Mite Parasites (Acarina) of Bats from Afghanistan

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Abstract. The following 18 species of parasitic mites have been recorded from bats captured in the territory of Afghanistan: Spinturnix acuminatus (C. L. Koch, 1836), S. kolonatii Oudms., 1910, S. psi (Kol., 1856), Macronyssus leucippe (Domrow, 1959), Macronyssus sp. (apparently japonicus Radovsky, 1967), Steatonyssus (Steatonyssus) peribilepharus Kol., 1858, S. (S.) afer Radovsky et Yunker, 1963, Androlaelaps casalis casalis (Berl., 1887), Argas (Caris) vespertilionis (Latreille, 1802), A. (Chiropierargas) boueti Roubaud et Colas-Belcour, 1935. A. (Secretargas) transgariepinus White 1846, Ixodes (Eschatocephalus) vespertilionis C. L. Koch, 1844, Haemaphysalis (H.) erinacei Pavesi, 1884, Audy trombicula (A.) tassasia V. – G., 1963, Sasatrombicula (Traubiella) multisternalae (V. – G., 1963), Chiroplea (Oudemansidium) muscae (Oudms., 1906). Two new species Spinturnix scuticornis sp. n. and Steatonyssus (S.) gaisleri sp. n. are described and a first description of male of the species Macronyssus leucippe (Domrow, 1959) is given.

The parasitic Acarine fauna of bats living in Afghanistan has been heretofore studied only occasionally, and mainly tick fauna (Ixodoidea) has been recorded; on one hand, the ticks were collected by the Third Danish Expedition to Central Asia and by J. Klapperich Afghanistan expedition (Anastos 1954, 1956), on the other, during Lindberg’s biospeleological investigations (Lindberg 1961, 1962, Travassos Santos Dias 1959, 1961, Nemec 1960). These collections also included specimens of the family Trombiculidae from bats which were studied by Ver cammen—Grandjean (1962, 1963). The data on free living groups of mites inhabiting caves in Afghanistan, i.e. those often associated with bats, are to be found in Cooreman’s paper (1960). The data on hosts alone were published by Zimmermann (1956), Aellen (1959), Meyer—Oehme (1965) and Gaisler, Povolný, Šebek and Tenora (1968).

From March to May 1967 an expedition of Czechoslovak parasitologists and zoologists, headed by Dr. Povolný, worked in Afghanistan with the aim of studying mainly insects, small mammals and their parasites. Materials of parasitic mites collected from bats by this expedition, together with the collections of Dr. Daniel, who participated in the First Czechoslovak expedition to Hindu-Kush (June to September 1965) have served as a basis for the present paper.
The author is deeply grateful to all, who in any way participated in collections of the material described in this paper. Special thanks are due to Dr. D. Povolný (University School of Agriculture, Brno) and Dr. M. Daniel (Institute of Parasitology, Czechoslovak Academy of Sciences, Prague) for making available the material to study, and to Dr. J. Gaisler (Institute of Vertebrate Zoology, Czechoslovak Academy of Sciences, Brno) who provided comments on a draft of this paper, edited the local names and identified the host material. The author also wishes to extend his appreciation to Dr. F. Tenora (University School of Agriculture, Brno) and to Dr. Z. Šebek (District Hygiene Station, Jiříhova) who took part in collections.

1. *Spinturnix acuminatus* (C. L. Koch)

*Pteroptus acuminatus* C. L. Koch: 1836  

Material: 1 ♀ from *Pipistrellus pipistrellus* (Schreb.), Jalalabad. 25. 4. 1967, lgt. Gaisler, Povolný, Šebek, Tenora.

A paleoarctic species whose distribution boundary line reaches as far as Ceylon and Java (Rudnick 1960). It has been reported from Israel by Shulov (1957) and Costa (1966) off *Pipistrellus kuhli* (Kuhl) and in Ceylon it has been found on *Scatophilus temmincki vroughtoni* Thomas. Its two subspecies are known from Europe: *acuminatus* C. L. Koch, 1836, parasitic on *Nyctalus noctula* (Schreb.) and *barbastelli* (Kol., 1856) (= bohemicus Dushábek, 1962) described from *Barbastella barbastellus* (Schreb.). Our specimen, however, does not agree with any described subspecies and therefore, it is possibly a distinct subspecies specific to the genus *Pipistrellus*.

2. *Spinturnix kolennii* Oudms.


Material: 1 ♀ 2 ♂♂ from *Eptesicus serotinus* (Schreb.), Jalalabad, 13. 4. 1967; 1 ♀ 3 ♂♂ from the same host and locality, 22. 4. 1967; 2 ♀♀ 1 ♀ from the same host and locality, 26. 4. 1967, all lgt. Gaisler, Povolný, Šebek, Tenora.

A paleoarctic species, known from *Eptesicus serotinus* (Schreb.) and *E. nilssoni* (Keys. et Blas.). Most findings of this species originate from Europe, but also, findings have been reported from Mongolia (Dushábek 1966) on *E. nilssoni* (Keys. et Blas.) and from Azerbaijan (Gadzhiev and Dubovchenko 1966, 1967) on *E. serotinus* (Schreb.), occasionally also on *Pipistrellus pipistrellus* (Schreb.) and *P. kuhli* (Kuhl).

3. *Spinturnix psi* (Kol.)


This species is distributed all over the paleoarctic region, reaching as far as India (Hiregadhàr and Bal 1955, 1956), New Guinea (Baker and Delphinado 1964), Australia (Domrow 1962) and Madagascar (Rudnick 1960). Costa (1966) reports it from Israel. It parasitizes primarily members of the genus *Miniopterus* and exceptionally other genera of hosts.

4. *Spinturnix scuticornis* sp.n.  

![Figs. 1, 2](image)

Type host: *Myotis longipes* (Dobson). Type locality: Jalalabad, Afghanistan, 15. 3. 1967, lgt. Gaisler, Povolný, Šebek, Tenora.
Material: 19 ♂ 17 ♀ 6 protonymphs and 5 deutonymphs from type host and type locality, 15. 3. 1967; 18 ♂ 15 ♀ 7 deutonymphs and 8 protonymphs from type host and type locality, 18. 4. 1967; 2 ♂ 1 ♀ 3 deutonymphs and 1 protonymph from *Miniopterus schreibersi* (Kuhl), Jalalabad, 15. 3. 1967; 5 ♀ 8 ♂ 3 deutonymphs from type host and locality, 3. 5. 1967, all lgt. Gaisler, Povolny, Sebek, Tenora.

Holotype (female), allotype (male) and all paratypes are deposited in the collection of the Institute of Parasitology, Czechoslovak Academy of Sciences in Prague.

Fig. 1. *Spinturnix scaticornis* sp. n.: A — dorsal view of female, B — dorsal view of male.

Female (Holotype): Idiosoma ovoid, 1.320 (1.104—1.330) long and 1.032 (912 to 1.080) wide (all measurements in μ).

Dorsum (Fig. 1 A): Dorsal plate of characteristic shape, with two lateral cornua in anterior part, 804 (790—857) long, 542 (513—554) wide. On the plate there are
13 pairs of small circular pores, of which some bear minute setae, and several larger irregular depressions. A pair of larger circular pores is developed outside the plate near the anterior cornua and another pair somewhat lower inside the plate. Anteriorly to dorsal plate 5 pairs of propodosomal setae of which the first pair is the shortest (40), the fourth and fifth the longest (85). Integument alongside the dorsal plate is, besides propodosomal setae, covered with further 95—105 pairs of setae, of which the metapodosomal ones are short and slender (40), the opisthosomal long and rough (160). Peritreme originates dorsally at the level of posterior margin of coxa III and reaches ventral side, terminating between coxa II and III.

Fig. 2. *Spinturnix scuticornis* sp. n.: A — ventral view of male. B — ventral view of female.
**Venter** (Fig. 2 B): Tritosternal plate is absent. Sternal plate relatively narrow, apiculate anteriorly, with tile-like structure, 172 (168—196) long, 117 (110—130) broad. Sternal setae placed inside the plate, 24 long. Genital plate small, with even structure. Genital setae beneath the plate. Two pairs of intercoxal and a pair of metasternal platelets developed.

**Gnathosoma:** Base of gnathosoma rather narrow. Gnathosomal setae longer (27) than hypostomal ones (14). Chelae dentate in distal part.

**Legs:** Coxa II with a semicircular posterolateral projection. Coxa III and IV with a similar smaller projection. Ventrolateral and dorsal setae long, rough to dentate.

**Male** (Allotype): Idiosoma egg-shaped, 939 (920—970) long, 775 (746—805) broad.

**Dorsum** (Fig. 1 B): Dorsal plate egg-shaped, with only 3 pores and setiform structures and with one pair of larger pores in anterior part, with irregular depressions and prominent punctuation. Five pairs of propodosomal setae are 121—130 long each. Hysterosoma bears 23—26 pairs of setae (78—86). Integument alongside the dorsal plate armed with microdenticles, particularly in anterolateral and posterior parts of idiosoma. Peritreme originates dorsally at the level of coxa II and III, with weakly developed peritremal plate, slightly overlapping the end of peritreme.

**Venter** (Fig. 2 A): Tritosternal plate absent, but in some paratypes it is weakly discernible. Genitoventral plate with a tile-like structure, reaches its maximal width at the level of the third pair of genitoventral setae, 360 (352—388) long, 262 (262—282) wide. Three pairs of genitoventral setae (31) placed on the plate. Two pairs of intercoxal and a pair of metasternal platelets developed. Metasternal setae are 40 long. Posteriorly to genitoventral plate there are 11 pairs of setae (40—55), increasing in length posteriorly. One pair of adanal and an unpaired postanal seta developed.

**Gnathosoma:** As in female, relatively wider. Chelicerae with a stout hook-like spermatodactyl.

**Legs:** As in female. Coxa II—IV without a posterolateral projection, or only with a trace of it.

The new species is morphologically close to *Spinturnix multisetosus* Rudnick, 1960, described from *Myotis goudotii* Smith in Madagascar. The female of *S. scuticornis* sp.n., however, differs in the characteristic shape of dorsal plate on which anterolateral cornua are developed, in the number of dorsal hysterosomal setae from which the propodosomal setae are clearly separated, in narrower sternal plate and posterolateral projections on coxae II—IV. The male also differs, besides having a smaller number of dorsal hysterosomal setae, in the shape of genitoventral plate which reaches its maximal width at the level of the third pair of genitoventral setae. There is an apparent difference between the two species also in host specificity and in geographical distribution. It is possible that in case of 3 nymphs of
Spinturnix multisetasus Rudnick, 1960 found on Eptesicus serotinus (Schreb.) in Azerbaijan as reported by Gadzhiev and Dubovchenko (1966, 1967), the species in question is S. scuticornis sp.n., whose occurrence in Azerbaijan is more probable.

5. Macronyssus leucippe (Domrow)  


Material: 3 ♀ 2 ♂ from Miniopterus schreibersi (Kuhl), Jalalabad, 15. 3. 1967; 3 ♀ from Myotis longipes (Dobson) from the same locality and date: 1 ♀ from Rhinopoma microphyllum (Brünnich), Abdulkil, near Shigi, 14. 4. 1967, all lgt. Gaisler, Povolny, Šebek, Temora.

The mite has been described on the basis of several female specimens found on Miniopterus schreibersi blepotis (Temminek) in Queensland, Australia. Its findings in Afghanistan are therefore surprising, but may be explained by a larger distribution area of the host Miniopterus schreibersi (Kuhl). As the male has not been described yet, I present its description and illustration.

Fig. 3. Macronyssus leucippe (Domrow, 1959), male: A – dorsal view, B – ventral view.
Male: Idiosoma oval, 474—485 long, 187—197 wide (all dimensions in μ). Dorsum (Fig. 3 A): Dorsal plate 407—426 long, 215—235 wide, with a fine tile-like structure and extruding posterior margin. There are 26 pairs of setae on it. Setae S6 and D8 absent; ET1 and ET2 placed on plate. The ratio of Sc—D3 is about 7.5 : 1. Lateral setae in anterior part of plate as long as 40—75, in posterior part of plate 20—27, except M11 which are 43 long. Setae inside the plate (series D and I) are 8 to 12 long. Integument alongside the plate bears 6 pairs of setae and 2 pairs of longer caudal setae which are 38—40 long.

Venter (Fig. 3 B): Tritosternal lacinia barbed. Praesternum with a fine structure. Sternogenital plate 200 long, 129 wide, with a tile-like structure, bearing 5 pairs of setae, of which the first three pairs are 40, the fourth 27 and the fifth 20 long. Ventroanal plate 188 long, 90 wide, structured, bearing 3 pairs of setae in its anterior part (27), a pair of adanal setae (20) and one postanal seta (32). Besides 2 pairs of caudal setae integument bears another 14 pairs of setae 20 long. Peritreme originates ventrally at the level of posterior margin of coxa III and terminates dorsally at the level of centre of coxa III, with a slightly discernible peritremal platelet at the base. Its length is 165.


Legs: as in female. Anterior spur of coxa II simple. Coxal ridges distinct. Tarsus I measures 82.

6. Macronyssus sp.

Material: 1 ♀ from Myatis longipes (Dobson), Julalabad, 15. 3. 1967, lgt. Caisler, Povolňy, Šebek, Tenora.

The found specimen is probably identical with Macronyssus japonicus Radovsky, 1967, described from Myatis sp. captured in Japan, which it strongly resembles. From the original description, however, it differs in the following details: Setae ET1, ET2, S1 and S6 are placed on dorsal plate, the total number of pairs of dorsal setae thus being increased to 25. Sc—D3 ratio is only 18 : 1. Also some dimensions are somewhat different (abbreviations after RADOVSKY 1967, dimensions in μ): Idiosoma L., 814. Dorsal plate L., 755, W., 360. Sc, 145. D3, 8. M5, 118 (?). S4, 18. S7, 21 (?). M10, 82. M11, 50. Sternal plate median L., 59. Stl, 78. Anal plate L., 130. W., 59. Adanal setae 32. Postanal seta 58. Caudal setae 82. Tarsus I. L., 149.

7. Steatonyssus (Steatonyssus) periblepharus Kol.


Material: 5 ♀ ♀, 1 ♂, 28 protonymphs from Pipistrellus pipistrellus (Schrbl.), Kunduz, 4. 9. 1965; 18 ♀ ♀, 7 ♂ ♀, 25 protonymphs from the same host and locality, 5. 9. 1965, all lgt. M. Daniel; 2 proto-
nymphs from the same host, Jalalabad, 24. 4. 1967; 2 ♀ 1 ♂ 48 protonymphs from the same host and locality, 25. 4. 1967; 2 protonymphs from Pipistrellus coromandria (Gray), Jalalabad, 29. – 30. 4. 1967, all lgt. Gaisler, Povolný, Šebek, Tenora.

A palearctic species, distributed as far as Egypt, Lebanon (RADOVSKY 1967) and Israel (COSTA 1966). It parasitizes mainly members of the genus Pipistrellus, but has been also found on members of the genera Myotis, Plecotus and Eptesicus.

8. Steatonyssus (Steatonyssus) afer Radovsky et Yunker


Material: 5 ♀ 1 ♂ from Eptesicus serotinus (Schreb.), Jalalabad, 13. 4. 1967; 14 ♀ 6 ♂ protonymphs from the same host and locality, 26. 4. 1967; 6 ♀ 6 ♂ and 25 protonymphs from the same host and locality, 22. 4. 1967; 2 protonymphs from the same host and locality, 24. 4. 1967; 1 ♂ from Rhinopoma microphyllum (Brunnich) or R. hardwickii Gray, Chaknahr, 19. 4. 1967, all lgt. Gaisler, Povolný, Šebek, Tenora.

This species is known only from Angola and Sierra Leone and has been found on Nycteris macrotis Dobson and on Eptesicus tenuepinus (Peters) and Pipistrellus nanus (Peters). Geographically our findings are interesting, but due to the occurrence of elements of Ethiopian fauna in Central Asia they are not surprising. Our specimens differ in some details from the original description published by RADOVSKY and YUNKER (1963) and the redescriptions by TILL and EVANS (1964). These little differences show primarily in some dimensions (larger dorsal plates in female, longer tarsus I to IV both in male and female, shorter caudal setae in male and shorter terminal setae on opisthosomal plate in female), in the presence of 8 deuto sternal teeth instead of 7 in female (after TILL and EVANS 1964). Peritreme of male terminates before the anterior margin of coxa III, but its length is preserved (86). In other morphological characters our specimens fully agree with the original description and therefore the mentioned differences may be regarded as intraspecific variabilities, or subspecific features only.

9. Steatonyssus (Steatonyssus) gaisleri sp.n.  

Figs. 4, 5

Type host: Eptesicus nasutus (Dobson). Type locality: Bisut, Afghanistan, 2. 4. 1967, lgt. Gaisler, Povolný, Šebek, Tenora. Material submitted by natives.

Material: 1 ♀ 2♂ 5 protonymphs from type host and type locality, lgt. Gaisler, Povolný, Šebek, Tenora.

Holotype (female), allotype (male) and all paratypes are deposited in the collection of the Institute of Parasitology, Czechoslovak Academy of Sciences, Prague.

Female (Holotype): Idiosoma 890 long, 630 wide (all dimensions in µ). The specimen is fully engorged with blood and therefore its clarification is not perfect and some details are discernible with difficulty.

Dorsum (Fig. 4 A): Propodosomal plate 302 long, 266 wide, with 11 pairs of setae. Lateral setae somewhat thicker than submedial ones, 35—47 long; submedial setae 31—43 long, setae V not reduced at all and 31 long. Opisthosomal plate unusually elongated, 445 long, 215 wide. Submedial setae (D5, D6, D8) indiscernible, but probably developed. Posterolateral setae (S6, M10, M11) subequal, 19—21 long, subterminal setae developed, 6 long. Neotrichous setation on this
plate is probably not developed. Integument along the plate bears 42 pairs of thickened setae, 55—63 long, caudal setae 60 to 66 long.

Venter (Fig. 4 B): Tritosternal lacinia smooth. Sternal plate with strongly chitinized posterior margin, 52 long (in median axis), 160 wide (at the level of St 3). Sternal setae slender, measuring: St1—32, St2—43, St3—51. Metasternal setae 50 long. Genital plate relatively wide, rounded posteriorly. Anal plate 176 long,

102 wide; adanal setae 31, postanal 35 long. Integument bears 20—22 pairs of setae, of which the setae placed anteriorly to anal plate are slender, 36—39 long, the posterior ones thickened, 55—66 long, the caudal setae being the longest. Peritreme originates at the level of centre of coxa IV, not exceeding the level of the anterior margin of coxa III, 45 long. Peritremal platelet exceeds the peritreme on both ends, interrupted dorsally, with separated part at the level of the anterior margin of coxa II.

Legs: Chactotaxy typical for the genus. Tibia I 102 long, tarsus I 164, tarsus II 149, tarsus III 151, tarsus IV 184 long. Anterior spur on coxa II tapering to a sharp tip.

**Male (Allotype):** Idiosoma 600 long, 464 wide.

**Dorsum (Fig. 5 A):** Dorsal armature divided as in female. Propodosomal plate in median line 225 long, 231 wide, with 11 pairs of setae. Lateral setae 32—37 long; submedial setae 23—35 long, the shortest being V (23), the longest D1 (35).

![Fig. 5. Steatonyssus (Steatonyssus) gaisleri sp. n.: A - dorsal view of male, B - ventral view of male, C - pygidial plate of protonymph, D - coxa II of protonymph.](image)

Opisthosomal plate with a deep concave anterior margin, in median line 308 long, 149 wide (at the level of D1). Three pairs of submedial setae (series D) 27—31 long, subterminal minute setae only 9 long. Uncovered integument bears 18—20 pairs of weakly thickened setae 36—42 long.

**Venter (Fig. 5 B):** Tritosternal lacinia smooth. Holoventral plate undivided, relatively narrow, with irregular margins, 492 long, at the level of posterior cornua 127 wide. It bears 7 pairs of setae (28—35), a pair of adanal setae (28) and unpaired postanal seta (27). Beyond coxa IV a pair of small rounded platelets developed. Integument covered with 12—13 pairs of setae, of which the setae placed anteriorly to anal pore are slender, 25—29 long, the posterior ones thickened, 25—43 long.
Peritreme reaching the level of posterior margin of coxa II, 106 long. Peritremal platelet exceeding the peritreme, divided, with a separate leafy part attached to propodosomal plate.


Legs: As in female. Anterior spur on coxa II tapering to a sharp point as in female. Anterior seta on coxa III normal, setiform. The seta on coxa IV placed on anterior margin of coxa. Tarsus I 117, tarsus II 98, tarsus III 98, tarsus IV 125 long.


Dorsum: Propodosomal plate 172—180 long, 160—168 wide, with 11 pairs of setae, the interior being only slightly shorter (24—28) than lateral ones (35—40). Pygidial plate with weakly concave anterior margin (Fig. 5 C), in median axis 70—72 long, 109—121 wide, with 3 pairs of strong marginal setae (32—43), a pair of very fine subterminal setae (7) and a pair of fine additional setae between the first and second pair of marginal setae, 17 long. These setae, however, are absent in some paratype specimens, or only a single seta of this pair is developed. Integument is covered with 14 pairs of stout setae (39—43).

Venter: Sternal plate 110—123 long, 90—115 wide, St1—St3 are 32—39 long. Anal plate 67—70 long, 55—63 wide. Anal setae 23, postanal seta 27 long. Peritreme 70 long. Integument covered with 6 pairs of setae (31—39), the anterior ones being slender and shorter, the posterior ones stouter and longer.

Gnathosoma: Gnathosomal and hypostomal setae about the same length (12—15). Palptrochanter without ventrolateral projection.

Legs: Coxal setae normal, setiform. Anterior spur on coxa II abruptly tapering to a sharp point (Fig. 5 D).

The new species may be characterized by the unusual length of opisthosomal plate in female, exceeding 400 μ, which fact is unknown in any heretofore described species of the subgenus Steatonyssus, and by the division of dorsal plate in male. This feature occurs in the members of the subgenus Steatonyssus only in S. mongolicus Dusb., 1966 and S. superans Zemskaya, 1951, also described from Asia, so that it appears to be characteristic for endemic Asian species. But in S. mongolicus and S. superans the length of opisthosomal plate does not exceed 400 μ in female, and 300 μ in male, as evident with S. gaisleri sp. n. Moreover, in males of S. superans the holoventral plate is divided into three parts, while in S. gaisleri sp. n. it is whole. Posterolateral setae on opisthosomal plate in female of S. mongolicus are dissimilar, the median pair (M10) being visibly longer than the remaining two pairs, while in S. gaisleri sp. n. all three pairs of posterolateral setae are equal and relatively long. Protonymph of the new species may be characterized by the presence of additional setae on pygidial plate and by the shape of this plate. Additional setae
on pygidial plate of S. superans are undeveloped and the first pair of lateral setae on this plate is visibly shorter. Protonymph of S. mongolicus described by Dus-
BÁEK (1966) apparently does not belong to the genus Steatonyssus, but probably to the genus Cryptonyssus and therefore I dismiss its comparison with the new species. In order to differentiate S. gaisleri sp.n. from other oriental species, such as S. longispinosus Wang, 1960, S. hsui Li 1965, S. dalianensis Li 1965 etc., the unusual length of opisthosomal plate in female of the new species is a sufficient feature.

10. Androlaelaps casalis casalis (Berl.)


Material: 1 ♀ 1 protonymph from Pipistrellus pipistrellus (Schreb.), Kunduz, 5. 9. 1965, lgt. M. Daniel.

A cosmopolitan species, occurring in nests of birds, less often on rodents and in their nests. The subspecies myrmecophila Evans et Till, 1966 was described from ant hills in Great Britain. Zhovtyi et al. (1962) found this species in shelters of bats of the species Vespertilio murinus (L.) in the Transbaikal region of the USSR. Findings of this species on bats or in their shelters must be regarded as purely accidental.

11. Argas (Carios) vespertilionis (Latr.)


Material: 2 nymphs, 2 larvae from Pipistrellus pipistrellus (Schreb.), Kunduz, 4. 9. 1965; 3 ♂ 15 larvae from the same host and locality, 5. 9. 1965, all lgt. M. Daniel, 1 larva from Myotis longipes (Dobson), Jalalabad, 18. 3. 1967; 6 larvae from Scotophilus heathi (Horsfield), Jalalabad, 30. 3. 1967; 2 larvae from Eptesicus nasutus (Dobson), Bisut, 7. 4. 1967; 23 larvae from the same host and locality, 9. 10. 4. 1967; 2 larvae from Scotophilus heathi (Horsfield), Jalalabad, 8. 4. 1967; 7 larvae from the same host and locality, 22. 4. 1967; 28 larvae from Eptesicus serotinus (Schreb.), Jalalabad, 13. 4. 1967; 1 larva from Scotophilus heathi (Horsfield), Jalalabad, 25. 4. 1967; 8 larvae from Eptesicus serotinus (Schreb.), Jalalabad, 26. 4. 1967; 2 larvae from Pipistrellus coromandra (Gray) (?), Jalalabad, 29. 30. 4. 1967, all lgt. Gaisler, Povolný, Šebek, Tenora.

This species is common throughout the Old World, reaching as far as the Indomalayan and Australian regions. It parasitizes many bat species inhabiting caves, hollow trees and attics of dwellings. It has been reported from Afghanistan by Lindberg (1961) who found it in the cave Kouh-Kvadjah, district of Naouzar, north of Guerechik.

12. Argas (Chiropterargas) boueti Roubaud et Colas-Belecour

Argas boueti Roubaud et Colas-Belecour. 1933 Parasitology 25, 4: 472.

Material: 34 larvae from Rhinopoma hardwickei Gray, Chaknaur, 7. 4. 1967; 7 larvae from Rhinopoma microphyllum (Brünnich) from the same data and locality, all lgt. Gaisler, Povolný, Šebek, Tenora.

A species distributed throughout the African continent, reaching as far as the Near and Middle East. Hoogstraal (1954) reports it from Palestine, Nemenz (1960) also from Afghanistan, from the
cave Chamchir ghar, Pandjaval, near Kandahar. Most findings originate from members of the superfamilies Emballonuroidea and Rhinolophoidea, but findings are also known from the genera Eptesicus, Tadarida and others.

13. Argas (Secretargas) transgariepinus White


The species is primarily distributed in Africa, but has been also found in Spain, France, Italy, Switzerland, Greece, Palestine and Israel (Hoogstraal 1952, 1954, 1957, Starkoff 1958, Theodor and Costa 1960, Beauchourn 1966). It is known so far only from vespertilionid bats, *Pipistrellus savii savii* (Bonap.), *P. nathusii* Keys. et Blas. and *Plecatus auritus* (L.). The findings of this species in Afghanistan are not surprising.

In the territory of Afghanistan another two bat-infesting species of the genus *Argas* were found by Lindberg during his biospeleological investigations (Lindberg 1961, 1962). Travassos Santos Dias (1961) reports the species *Argas* (Chiropterargas) afghanistaniensis Travassos Santos Dias, 1961 from *Rhinopoma microphyllum* (Brönnich), found in the cave Kough-Kvadjah Largar, district of Nauzur, north of Guerech and in the cave Chamchir ghar, near Pandjaval. Nemenz (1960) determined the species *Argas* (Chiropterargas) confusus Hoogstraal. 1955 also from the cave Kough-Kvadjah Largar, but after Morel (1964) both these species are identical.

14. Ixodes (Eschatocephalus) vespertilionis C. L. Koch

*Ixodes vespertilionis* C. L. Koch, 1844 Arch. Naturgesch. 10 J, 1:217.


This species is known from the Eurasian continent and Africa, its distribution reaching as far as Japan (Hoogstraal 1956). It has been reported from Palestine by Arthur (1956), from Israel and south-Asian republics of the USSR by Olenev (1927, 1931) and Pomerantz (1937, 1950).

It was collected in Afghanistan by Lindberg, in the cave Zarmat, Gouvernement de Maimaneh, in the cave Kham Zindar, near Darrelo Chakh, region of Betchiragh, from *Rhinolophus ferrum-equinum irani* (Cheesman) (Lindberg 1961, Travassos Santos Dias 1961) and in the cave Chamchir near Kandahar (Beau-courn 1966). Many host species of bats of various families are known in literature, but the most often mentioned are members of the genus *Rhinolophus*.

15. Haemaphysalis (Haemaphysalis) erinacei Pavesi


This species is distributed in the Mediterranean region, i.e. North Africa, Southern Europe and the Near and Middle East. From Afghanistan it has been reported by Anastos (1954)—after Nemenz 1960, as *H. namidia* Neumann, 1905. The tick feeds on small mammals inhabiting burrows or frequenting caves. Morozova et al. (1964) found one larva on *Nyctalus noctula* (Schreb.) and one
nymph feeding on *Pipistrellus pipistrellus* (Schreb.) in the Kazakh SSR (as *H. numidiana* Neuemann, 1905). Because this tick reveals an affinity to insectivores and rodents, its findings on bats must be regarded as accidental and exceptional.

16. *Audytrombicula (Audytrombicula) taumasia* Vercammen—Grandjean

*Audytrombicula taumasia* Vercammen—Grandjean, 1963—Acarologia 5, 4:603

Material: 4 larvae from *Rhinopoma hardwickei* Gray, Chaknaur, 7. 4. 1965; 14 larvae from the same host, Darunta, 12. 4. 1967; 1 larva from *Miniopterus schreibersi* (Kuhl), Jalalabad, 3. 5. 1967, all lgt. Gaisler, Povolný, Šebek, Tenora.

The species is known so far only from Afghanistan and has been described from *Rhinopoma hardwickei scianum* Thomas, found in the cave Chamehir near Kandahar. In this case the host was probably *R. h. hardwickei* Gray.

17. *Sasatrombicula (Traubiella) multisternalae* (Vercammen—Grandjean)


Material: 1 larva from *Rhinopoma hardwickei* Gray, Chaknaur, 7. 4. 1967; 16 larvae from the same host, Darunta, 12. 4. 1967, lgt. Gaisler, Povolný, Šebek, Tenora.

This species has also been described from Afghanistan from *Rhinopoma microphyllum microphyllum* (Brünich) found in the cave Kvadjah Largur, Guerechek, district of Naouzur. Heretofore it has been known only from the type collection.

18. *Chiroptella (Oudemansidium) muscae* (Oudms).

*Allothrombidium muscae* Oudemans, 1906—Ent. Ber., Amsterdam 2. 27:43.

Material: 1 larva from *Rhinopoma hardwickei* Gray, Chaknaur, 7. 4. 1967; 1 larva from *Scotophilus heathi* (Horsfield), Jalalabad, 8. 4. 1967, all lgt. Gaisler, Povolný, Šebek, Tenora.

This species has been known only in Europe (France, Netherlands, Czechoslovakia, Austria, Bulgaria), where it parasitizes bats of the family Vespertilionidae. In Asia another species of the subgenus *Oudemansidium*, *Ch. (O.) subakamushi* (Schluger, 1948) has been described from *Epsteinia serotinus* (Schreb.). This species, however, has been recently synonymized with *Ch. (O.) muscae* by Tamyia Takeo (1962). Our findings of *Ch. (O.) muscae* in Afghanistan confirm this synonymy.

Vercammen—Grandjean (1963) reported from the territory of Afghanistan another 11 species of the family Trombiculidae, parasitic on bats, which have not been included in our collection. They are the following species:  

1) *Leptotrombidium (Ericotrombidium) aelleni* V. — G., 1963 from *Rhinolophus ferrumequinum irani* Cheesman, from the cave Khun Zindar, Beldiragh: *L. (E.) plecoti* V. — G., 1963 from *Plecotus wardi wardi* Thomas (= *P. austriacus* (Fischer)) from the cave Mont Qoul Khairish, west of Kabul and Kudjah gar, near Mazunah, Shourboud Valley; *Myotrombicula (Myotrombicula) olusa* V. — G., 1963 from *Rhinolophus ferrumequinum irani* Cheesman and *R. hipposidors midas* Andersen, fortress Qual'e Bost, southwest of Guerechek and from the cave Boulan, Qalat: *M. (M.) asselii* V. — G., 1963 from *Asselia tridens murraiana* (Andersen), the cave Khun-Dozd.

*) Generic and subgeneric combinations of species have been itemized after Vercammen—Grandjean’s revision of Trombiculidae of the world (Index List) — unpublished to date.
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