

## Parasitic arthropods (*Siphonaptera*, *Diptera*, *Acari*) of bats from western part of the Biatowieża Primeval Forest

By RYSZARD HAITLINGER, Wrocław, and ANDRZEJ L. RUPRECHT, Ciechocinek

The arthropod fauna occurring on bats occurring in Biatowieża Primeval Forest was examined by SKURATOWICZ (1964, 1967) and HAITLINGER & RUPRECHT (1977, 1982, 1985). There are mentioned 4 species of *Siphonaptera* and 8 species of *Acari*. In 1983 - 1986 were collected 60 bats in Biatowieża Primeval Forest and one bat in Hajnówka belonging to 6 species from which obtained 354 arthropods of 16 species; 8 species of them were found in Biatowieża Primeval Forest the first time and *Macronyssus flavus* (Kol.) is new to the fauna of Poland. Informations of the arthropods obtained from 3 *Plecotus auritus* collected by K. WOTK in Czartajew n. Siemiatycze (voi. Biatystok) and from 2 *Pipistrellus nathusii* collected by A. RACHWALD in Przebrno (voi. Elbląg) are given. The remaining ones were collected by A. L. RUPRECHT; arthropods were determined by R. HAITLINGER.

### *Diptera*, *Nycteribiidae*

*Nycteribia kolenatii* Theodor et Moscona, 1954

Material: 1 ♀, 1 ♂ from *Myotis daubentoni*, 10.IV.1984. Biatowieża. The most numerous nycteribiids in Poland. Known from many localities in west Poland (SKURATOWICZ 1962, 1968, NOWOSAD 1974, 1987, HAITLINGER 1978 a). The specific species of *M. daubentoni*, sporadically collected from other bats; in the Biatowieża Primeval Forest was not reported hitherto.

### *Siphonaptera*, *Ischnopsyllidae*

*Ischnopsyllus hexactenus* (Kolenati, 1856)

Material: 1 ♀ from *Barbastella barbastellus*, 13.III.1984, 1 ♀ from *Pipistrellus pipistrellus*, 9.VII.1984, 1 ♀ from *Plecotus auritus*, 28.IV.1986 all from Biatowieża; 7 ♀♀, 4 ♂♂ from *P. auritus*, 10.VIII.1984, Czartajew n. Siemiatycze.

It is commonest species among fleas occurring on bats in Poland. In the Biatowieża Primeval Forest not reported hitherto.

*Ischnopsyllus octactenus* (Kolenati, 1856)

Material: 1 ♀, 9.VIII.1984, 1 ♀, 1 ♂ 17.VIII., 1 ♀ 27.VII.1986 all from *P. pipistrellus*; 1 ♀, 5.X.1983 from *Eptesicus serotinus*, Biatowieża. Rare species; in Poland obtained from *P. pipistrellus*, *P. nathusii*, *Myotis dasycneme*, *M. nattereri*, *B. barbastellus* and from nests of *Delichon urbica* (SKURATOWICZ 1967). In the Biatowieża Primeval Forest was found on *P. pipistrellus* (HAITLINGER & RUPRECHT 1977).

*Ischnopsyllus variabilis* (Wegner, 1898)

Material: 2 ♀♀, 1 ♂, 9.VIII.1984 from *P. pipistrellus*, Biatowieża. An uncommon species in Poland; in the Biatowieża Primeval Forest as already found on *P. pipistrellus* and *E. serotinus* (HAITLINGER & RUPRECHT 1977).

*Ichnopsyllus intermedius* (Rothschild, 1898)

Material: 1 ♀, 14.IX.1983, 1 ♀, 27.IV.1983, 1 ♀, 2 ♂♂, VII.1983, 2 ♀♀, 15.VI.1983, 1 ♀, 15.VIII.1983, 1 ♀, 3.VI.1983, 2 ♂♂, 28.IV.1983, 1 ♀, 15.VIII.1983, 5 ♀♀, 7.VII.1983, 1 ♂, 19.VIII.1983, 1 ♀, 16.VIII.1983, all from *E. serotinus*, Biatowieża.

*Acari, Mesostigmata: Macronyssidae**Macronyssus cyclaspis* (Oudemans, 1906)

Material: 1 ♀, 22.IX.1986 from *B. barbastellus*; 1 ♀, 16.VIII.1984 from *E. serotinus*, Biatowieża. This species was not reported from Biatowieża Primeval Forest hitherto.

In Poland known only from Lower Silesia (HAITLINGER 1978c); mainly it occurs on *B. barbastellus* but collected also from other bats. In Poland from *E. serotinus* was not reported hitherto but in Moldavia was collected mainly from this host (PINTSCHUK 1970).

*Macronyssus kolenatii* (Oudemans, 1902)

Material: 1 ♀, 1 protonymph, 15.8.1984 from *P. pipistrellus*, Biatowieża; 1 ♀, 29.VIII.1986 from *P. nathusii*, Przebrno.

In Poland known only from Bieszczady (HAITLINGER 1978 c). Rare species, connected with bats of the genus *Pipistrellus*.

*Macronyssus flavus* (Kolenati, 1856)

Material: 4 ♀♀, 21 protonymphs, 21.VI.1986, 2 ♀♀, 5 protonymphs, 1.VII.1986, all from *Nyctalus noctula*, Biatowieża.

The parasite of *N. noctula* widely distributed in Poland also obtained from other bats; in Czechoslovakia collected from *B. barbastellus*, *M. daubentoni*, *M. myotis* and *P. pipistrellus* (DUSBABEK 1964). Sometimes the most numerous species; from one specimen from Moldavia obtained 903 *M. flavus* (PINTSCHUK 1970). New species to the fauna of Poland.

*Steatonyssus periblepharus* Kolenati, 1858

Material: 3 ♀♀, 9 protonymphs, 9.VII.1984, 1 ♂, 4 protonymphs, 9.VIII.1984, 7 protonymphs, 17.VII.1984, 3 protonymphs, 15.VIII.1984, 1 protonymph, 13.VII.1983, 1 ♀, 9 protonymphs, 24.VI.1983, 1 ♀, 9.VII.1983, all from *P. pipistrellus*, Biatowieża; 6 ♀♀, 6 protonymphs, 29.VIII.1986 from *P. nathusii*, Przebrno, 10 protonymphs, 1.VII.1986 from *N. noctula*, 1 protonymph, 20.IX.1984 from *E. serotinus*, Biatowieża.

In Poland known from Świny n. Bolków (HAITLINGER 1978 c) and Przechody n. Hajnówka (HAITLINGER & RUPRECHT 1977). This species was obtained from *P. pipistrellus* and *Myotis mystacinus*. In Biatowieża Primeval Forest common species; previously not reported from *P. nathusii*, *N. noctula* and *E. serotinus* in Poland.

*Steatonyssus occidentalis evansi* Micherdziński, 1980

Material: 1 ♀, 21.VI.1986 from *N. noctula*, 2 ♂♂, 19.VI.1984, 1 protonymph, 27.VI.1983, 1 protonymph, 15.VIII.1983, 2 ♀♀, 1 ♂, 16 protonymphs, 20.IX.1984, 2 protonymphs, 30.VIII.1983, 1 protonymph, 6.VIII.1984, all from *E. serotinus*, Biatowieża.

In Europe known from few localities; in Poland only from Kujawy (HAITLINGER & RUPRECHT 1985). It occurs on *E. serotinus*; *N. noctula* is new host for this mite.

*Spinturnicidae**Spinturnix andegavinus* Deunff, 1977

Material: 1 ♀, 10.IV.1984 from *Myotis daubentoni*, Biatowieża. Oligoxenic species, parasite of *M. daubentoni* also found on *Myotis dasycneme*. Described by KOLENATI, 1857 as *Diplo-*

*staspis daubentoni* but according DEUNFF (1977) it is nomina nuda. Previously often was mentioned as *S. myoti*. In Poland known from 9 localities in Lower Silesia (as *S. daubentoni*) (HAITLINGER 1978 b). In autumn and winter the commonest species of *Spinurnicidae*.

*Spinturnix barbastelli* (Kolenati, 1856)

Material: 1 ♀, XII. 1985, 4 ♂♂, 25.VIII. 1983 from *B. barbastellus*, Biatowieża. Monoxenic species; in Poland known only from 6 localities in Lower Silesia (HAITLINGER 1978 b).

*Spinturnix acuminatus* (Koch, 1836)

Material: 1 ♀, 1 ♂, 21.VI.1986, 3 ♀♀, 1.VII.1986 from *N. noctula*, Biatowieża.

Monoxenic species; occasionally obtained from *E. serotinus*. In Poland known only from Biatowieża (HAITLINGER & RUPRECHT 1982).

*Spinturnix plecotinus* (Koch, 1839)

Material: 3 ♀♀, 10.VIII.1984, Czartajew n. Siemiatycze; 1 ♀, 8.VII.1983, Biatowieża; all from *Plecotus auritus*.

*Spinturnix kolenatii* Oudemans, 1910

Material: 1 ♀, 11.IX.1983, 2 ♂♂, 1 ♀, 15.VIII.1983, 5 ♀♀, 1 ♂, 20.VIII.1983, 1 ♀, 29.VIII.1983, 1 ♀, 1 ♂, 30.VIII.1983, 1 ♀, 27.IV.1983, 3 ♀♀, 1 ♂, VII.1983, 6 ♀♀, 3 ♂♂, 23.VIII.1983, 2 ♀♀, 28.VII.1983, 6 ♀♀, 3 ♂♂, 8.VII.1983, 1 ♀, 19.VIII.1983, 1 ♂, 16.VIII.1983, all from *E. serotinus*, Biatowieża.

Oligoxenic species occurring on *E. serotinus*, mainly occurs in summer. In Poland known from Biatowieża, Ważki (voi. Biatystok) (HAITLINGER & RUPRECHT 1977), Kowal and Kukawy (voi. Wtoctawek) (HAITLINGER & RUPRECHT 1985). In Poland was found also on *E. nilssoni*.

*Ixodida, Argasidae*

*Argas vespertilionis* (Latreille, 1802)

Material: 2 larvae, 14.IX.1983, 5 larvae, 29.VIII.1983, 2 larvae, 26.VIII.1983, 1 larva, 27.IV.1983, 16 larvae, 20.IX.1984, 1 larva, 25.VIII.1983, all from *E. serotinus*, 113 larvae, 24.VI.1983 from *P. pipistrellus*, Biatowieża.

Very common species known from many localities in Poland. It was collected from *M. mystacinus*, *M. myotis*, *B. barbastellus*, *E. serotinus*, *P. auritus*, *Vespertilio murinus*, *P. nathusii* but the most numerously from *P. pipistrellus*. In Biatowieża from one specimen of *P. pipistrellus* obtained 101 larvae *A. vespertilionis*.

*Prostigmata, Trombiculidae*

*Chiroptella muscae* (Oudemans, 1906)

Material: 1 larva, 19.VI.1984, 4 larvae, 2.X.1983, all from *E. serotinus*, Biatowieża.

In Poland known from Biatowieża (HAITLINGER & RUPRECHT 1977), Ptuczki Dolne, Kamieniec Żąbkowicki (Lower Silesia) (HAITLINGER 1979 a) and Kowal (voi. Wtoctawek) (HAITLINGER & RUPRECHT 1985). It was found on *V. murinus*, *M. nattereri* and *E. serotinus*. Majority of larvae collected from *E. serotinus*, mainly host for this species.

*Leptotrombidium rassicum* (Oudemans, 1902)

Material: 8 larvae, 10.VIII.1984 from *P. auritus*, Czartajew n. Siemiatycze (voi. Biatystok). Common species, known in Poland from Pomerania (WILLMANN 1952), neighborhood of Cracow (HARMATA 1967), Lower Silesia (HAITLINGER 1979 a), Kowal, Kukawy (voi. Wtoctawek) and Teremiski n. Biatowieża (HAITLINGER & RUPRECHT 1985).

In Poland the most numerously collected from *B. barbastellus*, more rare from *P. austriacus* and *P. auritus*. In Poland it was found moreover on *M. daubentoni*, *M. mystacinus*, *M. bechsteini* and *E. nilssoni* (HAITLINGER 1979 a).

The arthropod fauna occurring on bats in Poland was examined mainly in Lower Silesia and Biatowieża Primeval Forest. In Lower Silesia found on bats 34 species of arthropods (HAITLINGER 1979 b) (exclude species connected with rodents and insectivorous); in Biatowieża Primeval Forest found hitherto 21 species of arthropods. The arthropod fauna occurring on bats from Biatowieża Primeval Forest is more indigent than the fauna on bats from Lower Silesia. Distinct differences are consequential lack of mites from genera *Acanthophtirius* and *Pteracarus* (*Myobiidae*) in material from Biatowieża and more indigent the bat. Probably real difference in fauna of the arthropods occurring on bats living in Lower Silesia and Biatowieża Primeval Forest are limited to species connected with bats not present (*M. myotis*, *M. bechsteini*) in the Biatowieża Primeval Forest.

Actually, *Spinturnix kolenatii*, *Steatonyssus periblepharus*, *S. occidentalis*, *Macronyssus flavus*, *Ischnopsyllus internedius* and *Argas vespertilionis* are the most numerously occurring arthropods on bats from Polish part of Biatowieża Primeval Forest.

### S u m m a r y

In the polish part of Biatowieża Primeval Forest it was able to note up to now 4 species of *Siphonaptera* and 8 species of *Acari* on bats. In this report were finds of ectoparasites evaluated, which are new in this region. They are collected from 6 species of bats (60 individuals, furthermore some materials of common long-eared bat and of Nathusius' pipistrelle out of regions Biatystok respectively Elbląg). Concerning this facts, there were noted 16 species, out of them 8 and *Macronyssus flavus*, are new species in the region of the Biatowieża Primeval Forest.

Specify they are (in parentheses the host species):

- *Nycteribia kolenatii* (Daubenton's bat),
- *Ischnopsyllus hexactenus* (Barbastelle bat, common pipistrelle, common long-eared bat),
- *I. octactenus* (common pipistrelle, serotine bat),
- *I. variabilis* (common pipistrelle),
- *I. internedius* (Serotine bat),
- *Macronyssus cyclaspis* (Barbastelle bat, serotine bat),
- *M. kolenatii* (common pipistrelle, Nathusius' pipistrelle),
- *M. flavus* (noctule bat),
- *Steatonyssus periblepharus* (common pipistrelle, Nathusius' pipistrelle, serotine bat, noctule bat),
- *St. occidentalis evansi* (noctule bat, serotine bat),
- *Spinturnix andegavinus* (Daubenton's bat),
- *Sp. barbastelli* (Barbastelle bat),
- *Sp. acuminatus* (noctule bat),
- *Sp. plecotinus* (common long-eared bat),
- *Sp. kolenatii* (serotine bat),
- *Argas vespertilionis* (serotine bat, common pipistrelle),
- *Chiroptella muscae* (serotine bat) and
- *Leptotrombidium rissicum* (common long-eared bat).

### Z u s a m m e n f a s s u n g

Im polnischen Teil des Biatowieża-Urwaldes konnten bisher 4 Arten der *Siphonaptera* und 8 Arten der *Acari* bei Fledermäusen festgestellt werden. In diesem Bericht werden für das Gebiet Funde neuer Ektoparasiten, abgesammelt von 6 Fledermausarten (60 Ex., außerdem etwas Material vom Braunen Langohr und der Rauhhaufledermaus aus den Bezirken Biatystok bzw. Elbląg), ausgewertet, und zwar 16 Arten, von denen 8 neu für das Urwaldgebiet Biatowieża sowie *Macronyssus flavus* neu für die polnische Fauna sind, im einzelnen (in Klammern die Wirtsart): *Nycteribia kolenatii* (Wasserfledermaus), *Ischnopsyllus hexactenus* (Mops-, Zwergfledermaus, Braunes Langohr), *I. octactenus* (Zwerg-,

Breitflügel fledermaus), *I. variabilis* (Zwergfledermaus), *I. intermedius* (Breitflügel fledermaus), *Macronyssus cyclaspis* (Mops-, Breitflügel fledermaus), *M. kolenatii* (Zwerg-, Rauhhaufledermaus), *M. flavus* (Abendsegler), *Steatonyssus periblepharus* (Zwerg-, Rauhhauf-, Breitflügel fledermaus, Abendsegler), *St. occidentalis evansi* (Abendsegler, Breitflügel fledermaus), *Spinturnix andegavinus* (Wasserfledermaus), *Sp. barbastelli* (Mopsfledermaus), *Sp. acuminatus* (Abendsegler), *Sp. plecotinus* (Braunes Langohr), *Sp. kolenatii* (Breitflügel fledermaus), *Argas vesperilionis* (Breitflügel-, Zwergfledermaus), *Chiroptella muscae* (Breitflügel fledermaus), *Leptotrombidium rusicum* (Braunes Langohr).

## References

- DEUNFF, J. (1977): Observations sur les *Spinturnicidae* de la region palearctique occidentale (*Acarina*, *Mesostigmata*) specificite repartition et morphologie. *Acarologia* **18**, 602-617.
- DUSBABEK, F. (1964): Parasitische Fledermausmilben der Tschechoslowakei. II. Familie *Dermanyssidae* Kol. 1859 (*Acarina*: *Gamasides*). *Českosl. parasit.* **11**, 77-125.
- HAITLINGER, R. (1978 a): Pasożyty zewnętrzne nietoperzy Dolnego Śląska. II. *Nycteribiidae* (*Diptera*). *Wiad. parazytol.* **24**, 467-474.
- (1978 b): Pasożyty zewnętrzne nietoperzy Dolnego Śląska. III. *Spinturnicidae*, *Argasidae*, *Ixodidae* (*Acarina*). I bid. **24**, 475-490.
- (1978 c): Pasożyty zewnętrzne nietoperzy Dolnego Śląska. IV. *Macronyssidae*, *Dermanyssidae*, *Veigaiidae* (*Acarina*). *Ibid.* **24**, 707-718.
- (1979 a): Pasożyty zewnętrzne nietoperzy Dolnego Śląska. V. *Trombidiformes*, *Sarcoptiformes* (*Acarina*). *Ibid.* **25**, 105-117.
- (1979 b): Pasożyty zewnętrzne nietoperzy Dolnego Śląska. VI. *Acarina*, *Siphonaptera*, *Diptera* (*Nycteribiidae*). *Ibid.* **25**, 119-140.
- (1987): *Macronyssus kolenatii* (Oudemans, 1902); *Acanthophthirus etheldredae* Perkins, 1925 (*Acari*: *Macronyssidae*, *Myobiidae*), dwa gatunki roztoczy nowe dla fauny Polski. *Przegl. zool.* **31**, 49-51.
- & RUPRECHT, A. L. (1977): Przyczynek do fauny pasożytów zewnętrznych nietoperzy Puszczy Białowieskiej. *Ibid.* **21**, 332-334.
- & – (1982): *Spinturnix acuminatus* (Koch, 1836) (*Acarina*: *Spinturnicidae*) nowy gatunek roztocza dla fauny Polski. *Ibid.* **26**, 171-172.
- & – (1985): Stawonogi zebrane na nietoperzach z Kujaw (*Acari* i *Siphonaptera*). *Pol. Pismo ent.* **55**, 613-618.
- HARMATA, W. (1967): Występowanie *Trombicula* (*Leptotrombidium*) *rusicum* Oudemans, 1902 (*Acarina*, *Trombiculidae*) na nietoperzach mopskach, *Barbastella barbastellus* (Schreber, 1774). *Wiad. parazytol.* **13**, 267-273.
- NOWOSAD, A. (1974): *Nycteribia kolenatii* Theodoret Moscona i *Penicillidia monoceros* Speiser (*Nycteribiidae*, *Diptera*) w Polsce. *Pol. Pismo ent.* **44**, 559-569.
- (1987): Materiały do znajomości *Nycteribiidae* (*Diptera*, *Pupipara*) Polski zachodnie i północno-zachodnie. *Ibid.* **57**, 263-276.
- PINTSCHUK, L. (1970): Kleszki рода *Ichoronyssus* (*Gamasoidea*: *Dermanyssidae*) do lietučių mysci Prut Dniestrowskiego miedzurečija. *Parazyty žiw. rast.* **5**, 73-87.
- SKURATOWICZ, W. (1962): Przyczynek do znajomości *Nycteribiidae* (*Diptera*, *Pupipara*) Polski. *Fragm. faun.* **10**, 215-221.
- (1964): Pchły. *Aphaniptera*. Katalog fauny Polski XXI, 1-59. Warszawa.
- (1967): Klucze do oznaczania owadów Polski, Pchły (*Siphonaptera*), 1-141. Warszawa.
- (1968): Przyczynek do znajomości *Nycteribiidae* (*Diptera*, *Pupipara*) Polski. II. *Fragm. faun.* **15**, 51-56.
- WILLMANN, C. (1952): Parasitische Milben an Kleinsäugetern. *Z. Parasitenkd.* **15**, 392-428.