

Ectoparasitic mites (Acarina: Parasitiformes) from small mammals from the Tärnasjö and Ammarnäs areas in Swedish Lapland

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1. Introduction

Very little has been published on the parasitic mites of the small mammals of Scandinavia. During the last seven years much material has been collected by working groups from the Department of Animal Ecology, University of Lund, as a part of the department's research on small mammals and their ectoparasites.

The present paper deals with material collected in the Tärnasjö and Ammarnäs areas, Lycksele lappmark, in Swedish Lapland during the years 1963—1966. The collectors were: Å. Pettersson, C. Rådeberg and L. E. Wiss (15/6—30/6 1963); H. Andersson, P. H. Enckell and B. Hyllén-Cavallius (12/7—18/7 1963); G. & P. Brinck, L. Cederholm and I. Rudebeck (4/9—17/9 1963); H. E. Lindskog (16/6—10/7 1963, 12/6—9/7 and 6/9—19/9 1964); S. Ulfstrand (4/7—11/8 1963, 15/5—23/5 1964); P. Brinck and L. Cederholm (28/6—30/6 1964); L. Hansson (12/6—16/6 1964, 17/6—27/6 1965, 15/6—20/6 1966).

2. Material and methods

1,651 small mammals were collected. Ectoparasitic mites were found on 518 host animals, 49 of which were dead when removed from the traps. 2,688 specimens of parasitic mites were collected from the fur of the mammals. 2,379 were from live mammal specimens.

The mammals were collected in net cage traps (Hansson 1967), placed in plastic bags, killed with ether and injected with 10 ml formalin-alcohol (1 part 4 % formalin and 1 part 80 % ethanol). About 30 ml formalin-alcohol was poured in each bag.

The ectoparasites were removed in the laboratory and prepared for microscopic examination in Swan's medium, Kramar's modification (Hrbacek et al. 1954).

Most of the material was determined by Dr. Milan Mrciak, Zoological Institute, Bratislava during his stay at the University of Lund.

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3. Localities

The host material was collected in the following localities.

- a. At River Vindelälven, Dalovardo vaktstuga. Forest with *Betula pubescens* ssp. *tortuosa* and some *Juniperus* and *Salix* between two mountains. Several small mires and small streams. Altitude ca. 640 m.
- b. At River Vindelälven, Vindelkrokens sommarviste. Similar to Dalovardo. Altitude ca. 650 m.
- c. Forsavanstugan, Lake Tärnasjön. *Betula* forest with rich undergrowth of herbs and grass. Altitude ca. 600 m.
- d. Tärnasjöstugan, Lake Tärnasjön. *Betula* forest on hill near the lake, surrounding grassy meadows. Behind the hill, marshy area with thick *Salix* scrub. Altitude ca. 600 m.
- e. At Lake Storvindeln, Vallnäs. Old *Picea* forest. Stony and moss-covered ground. Altitude ca. 340 m.
- f. At Karsbäcken stream. Rather dry, open *Pinus* forest with boulders at places, elsewhere moist meadow-type mixed forest. Altitude 450 m.
- g. 5 km W Ammarnäs village. Old *Picea* forest with scattered *Betula*. Moss-covered ground. Altitude ca. 450 m.
- h. 5.5 km W Ammarnäs village. Cultivated ground around farm, close to a *Picea* forest. Altitude ca. 475 m.
- i. 6 km W Ammarnäs village. Moor *Betula* forest with *Juniperus* and *Vaccinium myrtillus*. Altitude ca. 530 m.
- j. Kraipe, 13 km SSE Ammarnäs village. Forest with *Betula pubescens* ssp. *tortuosa*. Altitude ca. 750 m.
- k. Kraipe, 13 km SSE Ammarnäs village. Open forest with *Betula pubescens* ssp. *tortuosa*, *Juniperus* and lichens. Altitude ca. 780 m.
- l. At Kuolatjåkko mountain, 15 km SSE Ammarnäs village. Moor with *Empetrum* and *Betula nana*. In some places stretches of *Carex* and *Salix*. Altitude ca. 820 m.
- m. At Täratjåkko mountain, 9 km NNE Ammarnäs village. Moor with *Empetrum* and *Betula nana*. Altitude ca. 800 m.
- n. At Lake Tjulträsk. Damp, meadow-type mixed forest near small stream. Altitude 716 m.
- o. Tjulträsk village. Thick forest with *Betula* and some scattered *Pinus* and *Picea*. Close to cultivated meadowland. Altitude ca. 560 m.
- p. At Kaissats mountain. Lush, damp area with tall herbaceous vegetation and thick *Salix* scrub. In some places *Carex* and *Betula nana*. Altitude ca. 700 m.
- q. Djupfors village. Scattered, small *Betula pubescens* ssp. *tortuosa* and *Betula nana* and *Empetrum* besides. Altitude ca. 750 m.
- r. At River Vindelån. Open area with *Salix*, *Juniperus* and bushes of *Betula*. Often stony and moss-covered ground. Altitude ca. 390 m.

4. Small mammal material

The 1,651 specimens collected represented 8 species (see table 1). 1,133 specimens had no gamasid mites.

Table 1. List of the small mammal species investigated

| Species | Localities | | | | | | | | | | | | | | | | | | Σ | Specimens with mites | Dead specimens of those with mites |
|--|------------|---|----|-----|----|-----|-----|-----|----|----|-----|----|----|---|-----|----|----|----|------|----------------------|------------------------------------|
| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | | | |
| <i>Neomys fodiens</i> Penn. | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | 1 | — | — |
| <i>Sorex araneus</i> L. | — | — | 5 | 30 | 4 | 16 | 7 | 16 | 5 | 3 | 26 | 3 | 1 | — | 60 | 2 | — | — | 178 | 10 | 4 |
| <i>Clethrionomys glareolus</i> Schreb. | 3 | 2 | 46 | 107 | 38 | 298 | 100 | 111 | 62 | 28 | 61 | 12 | 26 | — | 157 | 8 | — | 2 | 1061 | 273 | 11 |
| <i>C. rufocanus</i> Sundevall ... | — | 1 | 10 | 1 | 3 | 11 | 3 | — | — | 1 | 27 | 12 | 12 | — | 7 | 4 | 13 | 22 | 127 | 60 | 16 |
| <i>Microtus agrestis</i> L. | 11 | 4 | 29 | 59 | 4 | 22 | 3 | 9 | 9 | 7 | 23 | 2 | 16 | 2 | 7 | 5 | — | 7 | 219 | 150 | 17 |
| <i>Lemmus lemmus</i> L. | — | — | 6 | 1 | — | 2 | — | 1 | — | — | 30 | 2 | — | — | — | — | — | 18 | 60 | 20 | 1 |
| <i>Mustela minuta</i> Pomel | — | — | 1 | 1 | — | 1 | — | — | — | — | — | — | — | — | — | — | — | 1 | 4 | 4 | — |
| <i>Mustela vulgaris</i> Erxleben | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | 1 | 1 | — |
| Σ | 14 | 7 | 97 | 199 | 49 | 350 | 113 | 137 | 76 | 39 | 168 | 31 | 55 | 2 | 232 | 19 | 13 | 50 | 1651 | 518 | 49 |

Table 2. The abundance of the mite species on the localities

| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | Σ |
|--|----|---|-----|-----|----|-----|----|-----|----|----|-----|----|-----|----|----|---|---|-----|------|
| <i>Eugamasus remberti</i> | — | — | — | — | — | 1 | — | 1 | 1 | 2 | 5 | — | — | — | 2 | — | — | — | 12 |
| <i>Eugamasus</i> sp. | — | — | — | 6 | — | 5 | 1 | 13 | 2 | 2 | 1 | — | — | — | — | — | — | — | 30 |
| <i>Poecilochirus necrophori</i> | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | 1 |
| <i>Cyrtolaelaps mucronatus</i> | — | — | 10 | 4 | — | 1 | 2 | 6 | 2 | — | 2 | — | — | — | — | — | — | — | 27 |
| <i>C. minor</i> | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 |
| <i>Eulaelaps stabularis</i> | 1 | — | 18 | 15 | 1 | 13 | 2 | 12 | 3 | 1 | 3 | — | — | — | 2 | — | 1 | 2 | 74 |
| <i>Laelaps lemmi</i> | — | — | 1 | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | 2 |
| <i>L. hilaris</i> | 45 | — | 172 | 154 | 2 | 61 | 7 | 12 | 26 | 11 | 22 | — | 128 | 23 | 2 | 5 | — | 178 | 848 |
| <i>L. clethrionomydis</i> | — | — | 98 | — | — | 36 | — | — | 1 | 2 | 4 | — | 3 | 2 | 3 | 1 | 1 | 382 | 533 |
| <i>Hyperlaelaps arvalis</i> | 5 | — | 57 | 51 | — | 14 | 2 | 9 | 2 | — | 15 | — | 4 | 18 | 1 | 3 | — | 83 | 264 |
| <i>Myonyssus ingricus</i> | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | 2 |
| <i>Haemogamasus nidi</i> | — | — | 53 | 10 | 4 | 10 | 22 | 28 | 13 | 1 | 5 | — | 3 | 1 | 8 | — | — | 19 | 177 |
| <i>H. nidiformis</i> | 1 | — | 15 | 19 | — | 29 | 6 | 21 | 6 | 2 | 10 | — | 2 | — | 1 | — | — | 18 | 130 |
| <i>H. ambulans</i> | — | — | 29 | 44 | 3 | 29 | 16 | 8 | 10 | 2 | 5 | 1 | 3 | — | 7 | — | — | 6 | 163 |
| <i>Hirstionyssus isabellinus</i> | — | 1 | 78 | 142 | 1 | 12 | 8 | 21 | 6 | 4 | 47 | 16 | 24 | 2 | 11 | — | — | 6 | 379 |
| <i>H. musculi</i> | — | — | — | 3 | — | — | — | — | — | 5 | — | — | — | — | 1 | — | — | — | 9 |
| <i>H. tatricus</i> | — | — | — | — | — | — | — | — | — | — | 4 | — | — | — | — | — | — | 32 | 36 |
| Σ | 52 | 1 | 533 | 448 | 11 | 211 | 66 | 131 | 77 | 27 | 124 | 18 | 167 | 46 | 39 | 9 | 2 | 726 | 2688 |

5. Acarine material

The 2,688 specimens represented 17 species of mites. 20 specimens were protonymphs; 252 deutonymphs; 314 males; and 2,102 females. Their occurrence in the localities is shown in table 2 and on the hosts in tables 3 and 4. All the species except *Haemogamasus nidi* are new to Sweden (cf. Trägårdh 1910 and Willmann 1943).

The species are listed below, arranged according to Bregetova's (1956) system.

Family *Parasitidae*

Eugamasus remberti Berlese, 1912

Deutonymphs from *Clethrionomys glareolus*, *Microtus agrestis* and *Mustela vulgaris*.

Eugamasus remberti is the most common species of the family in Central Europe. It is commonly found as deutonymphs on small mammals in Central Europe, in the Balkan Peninsula (Mrčiak 1959 a—b, Mrčiak and Tovornik 1966) and in Finland (Mrčiak and Brander 1965). Vitzthum (1929) observed it in nests of small mammals, Bregetova (1956) in nests of moles and Nordberg (1936) in nests of birds. Willmann (1954) recorded it as a free-living species.

Eugamasus sp.

Deutonymphs from *Clethrionomys glareolus* and *Microtus agrestis*.

Poecilochirus necrophori Vitzthum, 1930

Of this species one deutonymph was found on *Clethrionomys glareolus*. It is normally a parasite of beetles (*Geotrupes* and *Necrophorus*) and is only occasionally found on small mammals, and then mostly as deutonymphs. In Finland it was recorded by Mrčiak (1964) from *Charadrius apricarius* L. and by Mrčiak and Brander (1965) from *Rattus norvegicus* Berkenhout.

Family *Ascaidae*

Cyrtolaelaps mucronatus G. & R. Canestrini, 1881

Deutonymphs and one protonymph from *Clethrionomys glareolus* and *Microtus agrestis*.

Willmann (1941) observed it as a free-living species in Yugoslavia. According to Mrčiak and Brander (1965) it occasionally occurs on small mammals and in their nests, mostly as deutonymphs.

Cyrtolaelaps minor Willmann, 1952

One deutonymph from *Microtus agrestis*. The species is very rare in the fur of small mammals (Mrčiak 1959 b).

Family *Laelaptidae*

Eulaelaps stabularis C. L. Koch, 1836

Adult females from *Sorex araneus*, *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis* and *Lemmus lemmus*.

Table 3. *The abundance of the mite species on their hosts*

| | <i>S. araneus</i> | <i>C. glareolus</i> | <i>C. rufocanus</i> | <i>M. agrestis</i> | <i>L. lemmus</i> | <i>M. minuta</i> | <i>M. vulgaris</i> | ♀ | ♂ | Protonymph (N I) | Deutonymph (N II) | Σ |
|--|-------------------|---------------------|---------------------|--------------------|------------------|------------------|--------------------|------|-----|---------------------|----------------------|------|
| <i>Eugamasus remberti</i> | — | 7 | — | 1 | — | — | 4 | — | — | — | 12 | 12 |
| <i>Eugamasus</i> sp. | — | 28 | — | 2 | — | — | — | — | — | — | 30 | 30 |
| <i>Poecilochirus necrophori</i> | — | 1 | — | — | — | — | — | — | — | — | 1 | 1 |
| <i>Cyrtolaelaps mucronatus</i> | — | 17 | 4 | 4 | 2 | — | — | — | — | 1 | 26 | 27 |
| <i>C. minor</i> | — | — | — | 1 | — | — | — | — | — | — | 1 | 1 |
| <i>Eulaelaps stabularis</i> | 1 | 40 | 18 | 13 | 2 | — | — | 74 | — | — | — | 74 |
| <i>Laelaps lemmi</i> | — | — | — | — | 2 | — | — | 2 | — | — | — | 2 |
| <i>L. hilaris</i> | — | 86 | 46 | 704 | 8 | 4 | — | 728 | 66 | 5 | 49 | 848 |
| <i>L. clethrionomydis</i> | 1 | 50 | 448 | 29 | 4 | 1 | — | 423 | 91 | 3 | 16 | 533 |
| <i>Hyperlaelaps arvalis</i> | — | 26 | 11 | 224 | 3 | — | — | 184 | 55 | 5 | 20 | 264 |
| <i>Myonyssus ingricus</i> | 1 | — | — | 1 | — | — | — | 2 | — | — | — | 2 |
| <i>Haemogamasus nidi</i> | 1 | 93 | 27 | 46 | 10 | — | — | 153 | 9 | 2 | 13 | 177 |
| <i>H. nidiformis</i> | 2 | 81 | 12 | 28 | 7 | — | — | 109 | 20 | — | 1 | 130 |
| <i>H. ambulans</i> | 2 | 85 | 12 | 59 | 5 | — | — | 132 | 26 | 1 | 4 | 163 |
| <i>Hirstionyssus isabellinus</i> | 1 | 99 | 52 | 204 | 3 | 17 | 3 | 251 | 46 | 3 | 79 | 379 |
| <i>H. musculi</i> | — | 3 | — | 6 | — | — | — | 9 | — | — | — | 9 |
| <i>H. tatricus</i> | — | — | 8 | 6 | 16 | 6 | — | 35 | 1 | — | — | 36 |
| Σ | 9 | 616 | 638 | 1328 | 62 | 28 | 7 | 2102 | 314 | 20 | 252 | 2688 |

It is known from many parts of the world from various host animals (Strandtmann and Wharton 1958) and is found in nests of most small mammals in Europe (Mrciak 1959 b). Trägårdh (1931) found it in a hay-loft at the Faeroes. It easily adapts itself to various ecological conditions and to various host animals. It can attack man and may be a vector of diseases (Mrciak 1958 b).

Laelaps lemmi Grube, 1851

Two females from *Lemmus lemmus*.

Bregetova (1956) records *Lemmus obensis* Brants. as a host. Mrciak and Brander (1965) found it on *L. lemmus* in Finland.

Laelaps hilaris C. L. Koch, 1836

This was the most common mite in the material from the Ammarnäs and Tärnasjö areas. It was found on *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis*, *Lemmus lemmus* and *Mustela minuta*. The most frequently-attacked host was *M. agrestis*, on which 83.0 % of the mites of this species were found. A similar dominance (77.3 %) on *M. agrestis* was found by Mrciak (1959 a) in the mountains of Krkonose (Riesengebirge) in Czechoslovakia. The common hosts are species of *Microtus* and *Pitymys*. The occurrence of *L. hilaris* on other small mammals may be a result of direct contact with the main hosts in overlapping ranges of the mammals (Mrciak 1959 b).

Laelaps clethrionomydis Lange, 1955

The species was found on *Sorex araneus*, *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis*, *Lemmus lemmus* and *Mustela minuta*. It was most common on *C. rufocanus*, 84.1 %. Only 9.4 % were collected from *C. glareolus*.

This mite is of interest because of its adaption to particular hosts in different zoogeographical areas. In Czechoslovakia and Bulgaria the main host is *Clethrionomys glareolus* (Mrciak 1959 a—b).

Hyperlaelaps arvalis Zachvatkin, 1948

The species was found on *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis* and *Lemmus lemmus*. 84.8 % of the specimens were found on *M. agrestis*.

According to Mrciak and Brander (1965) the main host in Central Europe is *Microtus arvalis* Pallas, but this species does not occur in North Finland or Scandinavia except for Jutland. Mrciak and Brander (1965) found one specimen on *M. agrestis* in Finland.

Myonyssus ingricus Bregetova, 1956

Two females were found, one on *Sorex araneus* and one on *Microtus agrestis*.

The mite has been found on many different hosts. It is rather rare on small mammals (Mrciak 1958 a, c, Mrciak and Tovornik 1959), but more common in their nests (Willmann 1952).

Family *Haemogamasidae*

Haemogamasus nidi Michael, 1892

The species occurred on *Sorex araneus*, *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis* and *Lemmus lemmus*. 52.5 % of the specimens were found on *C. glareolus*.

This species is the only one in this material that has previously been recorded in Sweden. Trägårdh (1910) found numerous specimens of *Eulaelaps ambulans* (Thorell) Trädgårdh in a lemming's nest in the Sarek area in Swedish Lapland. According to Evans and Till (1966), *E. ambulans* is synonymous with *Haemogamasus nidi* Michael.

It occurs on many hosts and is known from most parts of Europe, Japan, the USA and Greenland. It occasionally parasitizes man, and is a vector of certain diseases (Mrciak 1959 b).

Haemogamasus nidiformis Bregetova, 1955

The species was found on *Sorex araneus*, *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis* and *Lemmus lemmus*. 62.3 % of the specimens were found on *C. glareolus*.

This mite was previously known from three countries, viz. the USSR (Bregetova 1955, Bibikova 1956) especially mountain districts, Czechoslovakia (Mrciak 1958 a), the Tatra Mountains and Bulgaria (Mrciak 1959 b) at 1700 m in the mountains of Rila. The Swedish material was collected in an area at altitudes between ca. 400 and 700 m.

Table 4. The frequency of the mite species on the small mammals investigated

| | <i>S. araneus</i> | <i>C. glareolus</i> | <i>C. rufocanus</i> | <i>M. agrestis</i> | <i>L. lemmus</i> | <i>M. minuta</i> | <i>M. vulgaris</i> | Total number |
|--|-------------------|---------------------|---------------------|--------------------|------------------|------------------|--------------------|--------------|
| <i>Eugamasus remberti</i> | — | 58.3 | — | 8.3 | — | — | 33.3 | 12 |
| <i>Eugamasus</i> sp. | — | 93.3 | — | 6.7 | — | — | — | 30 |
| <i>Poecilochirus necrophori</i> | — | 100.0 | — | — | — | — | — | 1 |
| <i>Cyrtolaelaps mucronatus</i> | — | 63.0 | 14.8 | 14.8 | 7.4 | — | — | 27 |
| <i>C. minor</i> | — | — | — | 100.0 | — | — | — | 1 |
| <i>Eulaelaps stabularis</i> | 1.4 | 54.1 | 24.3 | 17.6 | 2.7 | — | — | 74 |
| <i>Laelaps lemmi</i> | — | — | — | — | 100.0 | — | — | 2 |
| <i>L. hilaris</i> | — | 10.1 | 5.4 | 83.0 | 0.9 | 0.5 | — | 848 |
| <i>L. clethrionomydis</i> | 0.2 | 9.4 | 84.1 | 5.4 | 0.8 | 0.2 | — | 533 |
| <i>Hyperlaelaps arvalis</i> | — | 9.8 | 4.2 | 84.8 | 1.1 | — | — | 264 |
| <i>Myonyssus ingricus</i> | 50.0 | — | — | 50.0 | — | — | — | 2 |
| <i>Haemogamasus nidi</i> | 0.6 | 52.5 | 15.3 | 26.0 | 5.6 | — | — | 177 |
| <i>H. nidiformis</i> | 1.5 | 62.3 | 9.2 | 21.5 | 5.4 | — | — | 130 |
| <i>H. ambulans</i> | 1.2 | 52.1 | 7.4 | 36.2 | 3.1 | — | — | 163 |
| <i>Hirstionyssus isabellinus</i> | 0.3 | 26.1 | 13.7 | 53.8 | 0.8 | 4.5 | 0.8 | 379 |
| <i>H. musculi</i> | — | 33.3 | — | 66.7 | — | — | — | 9 |
| <i>H. tatricus</i> | — | — | 22.2 | 16.7 | 44.4 | 16.7 | — | 36 |
| | | | | | | | | Σ 2688 |

Haemogamasus ambulans Thorell, 1872

The species was found on *Sorex araneus*, *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis* and *Lemmus lemmus*. 52.1 % of the specimens were found on *C. glareolus* and 36.2 % on *M. agrestis*.

This mite is known from Asia, Europe, Greenland and North America (Strandtmann and Wharton 1958).

Family Liponyssidae*Hirstionyssus isabellinus* Oudemans, 1913

The species was found on *Sorex araneus*, *Clethrionomys glareolus*, *C. rufocanus*, *Microtus agrestis*, *Lemmus lemmus* and *Mustela vulgaris*. 53.8 % of the mites were found on *M. agrestis*, 26.1 % on *C. glareolus* and 13.7 % on *C. rufocanus*.

This mite is recorded from many host species and may also be found in their nests. It is very important in natural foci of tularemia (Mrciak 1959 b).

Hirstionyssus musculi Johnston, 1894

The species was found on *Sorex araneus*, *Clethrionomys glareolus* and *Microtus agrestis*. It is a parasite of Muridae and only rarely occurs on Microtids (Mrciak and Brander 1965).

Hirstionyssus tatricus Mrciak, 1958

The species was found on *Clethrionomys rufocanus*, *Microtus agrestis*, *Lemmus lemmus* and *Mustela minuta*.

The species was previously known from three countries, viz. Czechoslovakia, Yugoslavia and Bulgaria. There the main host is *Microtus nivalis* Martins (Mrciak 1959 b) which does not occur in Scandinavia. *H. tatricus* was found only in mountain districts.

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7. Summary

2,688 specimens of gamasid mites from small mammals collected in Swedish Lapland (Tärnasjö and Ammarnäs areas) represented 17 species, viz. *Eugamasus remberti*, *Eugamasus* sp., *Poecilochirus necrophori*, *Cyrtolaelaps mucronatus*, *C. minor*, *Eulaelaps stabularis*, *Laelaps lemni*, *L. hilaris*, *L. clethrionomydis*, *Hyperlaelaps arvalis*, *Myonyssus ingricus*, *Haemogamasus nidi*, *H. nidiformis*, *H. ambulans*, *Hirstionyssus isabellinus*, *H. musculi* and *H. tatricus*. Of this species only *Haemogamasus nidi* has previously been recorded from Sweden.

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