FOLIA PARASITOLOGICA (PRAHA) 21: 29—37, 1974.

SIPHONAPTERA FROM EASTERN AFGHANISTAN

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Abstract. During two expeditions of Czechoslovak parasitologists and zoologist, in 1966 and 1967, mainly to the region around Jalalabad, Afghanistan, 354 specimens of 16 species or subspecies of fleas were collected, adding one species to the faunal inventory of the country. Collecting data and some general notes concerning the various taxa are given below.

Under leadership of Prof. Dr. D. Povolný of the Agricultural University, Brno — to whom we are much indebted for the material studied—two expeditions of Czechoslovak zoologists explored mainly the valley of the Kabul River and ajdoining foothills, between Kabul and the Khyber Pass, in 1966 and 1967. Zoogeographically this is an interesting area, for it is the northwesternmost extension of the Indian Subregion of the Oriental Region. Among the material collected in that area are 270 specimens of fleas belonging to 10 species which clearly show that three zoogeographical subregions meet here. Four of those species *(Acropsylla traubi, Nosopsyllus punjabensis, Xenopsylla astia, X. hussaini)* belong to the fauna of the Indian Subregion of the Oriental Region, one *(Synosternus cleopatrae)* is typical of the Mediterranean Subregion of the Palaearctic Region, three *(Amphipsylla montium, Nosopsyllus afghanus, Phaenopsylla* sp.) are characteristic of the Siberian Subregion of the Palaearctic Region and two species *(Ctenocephalides felis felis, Xenopsylla cheopis)* are cosmopolitan.

In the mountainous district to the west of Kabul 84 fleas were collected and these belong to the Palaearctic fauna (Smit and Rosický 1973).*)

COLLECTING LOCALITIES

(listed in west-east order, with enumeration of trapping results)

Bamiyan (or Bamian) 34.50 N 67.50 E (Bamiyan province), 2700 m.

Meriones persicus, 20. V. 1967, on a rocky slope: 1 ♀ *Xenopsylla conformis conformis*

Shibar Pass (or Shebar Kowtal-e) 34.54 N 68.14 E (Parwan province)

*) At the time when our galley proofs arrived from the printers we learned that an important publication by R. E. Lewis on the flea-fauna of Afghanistan had been published in September 1973. We draw direct attention to this fact because Lewis's results complete our data on some species.

Our joint-paper on fleas from Hindu Kush was published in November 1973 and the name of one of our new species, *Callopsylla danieli*, now proves to be a synonym of *Callopsylla streeti* Lewis, 1973 (Syn. nov.).

Canis aureus or *Vulpes* sp., 4. III. 1967: 25♂ 41♀ *Pulex irritans*, 3♂ 4♀ *Chaetopsylla globiceps*, 3♀ *Ctenocephalides canis*

Ochotona rufescens, V. 1967, on a rocky slope: 1♂ 1♀ *Ctenophyllus rufescens*, 1♂ 3♀ *Callopsylla caspia tiflovi*

Meriones persicus, 21. V. 1967, near highway: 1♀ *Nosopsyllus afghanus*

Laghman region, 35.00 N 70.15 E (Eastern province)

Herpestes auropunctatus, 25. II. 1966: 3♀ *Ctenocephalides felis felis*, 1♂ 1♀ *Synosternus cleopatrae cleopatrae*

Tatera indica, 25. II. 1966, in a rocky field (leg. J. Niethammer): 1♂ 2♀ *Xenopsylla astia*, 2♀ *Nosopsyllus punjabensis;* 23. III. 1967, in dry river bed at edge of rocky desert: 5♂ 12♀ *X. astia*

Daruntah 34.28 N 70. 22 E (12 KM W. of Jalalabad), sulphur spring in desert mountains (Eastern province).

Calomyscus bailwardi, 28. III. 1967: 1♂ 1♀ *Amphipsylla montium;* 31. III. 1967: 1♂ 4♀ *A. montium*

Rattus rattoides, 28. III. 1967: 1♂ 1♀ *Nosopsyllus punjabensis;* 31. III. 1967: 1♀ *N. punjabensis*

Daruntah 34.28 N 70.22 E, on a rocky slope in mountains

Meriones persicus, 11. IV. 1967: 4♂ 5♀ *Nosopsyllus afghanus*

Jalalabad 34.26 N 70.28 E (Eastern province)

Miniopterus schreibersi, 15. III. 1967, near Royal Palace: 1♂ *Xenopsylla hussaini*

Herpestes auropunctatus, 10. III. 1966, western edge of town: 6♂ 3♀ *Ctenocephalides felis felis*

Mus musculus, 9. III. 1966, edge of wheat field: 1♂ *Synosternus cleopatrae cleopatrae;* 12. III. 1967, near a house at edge of desert: 1♂ 2♀ *Acropsylla traubi*

Meriones lybicus, loess semidesert, near military camp, 19. II. 1966: 4♀ *Nosopsyllus afghanus;* 26. II. 1966: 2♂ 12♀ *Synosternus cleopatrae cleopatrae*, 1♀ *Xenopsylla astia;* 27. II. 1966: 1♀ *S. c. cleopatrae*, 7♀ *N. afghanus;* 21. II. 1966: 1♂ *S. c. cleopatrae*, 6♀ *N. afghanus;* 22. II. 1966, loess desert, near Royal farm: 5♂ 5♀ *S. c. cleopatrae;* 7. III. 1966: 8♂ 4♀ *S. c. cleopatrae;* 28. II. 1966, cemetery in desert, 5 KM E. of Jalalabad: 2♂ 2♀ *N. afghanus;* 1. III. 1966, loess desert, 8 KM S. E. of Jalalabad: 7♂ 9♀ *S. c. cleopatrae;* 2. III. 1966: 4♂ 11♀ *S. c. cleopatrae*, 1♀ *N. afghanus;* 11. III. 1967, loess semidesert, 5 KM S. E. of Jalalabad: 7♂ 8♀ *S. c. cleopatrae*, 1♂ 3♀ *N. afghanus*, 1♀ *Xenopsylla astia;* 20. IV. 1967, semidesert, 5 KM S. E. of Jalalabad: 1♂ 2♀ *S. c. cleopatrae.*

Nesokia indica, 22. II. 1966, in a field near Royal farm: 1♀ *Acropsylla traubi;* 10. III. 1967: 1♀ *Synosternus cleopatrae cleopatrae*, 2♀ *Nosopsyllus punjabensis;* 10—11. III. 1967, on University lawn: 1♂ 1♀ *N. punjabensis;* 14. III. 1967, near solitary houses, edge of highway Jalalabad — Samrchel: 1♂ *Xenopsylla hussaini;* 15. III. 1967: 4♂ 4♀ *N. punjabensis*

Tatera indica, 17. III. 1967, solitary houses, edge of highway Jalalabad — Samrchel: 2♂ 2♀ *Xenopsylla astia*, 1♀ *X. hussaini*, 1♂ *N. afghanus*

Bisut, ± 4 KM N. of Jalalabad (Eastern province)

Rattus rattus, 5. III. 1966, in a field: 1♀ *Nosopsyllus punjabensis;* 6. III. 1966: 1♂ *Synosternus cleopatrae cleopatrae*, 1♂ *N. punjabensis*, 1♂ *N. afghanus;* 4. IV. 1966, in courtyards of country houses: 1♂ *Xenopsylla cheopis;* 6. IV. 1966: 5♂ 1♀ *X. cheopis;* 7. IV. 1966: 3♂ 1♀ *X. cheopis;* 15. IV. 1966: 3♀ *X. cheopis*

near Samrchel, ± 10 KM E. of Jalalabad (Eastern province)

Meriones lybicus, 5. III. 1966, basalt desert and loess dunes: 27♂ 30♀ *Synosternus cleopatrae cleopatrae*, 1♂ *Nosopsyllus afghanus;* 10. III. 1967, rocky desert: 2♂ 2♀ *S. c. cleopatrae;* 30. III. 1967, sandy semidesert: 3♂ 2♀ *S. c. cleopatrae*

Rattus rattus, 18. III. 1967, near tea-room: 1♀ *Nosopsyllus afghanus*, 4♂ 4♀ *Xenopsylla cheopis*

Tatera indica, 23. II. 1966, in tea-room: 1♂ 1♀ *S. c. cleopatrae;* 11. III. 1967: 1♀ *Xenopsylla hussaini;* 13. III. 1967: 1♂ *X. hussaini*

Dar-i-Nur (Darra-Nur) 34.45 N 70.34 E (Eastern province)

Meriones persicus, 19. III. 1967, on rocky mountain slope: 2♂ 2♀ *Nosopsyllus afghanus*

Chaknaur, 12 KM W. of the Khyber Pass (34.06 N 71.05 E) (Eastern province)

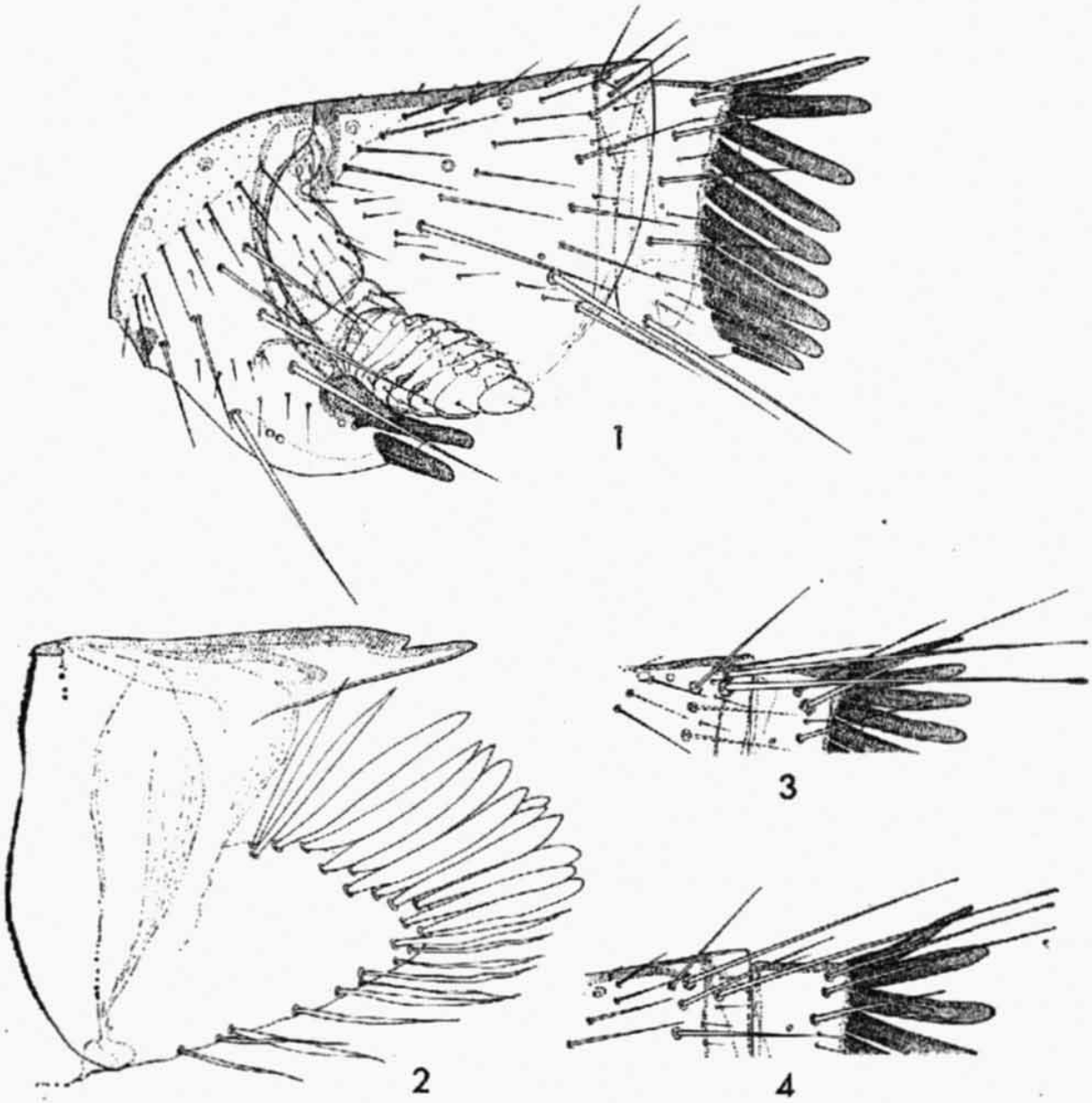
Rhinopoma microphyllum, 7. IV. 1967, in a cave in a rocky slope): 1♀ *Phaenopsylla* sp. indet.

LEPTOPSYLLIDAE

Acropsylla traubi Lewis, 1973 (Figs. 1, 2, 5, 6)

Jalalabad, *Mus musculus:* 1♂ 2♀; *Nesokia indica:* 1♀.

Lewis (1973) reported this species from 8 KM S. of Kamdesh, i.e. 135 KM N.E. of Jalalabad, and from various localities just across the frontier in neighbouring Pakistan; nearly all taken from *Mus* sp.



Figs. 1, 2. *Acropsylla traubi* Lewis (1) Head of ♂; (2) Sternum VIII, ♂.
Figs. 3, 4. Dorso-posterior part of head and dorsal part of pronotum of ♂ of: (3) *Acropsylla* sp. (from southern India); *A. girshami* Traub (paratype).

Of the two other described species, one —*A. episema* Rothschild, 1911 — is only known from the ♀ holotype from Dacca (Bangladesh), the other —*A. girshami* Traub, 1950 — from both sexes from Upper Burma, Yunnan and Fukien. Specimens of *Acropsylla* from southern India differ markedly in the male from those of *A. girshami* but it cannot yet be ascertained whether or not these belong to *episema* or to an undescribed species.

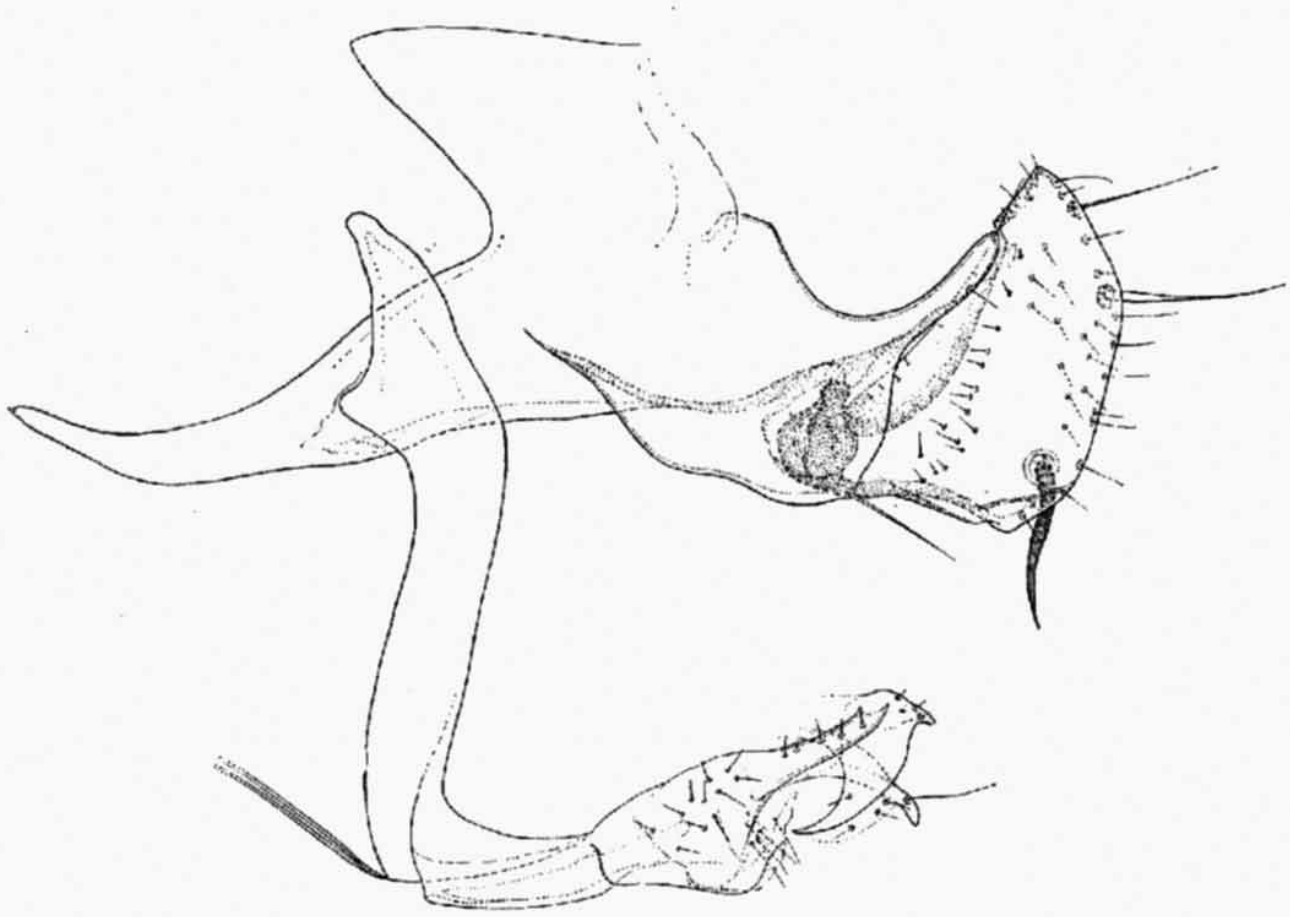


Fig. 5. *Acropsylla traubi* Lewis Paramere and sternum IX.

It has not yet been pointed out that *A. traubi* is distinguishable in the male from *A. girshami* and the southern India specimens by the fact that the few setae posterior to the dorsal ones of the posterior occipital row are about as long as the latter; in the male of the other taxa these setae are very long, the tip of at least one of them reaching well beyond those of the pronotal spines (Fig. 1, cf. Figs. 3, 4). The taxonomically important genitalia have only been partly figured by Lewis (1973); more extensive illustrations are given here (Figs. 2, 5, 6) (the precise structure of the apical portion of ♂ sternum IX cannot be made out in the preparation; the phallosome is similar to that of *A. girshami* but is not well positioned in our specimen for drawing purposes).

Amphipsylla montium Jordan, 1944

Daruntah, *Calomyscus bailwardi:* 2♂ 5♀

A specific parasite of the mouse-like hamster *Calomyscus bailwardi*, which is found in rocky terrain in the lower mountainous regions of Transcaucasia, Iran, Turkmenia, Afghanistan and Beluchistan. In Afghanistan this flea was hitherto only known from the Paghman mountains (Jordan 1944; Peus 1966).

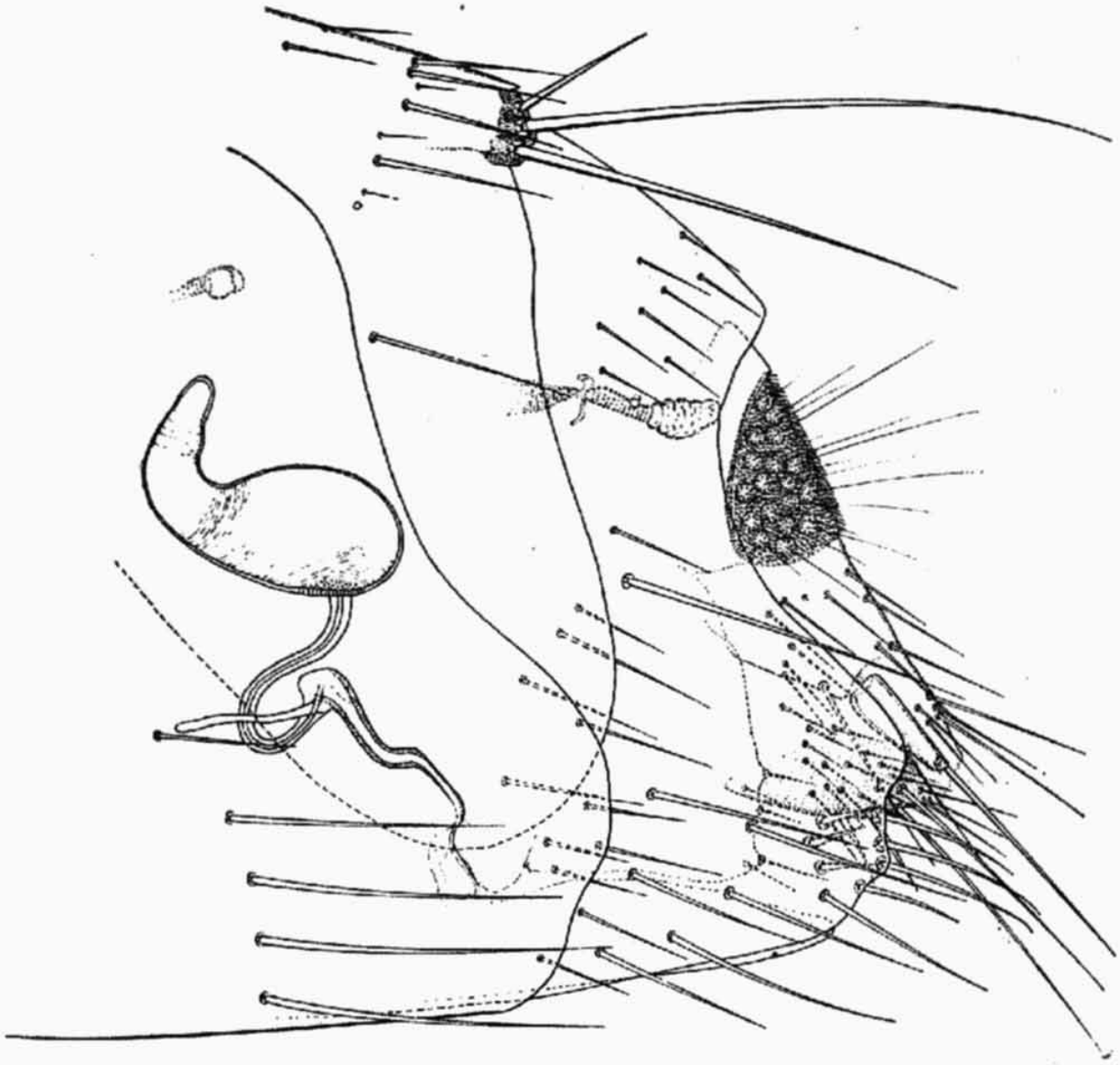


Fig. 6. *Acropsylla traubi* Lewis Terminalia of ♀.

Ctenophyllus (Ctenophyllus) rufescens Ioff, 1946

Shibar Pass, *Ochotona rufescens:* 1♂ 1♀

This species had already been found in Afghanistan in the Unai Pass (Peus 1966), Band-i-Amir and Kotal Pass (Smit and Rosický 1973), Dasht-i-Nawar and Dumandi Pass (Lewis 1973); also known from the Kopet-Dag mts in Turkmenia. Like the other species of *Ctenophyllus*, this is a specific flea of *Ochotona*. The apex of the ductus obturatus in the female specimen is not dilated (Smit and Rosický 1973: fig. 8).

Phaenopsylla sp. indet.

Chaknaur, *Rhinopoma microphyllum:* 1♀

Phaenopsylla is a little-known genus of parasites of *Calomyscus bailwardi* (the occurrence on the bat *Rhinopoma microphyllum* is highly accidental) and it is at present not possible to evaluate the status of the single female specimen recorded above.

***Callopsylla (Callopsylla) caspia tiflovi* Wagner, 1936**

Shibar Pass, *Ochotona rufescens:* 1♂ 3♀

Already known from the Shibar Pass (Jordan 1944 — as "*Citellophilus alticola* Jordan, 1944", a synonym of *Callopsylla caspia tiflovi* Wagner, 1936; Smit and Rosický 1973). Also recorded from Band-i-Amir and the Kotal Pass; for a distribution map of this and related subspecies, see Smit and Rosický 1973: fig. 13. Lewis (1973) adds Dasht-i-Nawar, Dumandi Pass, Herat, Paghman Mts, Sauzak Pass and Unai Pass. *C. caspia tiflovi* is specific to *Ochotona rufescens* (but may also be found on other rock-inhabiting mammals, and occurs outside Afghanistan in the mountains of Iran, Kopet-Dag and the Bol'shoy Balkhan.

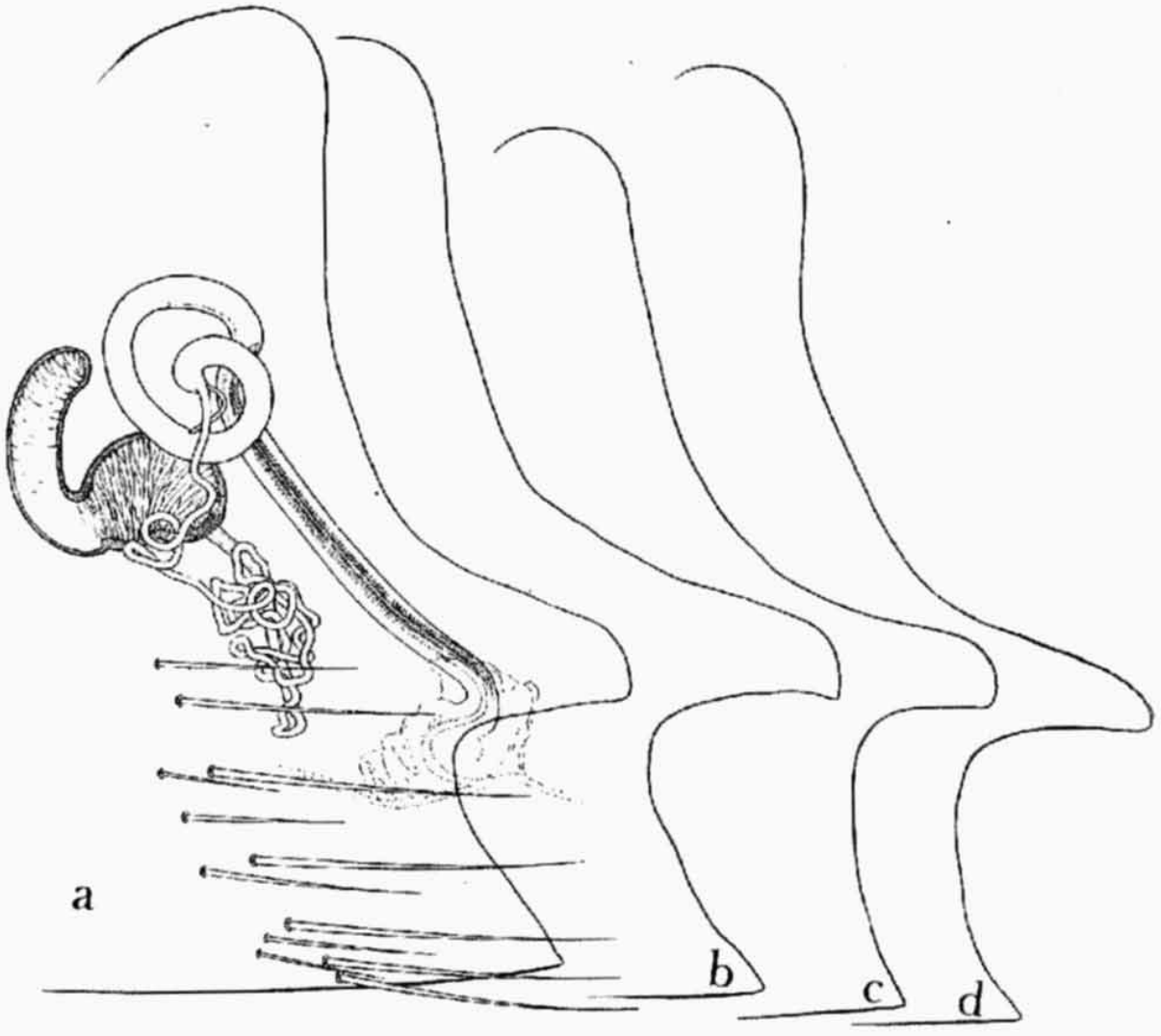


Fig. 7. *Nosopsyllus afghanus* Peus. (a) Sternum VII and genitalia, ♀; (b—d) Outlines of sternum VII of three other females to show variation.

***Nosopsyllus (Gerbillophilus) afghanus* Peus, 1957** (Fig. 7)

Shibar Pass, *Meriones persicus:* 1♀
Daruntah, *Meriones persicus:* 4♂ 5♀
Jalalabad, *Meriones lybicus:* 3♂ 20♀

Bisut, *Rattus rattus:* 1♂
Jalalabad-Samrchel highway, *Tatera indica:* 1♂
Samrchel, *Rattus rattus:* 1♀
Dar-i-Nur, *Meriones persicus:* 2♂ 2♀

This species was known from the ♂ holotype taken in the environs of Kabul from *Meriones lybicus* (Peus 1957) and from various other localities in rather low-lying districts (Lewis 1973). It is obvious that this flea is a common parasite mainly of *Meriones*.

The variation in outline of sternum VII of females is shown in Fig. 7a—d. In the preparations of the females the remains can be seen of the ducts, with their basical dark dot-like expansions, of the glands which secrete through the area cribriforms into the spermatheca; it is noteworthy that similar dark spots are distributed throughout the skein formed by the doctus spermathecae which therefore seems to be embedded in a glandular structure.
Length: ♀ 2.5—3 mm.

Nosopsyllus (Nosopsyllus) punjabensis (Jordan et Rothschild, 1921)

Laghman region, *Tatera indica:* 2♀
Daruntah, *Rattus rattoides:* 1♂ 2♀
Jalalabad, *Nesokia indica:* 5♂ 7♀
Bisut, *Rattus rattus:* 1♂ 1♀

A common parasite of rats *(Rattus* and *Nesokia)* in Tadzhikistan, Uzbekistan and northern India.

PULICIDAE

Ctenocephalides canis (Curtis, 1826)

Shibar Pass, jackal or *Vulpes* sp.: 3♀
Either of these canids could have been the host of these fleas.

Ctenocephalides felis felis (Bouché, 1835)

Laghman region, *Herpestes auropunctatus:* 3♀
Jalalabad, *Herpestes auropunctatus:* 6♂ 3♀

In Afghanistan the cat-flea was hitherto known from Kabul (on cat, dog, man) and from Col de Sabzzak and Doab (from under a stone). The many records, from the mongoose *Herpestes auropunctatus*, are of interest as Haas (1966) showed, on ecological, physiological and behavioural evidence, that in the Hawaiian islands this mongoose (introduced there some 90 years ago from Jamaica where a number of mongooses from India were released some 10 years earlier) is a true host of the cat-flea.

Pulex irritans Linnaeus, 1758

Shibar Pass, jackal or *Vulpes* sp.: 25♂ 41♀

The "human-flea" is obviously common in parts of this country; Peus (1957) recorded it from human abodes in 8 localities and Smit (1960) from a dog, a cave and

under a stone in three other localities. The fox is one of the preferred hosts in the Middle East.

***Synosternus cleopatrae cleopatrae* (Rothschild, 1903)**

Laghman region, *Herpestes auropunctatus:* 1♂ 1♀
Jalalabad, *Mus musculus:* 1♂; *Nesokia indica:* 1♀; *Meriones lybicus:* 28♂ 44♀
Bisut, *Rattus rattus:* 1♂
Samrchel, *Meriones lybicus:* 32♂ 34♀; *Tatera indica:* 1♂ 1♀

A common parasite of gerbils. This, the nominate, subspecies is known from Spanish Sahara, Algeria, Sudan, Egypt, Saudi Arabia, Iraq, Iran and as far east as Pakistan (Smit 1964).

***Xenopsylla astia* Rothschild, 1911**

Laghman region, *Tatera indica:* 6♂ 14♀
Jalalabad-Samrchel highway, *Tatera indica:* 2♂ 2♀
Jalalabad, *Meriones lybicus:* 2♀

Throughout most of the Oriental Region, very common in warm plains with high humidity; chiefly on rats (*Rattus*) but also on gerbils. Hitherto known in Afghanistan from Kandahar (Peus 1957).

***Xenopsylla cheopis* (Rothschild, 1903)**

Bisut, *Rattus rattus:* 9♂ 5♀
nr. Samrchel, *Rattus rattus:* 4♂ 4♀

Hitherto the best known "oriental plague flea" had only been recorded in this country from Ishmurkh-Darrah in the Wakhan region at an altitude of nearly 4000 m. (Smit and Rosický 1973). We stated that the occurrence at that altitude "is surprising and may not easily be explained" because Pulicid fleas are normally not found at considerable altitudes, i.e. at low temperatures. At Bisut these fleas were only found on black rats living near houses, not on the ones living in the field.

***Xenopsylla conformis conformis* (Wagner, 1903)**

Bamiyan, *Meriones persicus:* 1♀

Thus far recorded from Afghanistan by Jordan (1944; from Ghazni), Peus (1966; from Chindzhan) and Smit and Rosický (1973; from Faizabad). This flea is a specific parasite of *Meriones* and is found in a large area from S. E. Russia in the west to Inner Mongolia in the east.

***Xenopsylla hussaini* Sharif, 1930**

Jalalabad, *Nesokia indica:* 1♂; *Miniopterus schreibersi:* 1♂.
Jalalabad-Samrchel highway, *Tatera indica:* 1♀
Samrchel, *Tatera indica:* 1♂ 1♀

Faunar nova species. A relatively little-known flea of *Tatera indica*, collected up till now in the Punjab and Uttar Pradesh (India) and in Pakistan.

VERMIPSYLLIDAE

Chaetopsylla (Chaetopsylla) globiceps **(Taschenberg, 1880)**

Shibar Pass, jackal or *Vulpes* sp.: 3♂ 4♀

A common flea of *Vulpes vulpes*, distributed from Europe through Turkey, Iran, Afghanistan and S. E. Russia into the Tian'-Shan mountains in Central Asia.

БЛОХИ (*SIPHONAPTERA*) ВОСТОЧНОГО АФГАНИСТАНА

Ф. Г. А. М. Смит и Б. Росицкий

Резюме. Во время двух экспедиций (1966, 1967) чехословацких паразитологов и зоологов в Афганистан (область Джалалабада) собрано всего 354 особей, относящихся к 16 видам или подвидам блох. Приводятся сведения о сборе и общие примечания относительно разных таксонов.

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Received 9 July 1973.

F. G. A. M. S., British Museum (Natural History) London, England