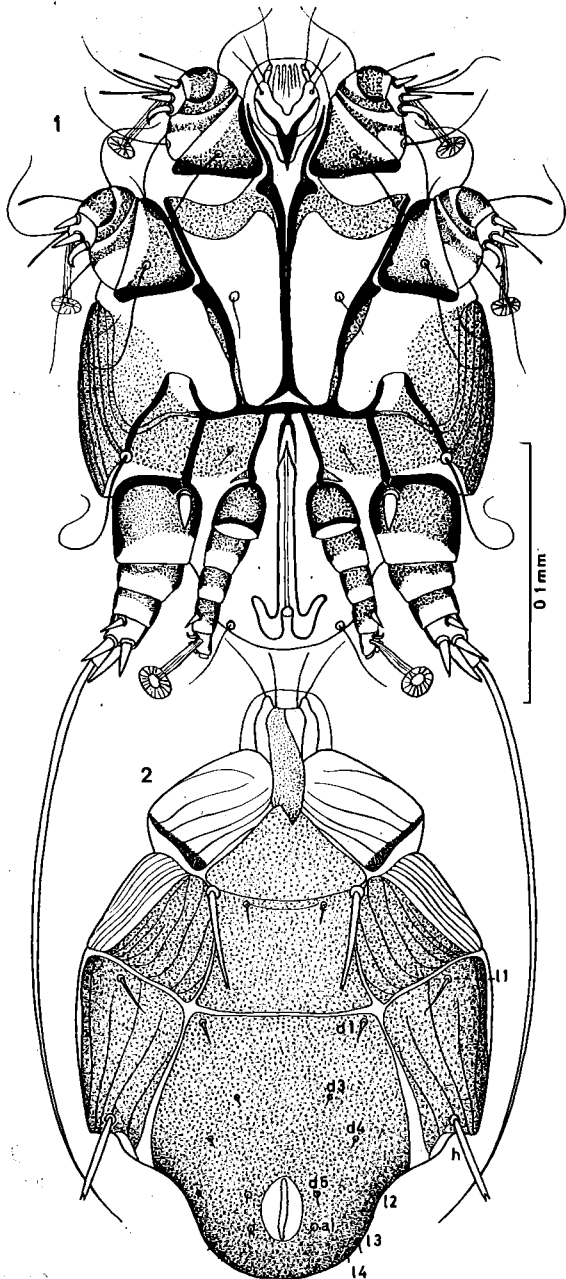


Fig. 1-2 — *Chirnyssoides* (*Ch.*) *caparti caparti* FAIN. Male, holotype, in ventral (fig. 1) and dorsal view (fig. 2).

One of us (F.L.) has found it recently on *Artibeus lituratus* in Surinam, from the following localities : Santo Boma, 6. VIII. 1971 (bat n° 173 : 3 females, 1 male, eggs, larva) ; Weg naar Zee, 10 and 11. IX. 1971 (bats n°s 445 and 461 : 3 females, eggs, larva) ; Wageningen, 26. IX. 71 (bats n°s 560, 566 and 568 : 10 females, 1 male, nymphs, eggs, larva) ; Brownsberg, 21-22. X. 71 (bats n°s 733, 738, 761, 762, 763, 768 : 5 females, 2 males, 4 nymphs, eggs).

Chirnyssoides (Chirnyssoides) caparti subsp. *urodermae* subsp. nov.
(Fig. 19, 25)

This subspecies differs from the typical form mainly by the structure of the preanal verrucous area of the protonymph. In this new subspecies the protonymphs are of two different types. In one type the verrucous area resembles that of the typical form except that there is no longitudinal median septum as in the latter. The total number of verrucae in this area is about 70. In the typical form the verrucae are situated into two fields of 25 to 35 verrucae each and separate by a median sclerotized septum. The second type of protonymph has only a few number of verrucae (about 2 x 10) situated just in front of the anus. The first type of protonymph is devoid of bursa copulatrix and is probably a male protonymph while the second type has a bursa (= ? female protonymph).

In all the stages the basal prolongation of epimera III is not branched.

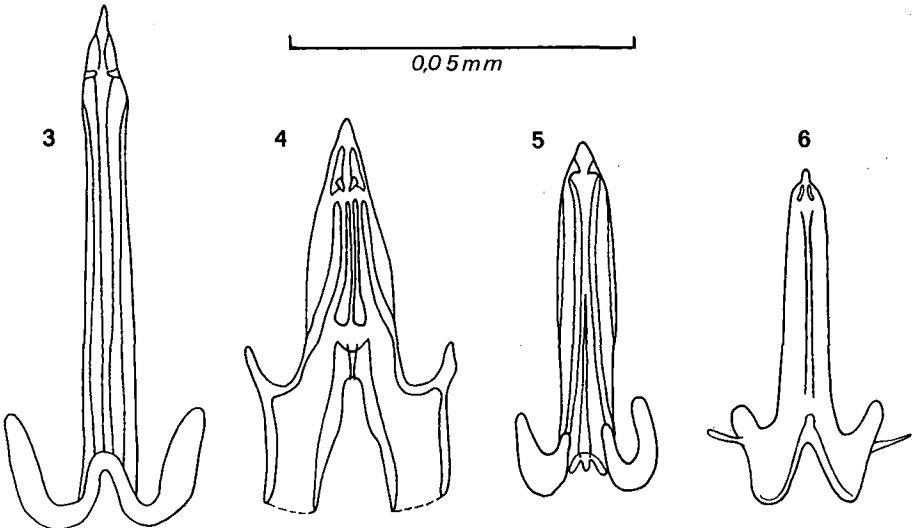


Fig. 3-6 — Aedeagus of the males of *Chirnyssoides (Ch.) caparti* (fig. 3) ; *Ch. (Ch.) amazonae* (fig. 4) ; *Ch. (Ch.) brasiliensis* (fig. 5) and *Ch. (Ch.) venezuelae* (fig. 6).

FEMALE : Same aspect as in *Ch. caparti* except that the perianal setae are a little thinner and shorter (from 25 to 42 μ). Epimera II and IV respectively 87 μ and 51 μ long. Body length 460 μ (gnathosoma included), width 370 μ .

TRITONYMPH : The only tritonymph we have contains a young male incompletely developed. It is 315 μ long and 305 μ wide. The 8 pairs of perianal setae are 30 to 42 μ long ; they are subcylindrical, moderately thick and have a slightly expanded base. Epimera II and IV respectively 57 and 60 μ long.

PROTONYMPH of type A (? male protonymph) : This protonymph is devoid of bursa copulatrix. It measures 265 μ in length and 246 μ in width. The verrucous area in front of anus contains approximately 65-70 verrucae. These verrucae are more elongate than in the typical form. This area is not divided in two parts by longitudinal septum. There are 8 pairs of perianal setae, from 18 tot 30 μ long. These setae are in the shape of stiff rods thinner in the typical form. Epimera II and IV 45 μ long.

PROTONYMPH of type B (? female protonymph) (Holotype) : This protonymph has a well-developed bursa consisting into a long canal and a copulatory papilla. Body 276 μ long and 255 μ wide. The preanal verrucae form two small groups at each side of the midline, their total number is circa 20. Perianal setae as in the protonymph type A.

LARVA : resembles the larva of *Ch. caparti*. Length 210 μ , width 180 μ . The 6 pairs of perianal setae are fine and stiff rods, 12 to 15 μ long.

Host and localities :

Uroderma bilobatum (female), from Weg naar Zee on 10.IX.1971 (male bats n^o 337 and 437 : 2 females paratypes, eggs) and 11.IX.1971 (female bat n^o 458 : 7 females, 1 tritonymph, 6 protonymphs, 1 larva, all paratypes). The holotype is a protonymph of the B type.

Chirnyssoides caparti subsp. *cinereus* subsp. nov.

(Fig. 20)

This subspecies differs from the two other subspecies mainly by the small number of verrucae in front of anus or even the complete absence of verrucae on the dorsum of the protonymph (see the key).

FEMALE : The body is 405 μ long and 330 μ wide (in lateral view). Perianal setae subcylindrical, 24 to 30 μ long. The *d I* setae are 3-4 μ long. Tarsal suckers well-developed. Epimera II and IV respectively 78 and 45 μ long. Basal prolongation of epimera III not branched. Other characters as in *Ch. caparti caparti*.

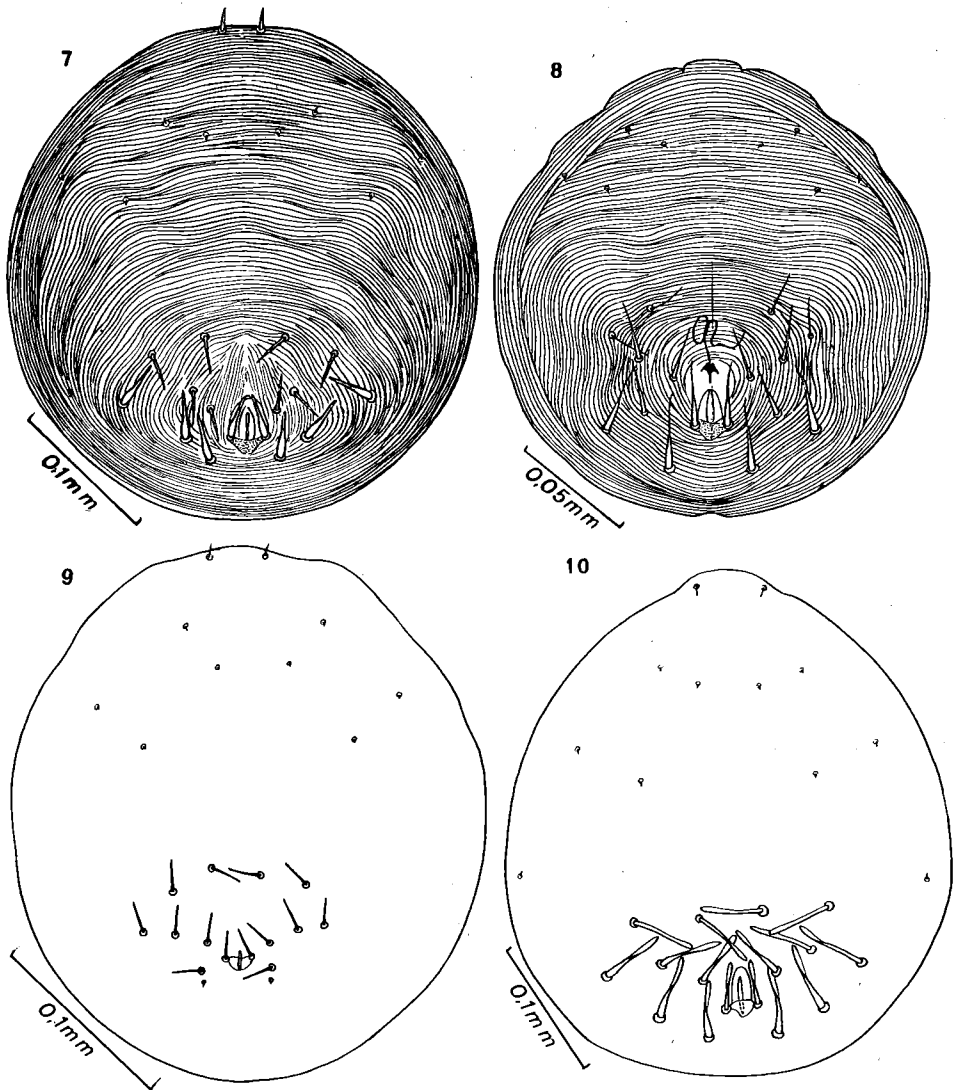


Fig. 7-10 — Dorsal view of the tritonymph of *Chirnyssoides* (*Ch.*) *caparti* (fig. 7); *Ch.* (*Ch.*) *amazonae* (fig. 8); *Ch.* (*Ch.*) *parvisuctus* (fig. 9) and *Ch.* (*Ch.*) *vampyrops* (fig. 10).

TRITONYMPH: 280 μ long and 255 μ wide. Two other specimens measure 230 x 220 μ and 240 x 230 μ . The 8 pairs of perianal setae are rather thin, subcylindrical, some have their base slightly inflated; they are from 19 to 27 μ long.

PROTONYMPH (holotype) : 250 μ long and 228 μ wide. The bursa is present. Verrucae very few in number (4 to 6) or absent on dorsum. The 8 pairs of perianal setae are 10-18 μ long ; they are in the shape of stiff rods with base slightly inflated.

LARVA : 210 μ long and 180 μ wide. There are 6 pairs of perianal setae very thin and rodlike, 7 to 12 μ long.

Host and locality :

Artibeus cinereus, from Brownsberg, Surinam, 21.X.1971 (male bat n° 725 : 3 females, 9 tritonymphs, 3 protonymphs, 1 larva, all paratypes, except one protonymph which is the holotype).

2. *Chirnyssoides (Chirnyssoides) amazonae* FAIN, 1959

Chirnyssoides amazonae FAIN, 1959 : 14

Chirnyssoides carolliae FAIN, 1962 : 400 ; FAIN et LUKOSCHUS, 1971 :
298 Syn. Nov.

This species has been described from specimens collected on *Hemiderma brevicauda*, from Brazil.

The holotype of this species is a young female. This specimen had been dissected from its nymphal skin in which it was enclosed. This nymphal skin exhibited the characters of a protonymph. In spite of the fact that it was developing into a protonymph and not in a tritonymph as usual, we have surmized that this specimen was really a female mainly because it presented a well-developed bursa copulatrix (FAIN, 1959, p. 14).

Since this description we have examined large series of South American sarcoptids, mainly of the genus *Chirnyssoides* and this study provides us a better experience of this group of mites. Among other new features, we discovered that the bursa copulatrix is frequently present in the tritonymph, and even but more rarely, in the protonymph and in the larva. We also observed that a protonymph always gives raise to a tritonymph and never a female (see FAIN and LUKOSCHUS, 1971 : 305). We think therefore that the specimen described as the "holotype female" of *Ch. amazonae* is really a tritonymph.

Specimens not distinguishable from this tritonymph have been found on bats which harboured adult females of *Chirnyssoides carolliae* FAIN, 1962. We think therefore that these two species are synonyms.

It is to be noted that in the female and in the immatures of *Ch. carolliae* the epimera III presents an external basal prolongation that is branched near its apex. This character is also present in the female and in the immatures of *Ch. amazonae*

The female and the larvae of *Ch. amazonae* have been fully described and figured under the name "*Ch. carolliae*" by FAIN (1962). (Fig. 26, 39)

The tritonymph (considered as the female) and the protonymph have been described in a previous paper (FAIN, 1959). (Fig. 8, 16)

The male was still unknown. We describe here a male collected on *Carollia perspicillata* from Brownsberg, Surinam.

MALE (allotype) (Fig. 4) : Total length (gnathosoma included) 198 μ , maximum width 146 μ . This specimen differs from the male of *Ch. caparti* by the following characters : posterior legs shorter, legs IV with much larger suckers, the *h* seta is very thin and very short (in *caparti* it is a strong spine), the male organ is conical and its posterior extremity is forked, its total length (fork included) is 54 μ , its maximum width 15 μ . This male has been extracted from a tritonymphal skin which corresponds morphologically with that of *Ch. amazonae*.

Hosts and localities :

1. *Carollia perspicillata* from several localities in Surinam : Gros Gold Mine, 18.VIII.1971 (bat n° 304 : 2 females, larva) ; Helena-Christina 31.VIII.1971 (bat n° 385 : 2 females) ; Moeroekreek, 15-16.IX.1971 (bats n° 471, 478, 482, 483, 484 : 20 females, nymphs, larvae) ; Brownsberg, 18-20.X.1971 (bats n° 703, 714, 718 : 12 females, 1 male, nymphs, larvae).

Some of these bats were also parasitized by specimens of *Chirnyssoides (Carollicoptes) zanderyensis* and *Ch. (C.) surinamensis* (females, males and immatures).

The specimens recorded in our previous papers under the name *Chirnyssoides carolliae* are in fact *Ch. amazonae*.

2. *Glossophaga soricina*, from two localities in Surinam : Gros Gold Mine, 4.IX.1971 (female bat n° 394 : larvae and eggs) ; Wageningen, 25.IX.1971 (male bat n° 551 : 2 females, larvae, eggs).

3. *Chirnyssoides (Chirnyssoides) brasiliensis* FAIN, 1959

Chirnyssoides brasiliensis FAIN, 1959 : 11

(Fig. 5, 11, 17, 41)

This species has been described from *Sturnira lilium*, from Brazil.

In Surinam we found this species on the same host, from Brownsberg, at the following dates : 18, 21 and 22.X.1971 (bats n° 702, 729, 730, 752 and 753 : 6 females, 1 male, 2 nymphs enclosed in a tritonymph, nymphs).

The protonymph and the tritonymph of *Ch. brasiliensis* bear respectively 5

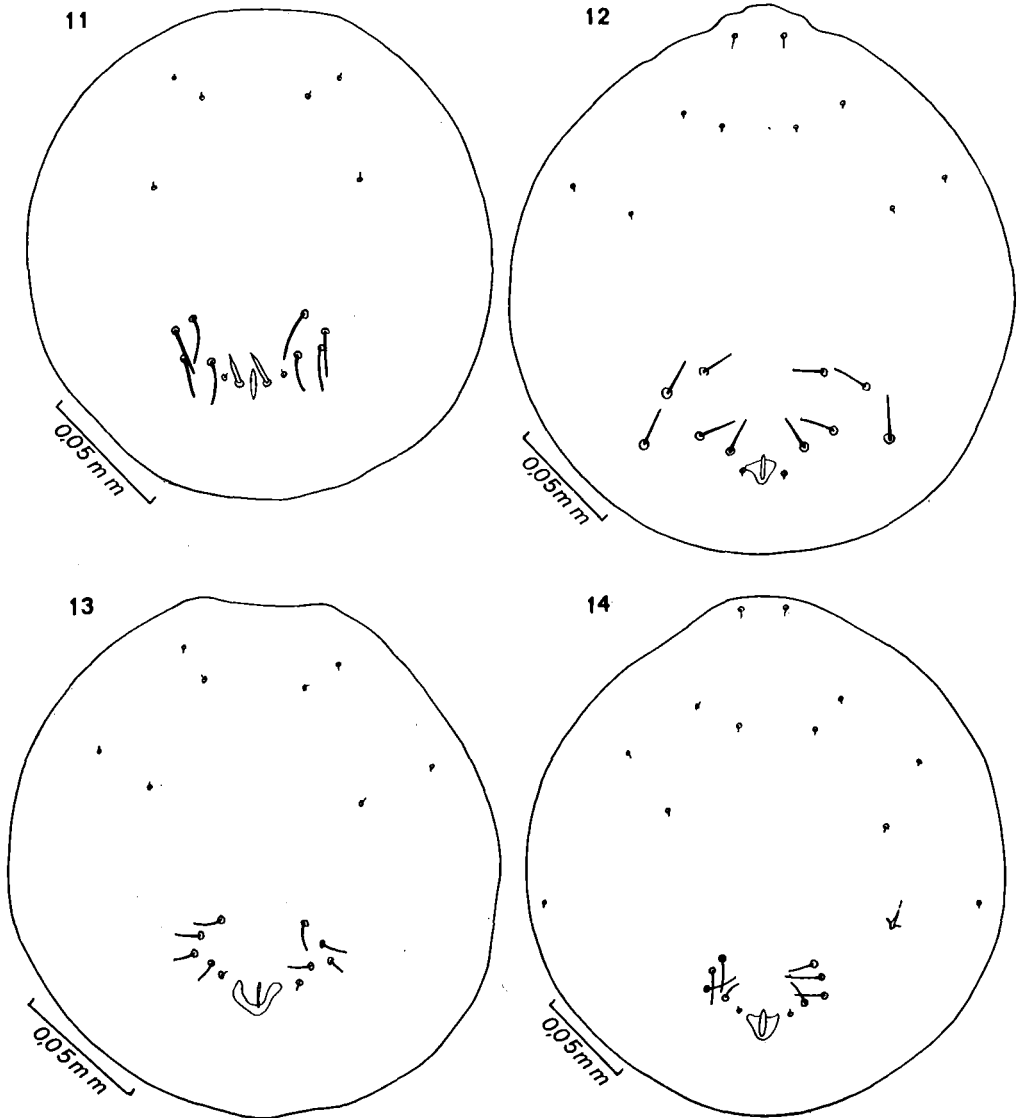


Fig. 11-14 — Dorsal view of the tritonymph of *Chirnyssoides* (*Ch.*) *brasiliensis* (fig. 11); *Ch.* (*Ch.*) *stenoderma* (fig. 12); *Ch.* (*Ch.*) *venezuelae* (fig. 13) and *Ch.* (*Ch.*) *phyllostomus* (fig. 14).

pairs and 6 pairs of perianal setae and not 4 and 5 as we have assumed previously. One of these pairs of setae is very thin and short and it had been overlooked in the original description. The larva of this species is still unknown.

4. *Chirnyssoides (Chirnyssoides) venezuelae* FAIN, 1959*Chirnyssoides venezuelae* FAIN, 1959 : 10

(Fig. 6, 13, 27, 38)

This species has been described from *Tonatia venezuelae*, from Venezuela.

In Surinam we found it on two different species of *Tonatia* :

1. *Tonatia sylvicola*, Brownsberg, 20 and 21.X.1971 (female bats n^{os} 719 and 720 : 2 females, one nymph, larvae, eggs).
2. *Tonatia* sp., Wageningen, 23.IX.1971 (bat n^o 517 : 1 female, 3 males, 3 nymphs).

This species is well characterized in the female by the relative great development of the *d 1* setae which are in the shape of stiff and straight rods, 27 μ long. The *sc e* and the *l 1* are longer (respectively 10 and 9 μ) than in the other species of the genus. The perianal setae are thick and rather short.

The male was still unknown. We describe it hereunder.

MALE : length 162 μ (gnathosoma included) width 120 μ . General aspect as in *Ch. amazonae*, the *h* setae are also very thin and short, the main difference consists in the shape of the male organ which is narrower and shorter ; the total length, posterior fork included, is 40 μ . Moreover the suckers of tarsi IV are smaller.

5. *Chirnyssoides (Chirnyssoides) phyllostomus* spec. nov.

(Fig. 14, 29, 31, 42)

The female of this species presents a pair of long and strong *d 1* setae as in *Ch. venezuelae*. It differs from this species by the following characters :

In the female : the body is larger. A fully developed ovigerous female of *Ch. venezuelae* is 290 μ long and 240 μ wide. In the new species a non-ovigerous female is 390 μ long and 345 μ wide. The perianal setae are rather thick and 21 to 36 μ long. The number of cuticular striae between *d 1* and *d 3* is 22. The setae *sc i* and *l 1* are 3 μ long (10 and 9 μ in *venezuelae*). The epimera II and IV are longer, 69 and 51 μ , for 57 and 42 μ in *venezuelae*.

In the tritonymph : the 5 pairs of perianal setae are longer : 19 to 21 μ for the 4 external pairs and 1 μ for the internal pair.

In the larvae : the 4 pairs of perianal setae are longer : 6 to 15 μ , for 3 to 5 μ in *venezuelae*).

FEMALE : holotype (not ovigerous) 390 μ long, 345 μ wide. An ovigerous female is 405 μ long and 375 μ wide.

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TRITONYMPH : 305 μ long and 240 μ wide.

Host and locality:

Phyllostomus hastatus, from Moeroekreek, 17.IX.1971. Female bat n° 495 :
holotype and 5 paratypes females, tritonymphs, larvae.

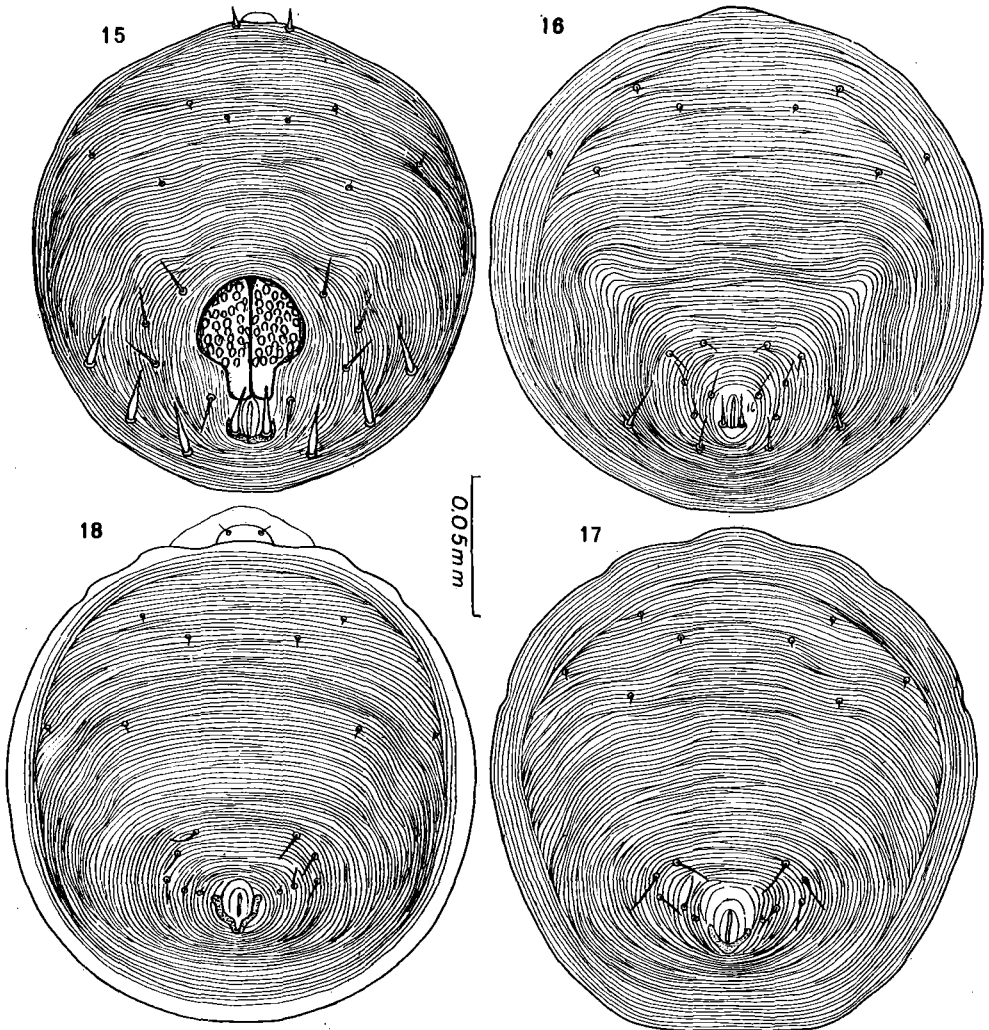


Fig. 15-18 — Dorsal view of the protonymphs of *Chirnyssoides* (*Ch.*) *caparti caparti* (fig. 15); *Ch.* (*Ch.*) *amazonae* (fig. 16); *Ch.* (*Ch.*) *brasiliensis* (fig. 17); *Ch.* (*Ch.*) *venezuelae* (fig. 18) (modified from FAIN, 1959).

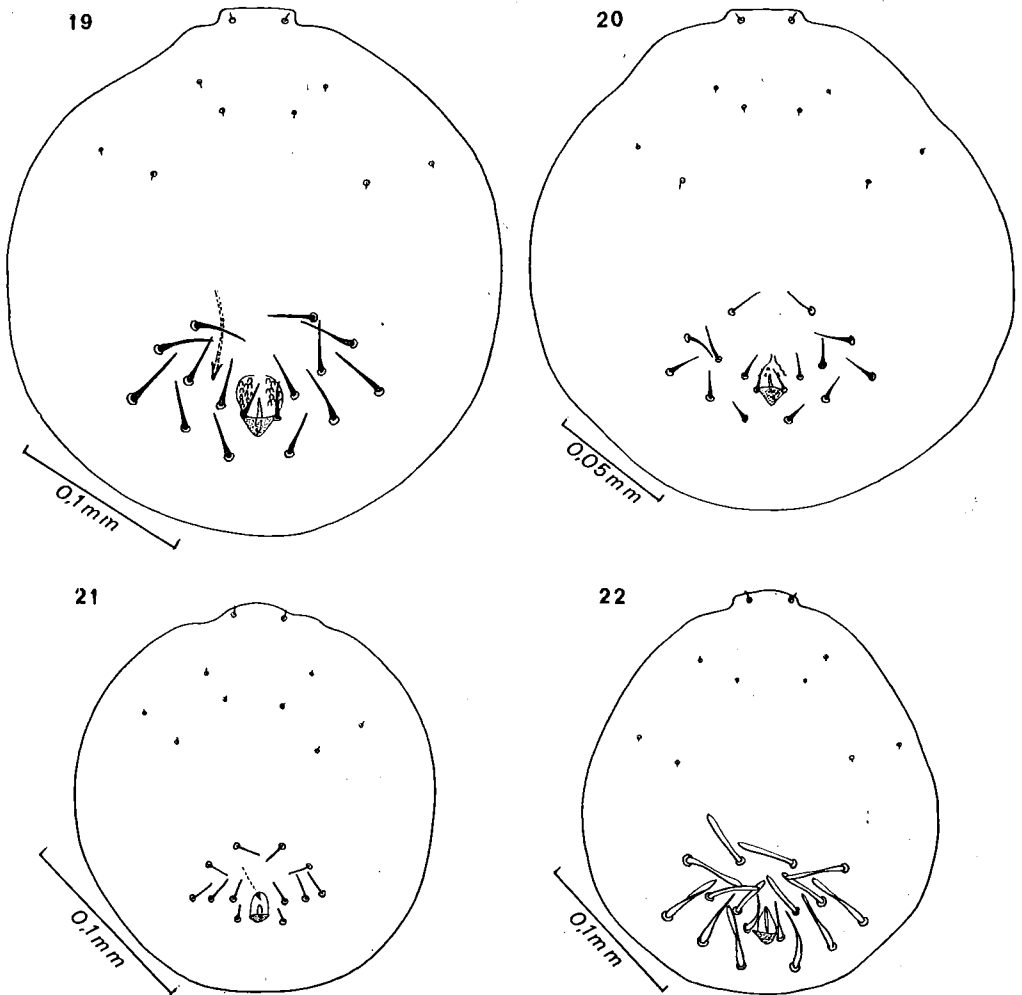


Fig. 19-22 — Dorsal view of the protonymphs of *Chirnyssoides* (*Ch.*) *caparti urodermae* (nymph B) (fig. 19); *Ch.* (*Ch.*) *caparti cinereus* (fig. 20); *Ch.* (*Ch.*) *parvisuctus* (fig. 21); *Ch.* (*Ch.*) *vampyrops* (fig. 22).

6. *Chirnyssoides* (*Chirnyssoides*) *parvisuctus* spec. nov.
(Fig. 9, 21, 28, 32, 35)

This new species is known only from the female and the immatures.

This species is distinguished from all the other species of the subgenus by the very poor development of the tarsal suckers in the female and the immatures.

This species presents a anterior branch on the basal prolongation of the epimera III. This branch exists also in *Ch. amazonae* (= *Ch. carolliae*) and in *Ch. stenoderma* sp. n. but it is absent in all the other species of the subgenus.

Ch. parvisuctus differs from *Ch. amazonae* in all the stages by the different shape of the epimera III, in the female by the smaller length of the perianal setae not more than 30 μ long ; in the tritonymph by the much smaller length of the perianal setae (maximum 15 μ) and the vestigial aspect of the postero-internal setae (*l 5*) approximately 0,5 to 2 μ long ; in the protonymph by the presence of only 6 pairs of perianal setae (for 8 pairs in *Ch. amazonae*) ; in the larva by the presence of 4 pairs of perianal setae (for 6 pairs in *Ch. amazonae*).

FEMALE : body ovoid. The holotype is 246 μ long (gnathosoma included) and 200 μ wide. An ovigerous female is 270 μ long and 225 μ wide. Anus dorsal, with 8 pairs of perianal setae 21 to 30 μ long. Setae *sc i*, *sc e*, *d 1*, *l 1* very short and thin. Epimera II and IV respectively 52 μ and 40-45 μ long. Epimera III with the basal prolongation bearing an anterior narrow and straight branch. Tarsal suckers I-II very small (5 μ diameter) carried on very short stalks (3 μ).

TRITONYMPH : body rounded, 255 μ long and 228 μ wide. There are 8 pairs of perianal setae, they are 13 to 18 μ long except the postero-internal pair (*l 5*) which is vestigial (1 to 2 μ long). Epimera III as in the female. Epimera II and IV respectively 40 and 33 μ long. Tarsal suckers I-II very small.

PROTONYMPH : body 190 μ long, 170 μ wide. There are 6 pairs of perianal setae 12 to 15 μ long. Epimera III and tarsal suckers as in the tritonymph.

LARVA : the larva still enclosed in the egg shell presents 4 pairs of perianal setae 3 to 5 μ long.

Host and locality :

On *Micronycteris brachyotis*, from Gros Gold Mine, Surinam, 23.VIII.1971 (male bats n^{os} 338, 342 and 343 : holotype and 13 paratypes females, 17 tritonymphs paratypes, 7 protonymphs paratypes, 2 larvae paratypes, eggs). Most of the specimens were collected along the edges or on the wing membrane.

7. *Chirnyssoides* (*Chirnyssoides*) *vampyrops* spec. nov.

(Fig. 10, 22, 24, 33, 40)

In this species the basal prolongation of the epimera III in the female and the immatures is not branched. This character is also present in *C. caparti* FAIN, *Ch. brasiliensis* FAIN, *Ch. venezuelae* FAIN and *Ch. phyllostomus* sp. n. This new species differs from these species in the female by the shape of the perianal setae

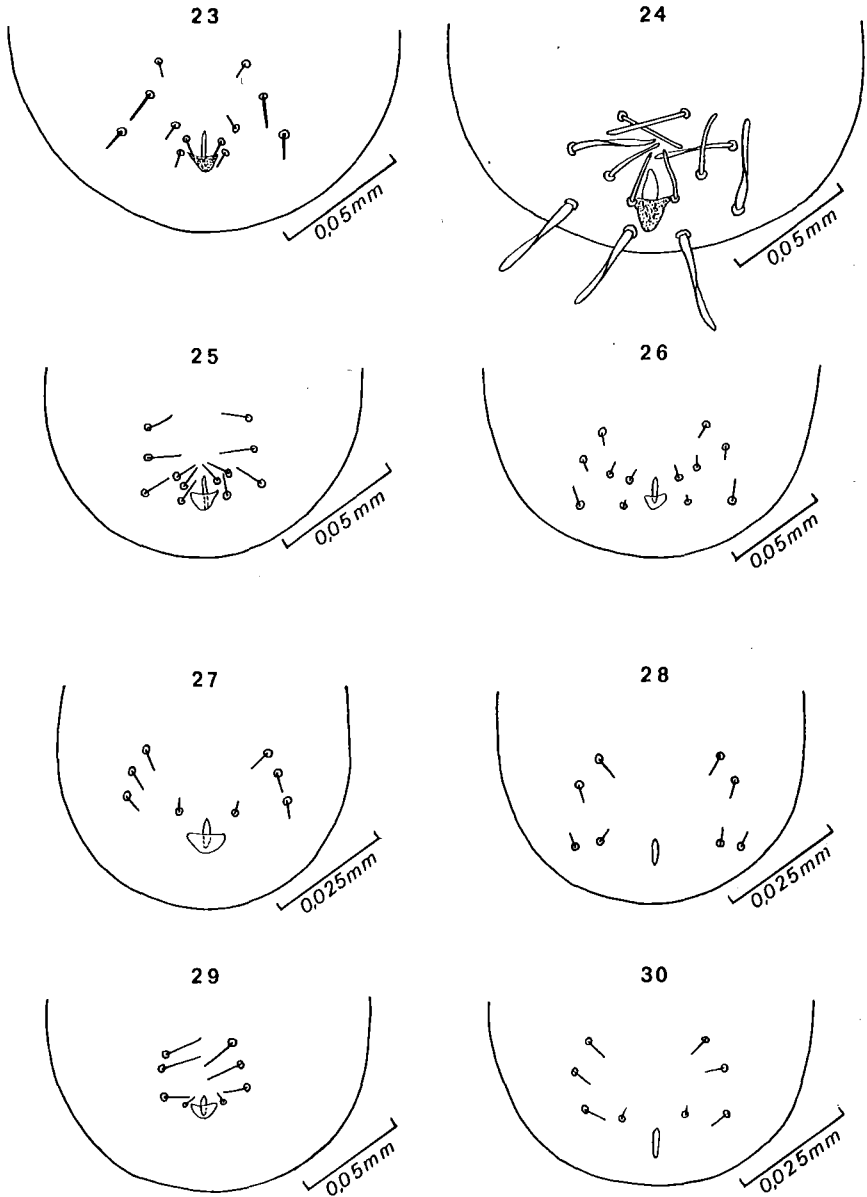


Fig. 23-30 — Perianal region of the larvae of *Chirnyssoides* (*Ch.*) *caparti caparti* (fig. 23); *Ch.* (*Ch.*) *vampyrops* (fig. 24); *Ch.* (*Ch.*) *caparti urodermae* (fig. 25); *Ch.* (*Ch.*) *amazonae* (fig. 26); *Ch.* (*Ch.*) *venezuelae* (fig. 27); *Ch.* (*Ch.*) *parvisuctus* (fig. 28); *Ch.* (*Ch.*) *phyllostomus* (fig. 29); *Ch.* (*Ch.*) *stenoderma* (fig. 30).

which are strong, spatulate apically and long (36 to 60 μ), by the few number of striae (10-12) between setae *d 1* and *d 3* and the greater length of the epimera IV (63 μ). The tritonymphs and protonymphs of this species differ from those of *Ch. brasiliensis*, *Ch. phyllostomus* and *Ch. venezuelae* by the greater number of perianal setae ; they differ from those of *C. caparti* by the greater length and the different shape of the perianal setae (see key).

FEMALE : the holotype is 330 μ long and 300 μ wide. Dorsal striae fewer in number than in *Ch. caparti*. There are 8 pairs of perianal setae, 36 tot 60 μ long. These setae are strong and spatulate apically. The *d 1* setae are distinctly thicker and longer (9 μ) than the *sc e*, *sc i* and *l 1* setae. Tarsal suckers I-II normally developed. Epimera III with a basal prolongation which is very thick in its basal half.

TRITONYMPH : a strongly inflated specimen measures 390 μ u length and 350 μ in width. Epimera II and IV respectively 60 and 66 μ long. Perianal setae as in the female, they are 40 to 51 μ long.

PROTONYMPH : length 260 μ , width 250 μ . Perianal setae as in the female but shorter (27 to 45 μ). Epimera II and IV respectively 48 and 51 μ long.

LARVA : body 210 μ long and 195 μ wide. There are 6 pairs of perianal setae of the same shape as in the female but shorter (20 to 39 μ).

MALE : unknown.

Host and locality :

1. *Vampyrops halleri*, from Wageningen, Surinam, 22.IX.1971 (female bat n° 513 : holotype and 3 paratypes females ; 2 trito and 2 protonymphs, paratypes, larvae, eggs).
2. *Uroderma bilobatum*, from Weg naar Zee, 11.IX.1971 (female bat n° 458 : 1 female, 9 nymphs, larvae, all paratypes).

8. *Chirnyssoides (Chirnyssoides) stenoderma* spec. nov.

(Fig. 12, 30, 34, 37)

In the female and the immatures of this species the epimera III presents the same structure (with a branch on the basal prolongation) as in *Chirnyssoides (Ch.) amazonae* FAIN and *Ch. (Ch.) parvisuctus* sp. n.

It is distinguished from these species in the female by the more anterior situation of the accessory branch on the prolongation of epimera III ; in the tritonymph by the presence of only 6 pairs of perianal setae (for 8 pairs in these

species). The larva of this species presents 4 pairs of unequal perianal setae (2, 5 μ) as in *Ch. parvisuctus*.

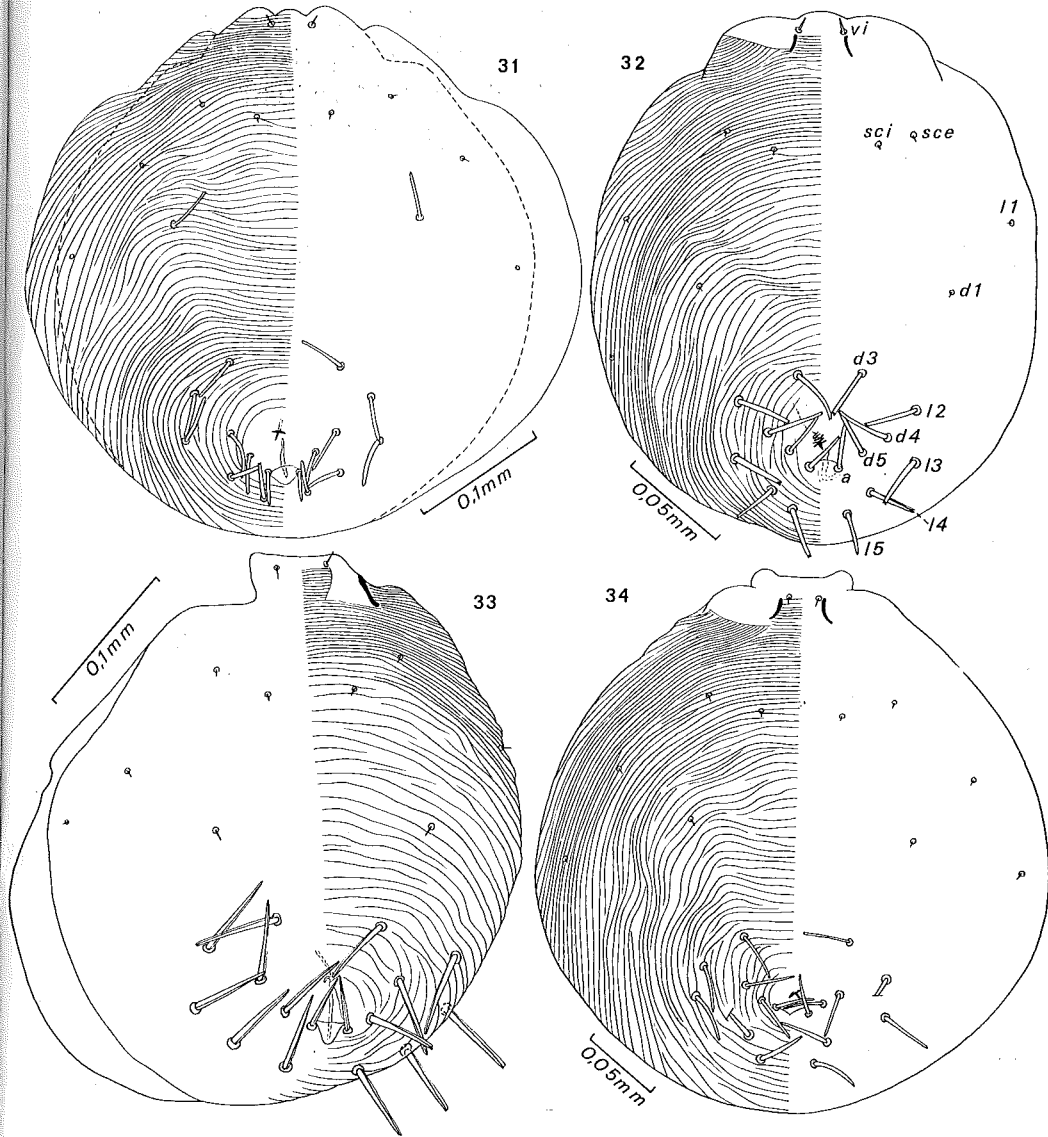


Fig. 31-34 — Dorsum of the females of *Chirnyssoides* (*Ch.*) *phyllostomus* (fig. 31); *Ch.* (*Ch.*) *parvisuctus* (fig. 32); *Ch.* (*Ch.*) *vampyrops* (fig. 33) and *Ch.* (*Ch.*) *stenoderma* (fig. 34).

XXX. NEW OBSERVATIONS ON THE GENERA *CHIRNYSSOIDES* AND *NOTOEDRES*
FROM BATS (SARCOPTIFORMES : SARCOPTIDAE)

FEMALE : the holotype is not ovigerous, it is 340 μ long and 300 μ wide. Perianal setae rather thin, subcylindrical and 25 to 33 μ long. Setae *sc i*, *sc e*, *d 1*, *l 1* very thin and very short. There are 14-15 striae between *d 1* and *d 3*. Epimera II and IV respectively 63 and 56-60 μ long. Epimera IV not forked apically. Tarsal suckers I-II well-developed (diametre 15 μ stalk 12 μ).

MALE : one male very poorly sclerotized and extracted from its tritonymphal skin. This male resembles that of *Ch. brasiliensis* except that the *h* setae is not a strong spine but is very thin and short.

TRITONYMPH : 255 μ long and 230 μ wide. There are 6 pairs of perianal setae : 5 pairs are rodlike, thin and 15-20 μ long, one pair is very short (1 to 2 μ) and very thin (setae *a i*). Epimera II and IV respectively 42 μ and 45 μ long.

LARVA : the only specimen is still enclosed in the egg shell and is very poorly sclerotized. It presents 4 pairs of very short perianal setae.

PROTONYMPH : unknown.

Host and locality :

Stenoderma sp., Brownsberg, Surinam, 22.X.1971. Bat n° 751 : holotype female, 1 male immature, 2 tritonymphs and 1 larva, all paratypes, eggs.

Subgenus *Noctiliocoptes* FAIN and LUKOSCHUS, 1971

Chirnyssoides (*Noctiliocoptes*) *noctilionis* (DUSBABEK, 1970)

Notoedres (*Bakeracarus*) *noctilionis* DUSBABEK, 1970 : 275

Chirnyssoides (*Noctiliocoptes*) *noctilionis*, FAIN and LUKOSCHUS, 1971 : 300

This species has been recorded previously from Surinam (FAIN and LUKOSCHUS, 1971), from *Noctilio labialis*.

Numerous new specimens of that species have been found by us in 1971 from two different hosts and localities :

1. *Noctilio leporinus*, from Weg naar Zee, 11.IX.1971 (bats n°s 447, 448, 449, 450, 451, 452, 455, 457 : numerous males and nymphs, a few females) ; from Wageningen, 23.IX.1971 (female bats n°s 525, 531 and 532 : 4 females, 1 nymph, 1 larva) and 26.IX.1971 (bat n° 573 : nymphs).
2. *Noctilio labialis*, from Meerzorg, in August 1971 (bats n°s 228, 248, 249, 251, 252, 257, 262 : males, females, nymphs) ; from Tawajariweg, 6.IX.1971 (bat n° 412 : nymphs, males).

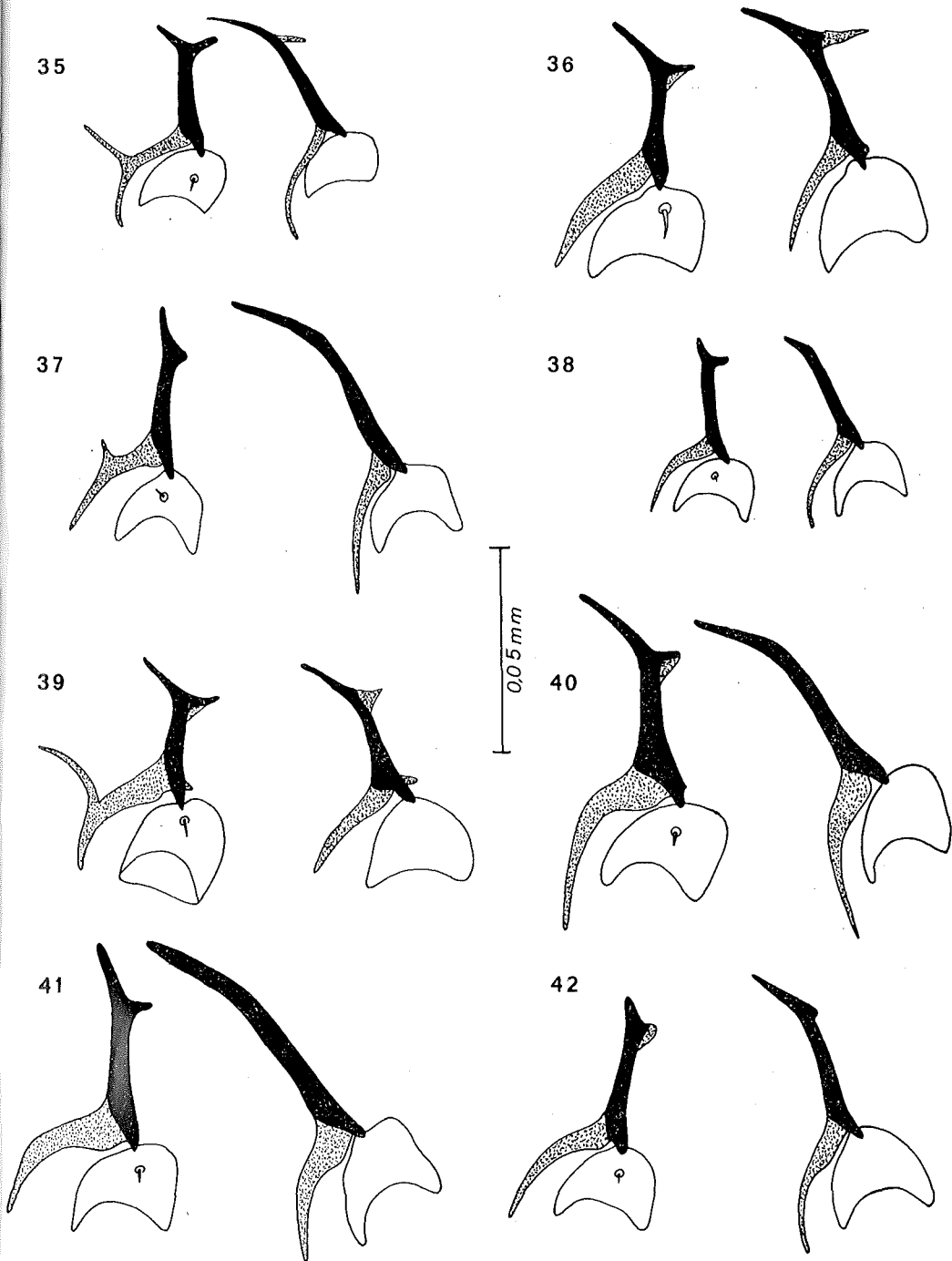


Fig. 35-42 — Epimera III and IV of the females of *Chirnyssoides* (*Ch.*) *parvisuctus* (ovigerous) (fig. 35); *Ch. (Ch.) caparti caparti* (fig. 36); *Ch. (Ch.) stenoderma* (fig. 37); *Ch. (Ch.) venezuelae* (fig. 38); *Ch. (Ch.) amazonae* (fig. 39); *Ch. (Ch.) vampyrops* (fig. 40); *Ch. (Ch.) brasiliensis* (fig. 41); *Ch. (Ch.) phyllostomus* (fig. 42).

Subgenus *Carollicoptes* FAIN and LUKOSCHUS, 1971

Chirnyssoides (*Carollicoptes*) *surinamensis* FAIN and LUKOSCHUS, 1971

Chirnyssoides (*Carollicoptes*) *surinamensis* FAIN and LUKOSCHUS, 1971 : 305

Chirnyssoides (*Carollicoptes*) *zanderyensis* FAIN and LUKOSCHUS, 1971 : 309

The two species *Ch. (C.) surinamensis* and *Ch. (C.) zanderyensis* have been described from the same host (*Carollia perspicillata*) and locality (Zandery) in Surinam.

Many new specimens of *Ch. surinamensis* and of the form that we have named, *Ch. zanderyensis* have been found, during our new stay in Surinam, on the same host but in the following other localities: Moeroekreek 15-16.IX.71 (bats n°s 471, 478 and 480); Helena-Christina, 31.VIII.71 (bat n° 385) and Brownsberg, 20.X.71 (bat n° 718).

The examination of this new material lessens our conviction about the validity of *Ch. zanderyensis*. This species has been described from numerous females and a simple tritonymph. The latter is a specimen without *bursa copulatrix* and

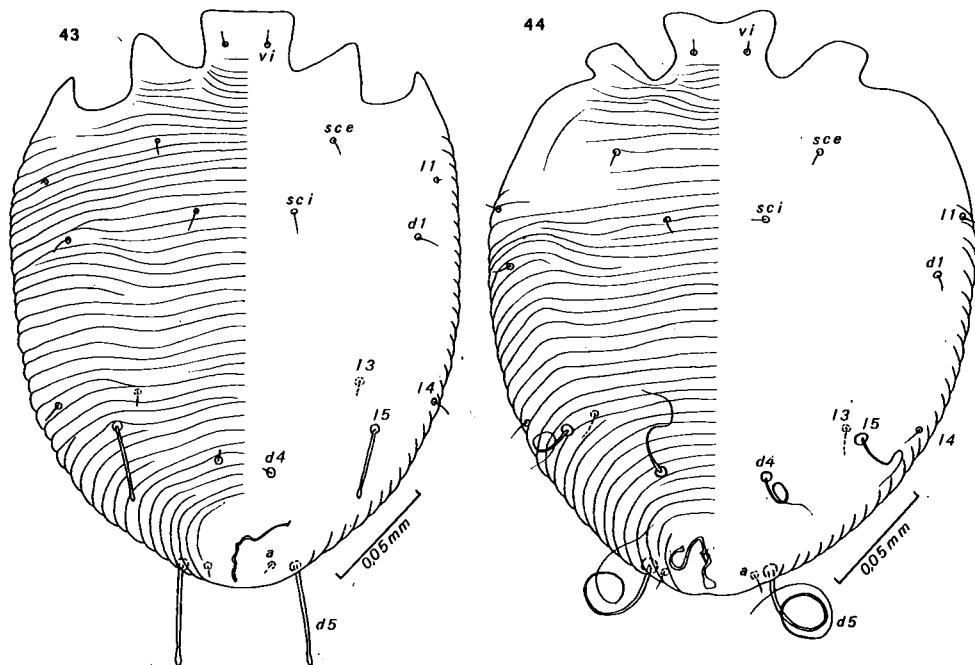


Fig. 43-44 — *Notoedres* (*Bakeracarus*) *lasionycteris anisothrix* ssp. n. Female in dorsal view (fig. 43); *Notoedres* (*Bakeracarus*) *helicothrix* sp. n. Female in dorsal view (fig. 44).

without visible vulva. The vulva is always difficult to discern even in ovigerous females of *zanderyensis*. The absence of the bursa should be normally sufficient to prove that this specimen is not a female and that *zanderyensis* is therefore a good species. However, other features lead us to think that this species could be a synonym of *surinamensis*. As a matter of fact the presence of a bursa in the holotype of *Ch. surinamensis* does not prove that this specimen is a female; it could be a tritonymph. We have showed that in the genus *Chirnyssoides* the bursa may be present in all the immature stages from larva to tritonymph (see above, in chapter dealing with *Chirnyssoides amazonae*). Moreover we have not seen the vulva in the holotype of *Ch. surinamensis* and besides we have not recognized males nor protonymphs amongst the material that we have identified as *zanderyensis*. It is therefore possible that the holotype of *Ch. surinamensis* is not a female but a tritonymph and that the holotype of *Ch. zanderyensis* is actually the female of *surinamensis*.

In order to clarify this situation it should be necessary to get new material of these species, and especially nymphs in the molting stages, such as tritonymphs developing into protonymphal skins and females developing into tritonymphs. The discovery of an ovigerous female of the *surinamensis* type, or of a protonymph of the *zanderyensis* type should be sufficient to ascertain the validity of the species *zanderyensis*.

Genus *Notoedres* RAILLIET, 1893

Subgenus *Bakeracarus* FAIN, 1961

1. *Notoedres (Bakeracarus) lasionycteris minimus* DUSBABEK, 1970

We have found this subspecies in the following hosts in Surinam :

1. *Molossus molossus* from two localities : Meerzorg, 14.VIII.1971 (bat n° 242 : 2 females) ; 15.VIII.1971 (bat n° 255 : 1 female) ; 25.VIII.1971 (bat n° 355 : 3 females) ; 26.VIII.1971 (bats n°s 356 and 357 : 4 females and eggs) ; from Wageningen : 23.IX.1971 (bat n° 528 : nymph, larvae, eggs).
2. *Molossus ater*, from Moeroekreek, 19.IX.1971 (bats n°s 499 and 500 : 2 females, eggs, larva).
3. *Molossidae* n° 2, from Meerzorg, 12.VIII.1971 (bat n° 230 : 2 females).

Notoedres (Bakeracarus) lasionycteris eptesicus FAIN and LUKOSCHUS, 1971

This subspecies has been described from *Eptesicus melanopterus* in Lelydorp, Surinam.

During our stay in 1971 we have found numerous new specimens of that subspecies from the same host in the following new localities: Paramaribo, August and September 1971 (bats n°s 135, 136, 216, 336, 417, 426, 705); Brownsberg, 18.X.71 (bat n° 705); Welgedacht, 1.VIII.71 (bats n°s 126 and 196); Tawajariweg, 5.IX.71 (bat n° 406).

Notoedres (Bakeracarus) lasionycteris ssp. *anisothrix* ssp. nov.
(Fig. 43)

This subspecies is characterized in the female by the very poor development of the *d 4* setae which are very thin and very short (3 to 6 μ).

FEMALE (Fig. 43): the holotype is 255 μ long and 195 μ wide. It contains an egg 132 μ long and 84 μ wide. Epimera I not fused in the midline but contiguous. The setae *a i* are 3 μ long; the setae *sc e*, *d l*, *d 4* and *l 3* are 4 to 6 μ long; setae *sc i* and *d 4* measure 7 μ . The setae *l 5* and *d 5* are respectively 30-34 μ and 36 μ long, they are straight and inflated apically. Distance *sc e-sc e* is 75 μ ; *l 5-l 5* is 110 μ ; *d 4-d 4* is 22 μ ; *d 5-d 5* is 48 μ ; *a i-a i* is 33 μ .

Host and locality:

Molossus molossus, from Weg naar Zee, 11.IX.1971 (bat n° 460: holotype and one paratype, females) and from Wageningen, 26.IX.1971 (bat n° 509: 1 paratype female).

2. *Notoedres (Bakeracarus) helicothrix* spec. nov.

This species is distinguished from *Notoedres (Bakeracarus) lasionycteris* (BOYD and BERNSTEIN, 1950) in the female by the presence in the anterolateral region of the dorsum of two bare areas and by the length and the shape of the setae *d 4*, *d 5* and *l 5*. These setae are long, attenuated apically and rolled up. In *N. (B.) lasionycteris* these setae are stiff, straight, and distinctly inflated apically. Besides, the *d 5* are much longer than in this species.

This species differs from *N. (B.) schoutedeni* (FAIN, 1959) by the much greater length of the *d 4*, *d 5*, *l 5* and scapular setae.

FEMALE (fig. 44): The holotype is 261 μ long and 204 μ wide. It contains an egg 150 μ long and 93 μ wide. In three paratypes these measurements are 255 x 186 μ , 285 x 195 μ and 309 x 204 μ . Cuticle completely striate except a small area around the anus and two anterolateral areas, outside of the *sc e*, which are bare. All the idiosomal setae are simple and finely attenuated apically. The setae *sc e* and *l 1* are very thin and short (5 to 8 μ). The *sc i*, *d l*, *l 3*, *l 4*

and *a i* are a little longer (6-10 μ). The *d 4*, *d 5* and *l 5* are stronger, longer and rolled up, they measure respectively 42-45 μ , 90-110 μ and 40-45 μ . Anus dorsoterminal.

TRITONYMPH: length 164 μ , width 125 μ . Setae as in the female but shorter.

LARVA: length 104 μ , width 74 μ . Dorsum completely striate. Anus terminal. Setae *d 4*, *d 5* and *l 3* finely attenuate apically and respectively 25 μ , 45-40 μ and 30-35 μ long. Setae *a i* not observed.

Hosts and localities:

1. Molossidae n° 1: host n° 321, Meerzorg, Surinam, 20.VIII.1971 (one larva, paratype).
2. Molossidae n° 3: hosts n° 234, Meerzorg, 12.VIII.1971 (5 female paratypes, larvae, eggs) and n° 319, Meerzorg, 20.VIII.1971 (1 larva paratype).
3. Molossidae n° 4: host n° 362, Meerzorg, 27.VIII.1971 (1 tritonymph paratype).
4. Molossidae: hosts n° 215 and 217 from Paramaribo, 10 and 17.VIII.1971 (1 nymph and eggs); n° 312, 313, 314 and 315, Meerzorg (holotype and 6 females paratypes and eggs). The holotype was collected on bat n° 315.

The hosts of species mentioned above have been deposited within Rijksmuseum van Natuurlijke Historie, Leiden. We are obliged to Dr. A.M. Husson for identifications of hosts.

SUMMARY

The authors describe 5 new species of mites of the family Sarcoptidae. Among these species 4 belong to the genus *Chirnyssoides* and one to the genus *Notoedres*, subgenus *Bakeracarus*. They correct and complete their previous observations on these genera of mites.

RESUME

Les auteurs décrivent 5 espèces nouvelles d'acariens de la famille Sarcoptidae. Parmi celles-ci 4 sont du genre *Chirnyssoides* et une du genre *Notoedres*,

sous-genre *Bakeracarus*. Ils corrigent et complètent leurs observations antérieures sur ces genres d'acariens.

SAMENVATTING

De auteurs beschrijven 5 nieuwe species of mijten van de Familie Sarcoptidae. Van deze species, behoren er 4 tot de genus *Chirnyssoides* en één tot de genus *Notoedres*, subgenus *Bakeracarus*. Zij verbeteren en vervolledigen hun vorige waarnemingen over deze mijten genera.

ZUSAMMENFASSUNG

Die Autoren beschreiben 5 neue Milben-Arten der Familie Sarcoptidae. Vier dieser Arten gehören zur Gattung *Chirnyssoides* und eine zur Gattung *Notoedres*, Untergattung *Bakeracarus*. Sie verbessern und vervollständigen ihre früheren Beobachtungen über diese Milben-Arten.

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