ACTA SCIENTIARUM POLONORUM
Acta Sci. Pol.
Silv. Colendar. Rat. Ind. Lignar. 10(2) 2011, 37-42

MITES (ACARI, MESOSTIGMATA) IN THE RED-BACKED SHRIKE *LANIUS COLLURIO* AND GREAT GREY SHRIKE *LANIUS EXCUBITOR* NESTS

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Abstract. The species composition of mesostigmatid mites in the red-backed shrike *Lanius collurio* and great grey shrike *Lanius excubitor* nests was studied in the Wielkopolska Region (Central Poland). Totally 15 samples (bird nests) were collected in May 1999. As a result of that study 81 mites were identified and classified to 13 species. The most numerous species was *Alliphis halleri*.

Key words: mites, Acari, red-backed shrike, great grey shrike, bird nests

INTRODUCTION

Bird nests are an example of unstable, patchy microhabitats occupied by distinctively associated invertebrate fauna. The fauna is generally classified into two main groups: ectoparasites of the host species [Haitlinger 1987, Philips 2000] and the accessory fauna, which is more related to the nest than to the bird – host species [Błoszyk and Olszanowski 1985, 1986, Mašan and Krištofik 1993, 1995, Fenda and Pinowski 1997, Krištofik et al. 2001, Gwiazdowicz et al. 1999, 2000, 2006, Tryjanowski et al. 2001, Fenda and Schniererová 2004, Błoszyk et al. 2006, 2009, 2011]. Bird nest a habitat of many invertebrate fauna, including the most abundant mesostigmatid mites, were a subject of several studies and in some cases were limited to the nesting boxes [Patan 1969, Żukowski and Bitkowska 1973, Kaczmarek 1977, 1981 a, b, 1982 a, b, 1986, Chmielewski 1982, Błoszyk and Olszanowski 1985, 1986, Madej and Stańska 1999].

The mesostigmatid mite inhabiting birds nest aimed on a certain bird species were recorded only for few species of birds e.g penduline tit *Remiz pendulinis* (Linnaeus, 1758) [Patan 1969, Krištofik et al. 1993, Mašan and Krištofik 1995], burn swallow *Hirundo rustica* L., 1758 [Mašan and Orszaghova 1995, Kaczmarek 1982], the sand martin *Riparia riparia* (L., 1758) [Żukowski and Bitkowska 1973, Mašan and Krištofik 1993], as well as great reed warbler *Acrocephalus arundinaceus* (L., 1758) and reed

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warbler *A. scirpaceus* (Herm., 1804) [Krištofik et al. 2001]. Moreover Madej and Stańska [1999] investigated mites communities in collared flycatcher *Ficedula albicollisi* (Temminck, 1815) and european pied flycatcher *Ficedula hypoleuca* (Pallas, 1764) nests. Recent studies of Gwiazdowicz et al. [1999, 2000, 2006] described the species composition in raptor nests, whilst Bajerlein et al. [2006], Błoszyk and Gwiazdowicz [2006], Błoszyk et al. [2006, 2009] aimed the mite species composition in white stork *Ciconia ciconia* (L., 1758) nests. Moreover, Błoszyk et al. [2006] summarized the Uropodine mites studies in several bird species in Poland and arthropods' fauna in red-backed shrike *Lanius collurio* (L., 1758) nests was described by Tryjanowski et al. [2001].

The mites were relatively well recognized in the nests of large birds e.g. raptors or storks and there is a need to recognize they species composition in small bird nest. Moreover, small nests are often more unstable microhabitats and we expected the differences in species composition and abundance in comparison to large nests. Due to this rather superficial knowledge of the mesostigamtid mite communities in a small bird nest, the main aim of that study was to recognize the species composition of mesostigmatid mites in the red-backed shrike and great grey shrike nests in Poland.

MATERIAL AND METHODS

In May 1999, totally 15 samples (bird nests) were collected from *Lanius collurio* (12 samples) and *L. excubitor* (3 samples) nest from the Wielkopolska Region of Poland. Mites were extracted using Berlese funnels with a mesh size of about 2 mm. The samples were heated from above, with 40 W bulbs, and the extraction lasted 7 days. The organisms were collected in 70% ethanol, mounted in permanent slides (using Hoyer's medium) and semi-permanent slides (using lactic acid), next counted, and identified. Symbols applied for developmental stage and sex are as follows: D – deutonymph, M – male, F – female.

RESULTS AND CONCLUSION

Totally 81 mite individuals were identified and classified to 13 species (Table 1). The most numerous species was *Alliphis halleri* (42 ind.) and *Gamasodes spiniger* (14 ind.). *Asca aphidioides, Cheiroseius borealis, Holoparasitus calcaratus* and *Iphidozercon gibbus*, *Proctolaelaps hystrix* as well as *Trachytes aegrota* were represented by single specimens in that study. Generally deutonymphs were the most numerous developmental stage (46 ind.). Moreover, we have found only one male classified as *Alliphis halleri* in the conducted study.

A total of 9 species occurred only in one sample. We have not found mites in three samples collected from *Lanius collurio* nests. Generally, 3 species were identified from *Lanius excubitor* nests: *Androlaelaps casalis, Iphidozercon gibbus* and *Proctolaelaps hystrix* represented by single females. The last two species occurred exclusively in that microhabitats. A total of 11 mite species were recoreded form *Lanius collurio* nests but only *Androlaelaps casalis* was characteristic for both microhabitats.

Table 1. Checklist of mites from *Lanius collurio* and *L. excubitor* nests
Tabela 1. Lista gatunków roztoczy wykazanych z gniazd *Lanius collurio* oraz *L. excubitor*

No. Nr	Species Gatunek	Abundance – Liczebność					
		Lanius collurio			*Lanius excubitor*		
		D	M	F	D	M	F
1	*Alliphis halleri* (Canestrini, 1881)	26	1	15	0	0	0
2	*Androlaelaps casalis* (Berlese, 1887)	0	0	2	0	0	1
3	*Asca aphidioides* (L., 1758)	0	0	1	0	0	0
4	*Cheiroseius borealis* (Berlese, 1904)	0	0	1	0	0	0
5	*Gamasodes spiniger* (Trägårdh, 1910)	14	0	0	0	0	0
6	*Holoparasitus calcaratus* (C.L. Koch, 1839)	0	0	1	0	0	0
7	*Hypoaspis vacua* (Michael, 1891)	0	0	2	0	0	0
8	*Iphidozercon gibbus* (Berlese, 1903)	0	0	0	0	0	1
9	*Parasitus fimetorum* (Berlese, 1904)	4	0	0	0	0	0
10	*Proctolaelaps hystrix* (Vitzthum, 1923)	0	0	0	0	0	1
11	*Trachytes aegrota* (C.L. Koch, 1841)	0	0	1	0	0	0
12	*Trichouropoda ovalis* (C.L. Koch, 1839)	0	0	7	0	0	0
13	*Veigaia nemorensis* (C.L. Koch, 1839)	2	0	1	0	0	0
	Total	46	1	31	0	0	3

D – deutonymph, M – male, F – female.
D – deuntonimfa, M – samiec, F – samica.

Bird nests of *L. collurio* and L. *excubitor* and inhabited by mites species are widely distributed in many microhabitats. We have recorded *Holoparasitus calcaratus*, *Parasitus fimetorum*, *Trachytes aegrota*, *Trichouropoda ovalis*, *Veigaia nemorensis* which generally occur in litter and soil [Hyatt 1980, Karg 1993, Wiśniewski and Hirschamann 1993]. We have also found *Trichouropoda ovalis* which confirms its cosmopolitan character. This species is widely distributed in soil, litter, moss, beetles galleries, dead wood and bird nests [Wiśniewski and Hirschamann 1993].

Moreover, our results confirm that some mites species are common in bird nests. *Androlaelaps casalis* have been found in nesting boxes [Bregetova 1956] but have only been noted sporadically form the "opened" bird nests. Two species, *Iphidozercon gibbus* and *Alliphis halleri*, recorded in our investigation occur also in bird nests. Both of them are coprofagous and distributed in the excrements [Bregetova 1977, Karg 1993, Gwiazdowicz 2007].

REFERENCES

Bajerlein D., Błoszyk J., Gwiazdowicz D.J., Ptaszyk J., Halliday B., 2006. Community structure and dispersal of mites (Acari, Mesostigmata) in nests of the while stork (*Ciconia ciconia*). Biologia 61 (5), 525-530.

Błoszyk J., Bajerlein D., Gwiazdowicz D.J., Halliday R.B., Dylewska M., 2006. Uropodine mite communities (Acari: Mesostigmata) in birds' nests in Poland. Belgian J. Zool. 136 (2), 145-153.

Błoszyk J., Dražina T., Gwiazdowicz D.J., Halliday B., Gołdyn B., Napierała A., Rybska E., 2011. Mesostigmatic mites (Acari: Mesostigmata) in nests of the Eurasian griffon vulture (*Gyps fulvus*) in Croatia. Biologia 66, 2, 335-339.

Błoszyk J., Gwiazdowicz D.J., 2006. Acarofauna of nests of the White Stork *Ciconia ciconia*, with special attention to mesostigmatid mites. In: The White Stork in Poland: studies in biology, ecology and conservation. Eds P. Tryjanowski, T.H. Sparks, L. Jerzak. Bogucki Wyd. Nauk. Poznań, 407-414.

Błoszyk J., Gwiazdowicz D.J., Halliday R.B., Dolata P.T., Gołdyn B., 2009. Nest of the black stork *Ciconia nigra* as a habitat for mesostigmatid mites (Acari: Mesostigmata). Biologia 64 (5), 962-968.

Błoszyk J., Olszanowski Z., 1985. Materiały do znajomości roztoczy gniazd i budek lęgowych ptaków. I. *Uropodina* i *Nothroidea* (Acari: Mesostigmata i Oribatida) [Materials to the knowledge of the mites of birds nests. I. *Uropodina* and *Nothroidea* (Acari: Mesostigmata and Oribatida)]. Przegl. Zool. 29 (1), 69-74 [in Polish].

Błoszyk J., Olszanowski Z., 1986. Materiały do znajomości roztoczy gniazd i budek lęgowych ptaków. II. Różnice w składzie gatunkowym populacji *Uropodina* (Acari, *Anactinotrichida*) budek lęgowych na Mierzei Wiślanej na podstawie dwuletnich obserwacji [Materials to the knowledge of the mites of birds nests. II. Numerical and species compositional differences of *Uropodina* (Acari, *Anactinotrichida*) of birds nests in the sandbar "Mierzeja Wiślana" on the base of biennial observation]. Przegl. Zool. 30 (1), 63-66 [in Polish].

Bregetova N.G., 1956. Gamasid mites (*Gamasoidea*). Short key. Acad. Sci. USSR Moscow [in Russian].

Bregetova N.G., 1977. Macrochelidae. In: Key to the soil inhabiting mites. Mesostigmata. Eds M.S. Ghilyarov, N.G. Bregetova. Nauka Leningrad 346-411 [in Russian].

Chmielewski W., 1982. Roztocze (*Acarina*) zamieszkujące gniazda wróbla domowego (*Passer domesticus* L.) [Mites (*Acarina*) inhabiting sparrow (*Passer domesticus* L.) nests]. Wiad. Parazyt. 28 (1-2), 105-107.

Fenda P., Pinowski J., 1997. The mites (*Acarina*: Mesostigmata) in the nests of sparrows (*Passer domesticus* and *Passer montanus*) in suburban villages of Warsaw (Poland). Int. Stud. Sparrows 24, 37-47.

Fenda P., Schniererová E., 2004. Mites (*Acarina*: Mesostigmata) in the nests of *Acrocephalus* spp. and in neighbouring reeds. Biologia 59 (suppl. 15), 41-47.

Gwiazdowicz D.J., Błoszyk J., Bajerlein D., Halliday R.B., Mizera T., 2006. Mites (Acari: Mesostigmata) inhabiting nests of the while-tailed sea eagle *Haliaeetus albicilla* (L.) in Poland. Entomol. Fennica 8, 366-372.

Gwiazdowicz D.J., Mizera T., Skorupski M., 1999. Mites in greater spotted eagle nests. J. Raptor Res. 33, 257-260.

Gwiazdowicz D.J., Mizera T., Skorupski M., 2000. Mites (Acari, *Gamasida*) from the nests of birds of prey in Poland. Buteo 11, 97-100.

Gwiazdowicz D.J., 2007. Ascid mites (Acari, Mesostigmata) from selected forest ecosystems and microhabitats in Poland. Wyd. AR, Poznań.

Haitlinger R., 1987. *Dermanyssus alaudae* (Shrank, 1781) i inne roztocze (Acari: *Dermanyssidae*, *Macronyssidae*, *Haemogamasidae*, *Histionyssidae*, *Trombiculidae*, *Erythreidae*) zebrane z ptaków w Polsce [*Dermanyssus alaudae* (Shrank, 1781) and other mites (Acari: *Dermanyssidae*, *Macronyssidae*, *Haemogamasidae*, *Histionyssidae*, *Trombiculidae*, *Erythreidae*) from birds in Poland]. Wiad. Parazyt. 33 (2), 233-245.

Hyatt H.K., 1980. Mites of the subfamily Parasitinae (Mesostigmata: *Parasitidae*) in the British Isles. Bull. Brit. Mus. Nat. Hist. (Zool.) 38 (5), 237-378.

Karg W., 1993. Acari (*Acarina*), Milben Unterordnung Parasitiformes (*Anactinochaeta*) Cohors Gamasina Leach. Raubmilben. Tierwelt Deutschlands 59, 1-523.

Kaczmarek S., 1977. Stawonogi (*Arthropoda*) zasiedlające gniazda ptaków w skrzynkach lęgowych rozmieszczonych w drzewostanach leśnych. Pow. WSP Słupsk, 3-152.

Kaczmarek S., 1981 a. Gliederfüssler (*Arthropoda*) aus in Steiholznisthöhlen gebauten Vogelnestern. Wiss. Helfte d. Pädagogischen Hochschule 'W. Ratke' Köthem 1, 173-180.

Kaczmarek S., 1981 b. Stawonogi (*Arthropoda*) znalezione w gniazdach ptaków na terenie Słowińskiego Parku Narodowego [Arthropods recorded in nests of birds in the Słowiński National Park]. In: Entomologia a gospodarka narodowa. Warszawa 111-118 [in Polish].

Kaczmarek S., 1982 a. Pasożyty zewnętrzne z gniazd jaskółek *Hirundo rustica* L. i *Delichon urbica* (L.) [Ectoparasites from the nests of the swallows *Hirundo rustica* L. and *Delichon urbica* (L.)]. Wiad. Parazyt. 28 (1-2), 169-171 [in Polish].

Kaczmarek S., 1982 b. Pasożyty zewnętrzne ptaków północnej Polski [Ectoparasites of birds in northern Poland]. Wiad. Parazyt. 28 (3-4), 449-463 [in Polish].

Kaczmarek S., 1986. Pasożyty zewnętrzne z gniazd jaskółek *Hirundo rustica* L. i *Delichon urbica* (L.) zebrane z okolic Szczecina [Ectoparasites from the nests of the swallows (*Hirundo rustica* L.) and the house martin (*Delichon urbica* (L.) collected in the vicinity of Szczecin]. Wiad. Parazyt. 32 (4-6), 469-472 [in Polish].

Krištofik J., Mašan P., Šustek Z., Gajdoš P., 1993. Arthropods in the nests of penduline tit (*Remiz pendulinus*). Biologia 48, 493-505.

Krištofik J., Mašan P., Šustek Z., 2001. Mites (Acari), beetles (*Coleoptera*) and fleas (*Siphonaptera*) in the nests of great reed warbler (*Acrocephalus arundinaceus*) and reed warbler (*A. scirpaceus*). Biologia 56, 525-536.

Madej G., Stańska M., 1999. Roztocze *Gamasina* (*Arachnida*, Acari) gniazd dziuplaków wtórnych muchołówki białoszyjej (*Ficedula albicollis* Temmink) i muchołówki żałobnej (*Ficedula hypoleuca* Pallas) w Puszczy Białowieskiej [Gamasid mites (*Arachnida*, Acari) in the nests of secondary hollow nesters Collared Flycatcher (*Ficedula albicollis* Temmink) and Pied Flycatcher (*Ficedula hypoleuca* Pallas) in the Białowieża Forest]. Par. Nar. Rez. Przyr. 18 (1), 35-39 [in Polish].

Mašan P., Krištofik J., 1993. Mites and ticks (*Acarina*: Mesostigmata et *Ixodida*) from the nests of *Riparia riparia* L. in South Slovakia. Biologia 48 (2), 155-162.

Mašan P., Krištofik J., 1995. Mites and ticks (*Acarina*: Mesostigmata) in the nests of penduline tit (*Remiz pendulinus*). Biologia 48 (2), 155-162.

Mašan P., Orszaghova Z., 1995. Mesostigmatic mites (*Acarina*) in the Winters Nests of *Hirundo rustica* in the Vicinity of Bratislava (Slovakia). Acta Zool. Univ. Comenianae 39, 33-37.

Patan K., 1969. Roztocze grupy *Gamasina* (Acari, Mesostigmata) z gniazd jaskółki brzegówki (*Riparia riparia*) w Wielkopolsce [Mites from the group *Gamasina* (Acari, Mesostigmata) from nests of sand-martin (*Riparia riparia* L.) in Great Poland]. Bad. Fizjogr. Pol. Zach. 22, 39-52 [in Polish].

Philips J.R., 2000. A review and checklist of the parasitic mites (*Acarina*) of the Falconiformes and Strigiformes. J. Raptor Res. 50 (5), 481-485.

Tryjanowski P., Baraniak E., Bajaczyk R., Gwiazdowicz D.J., Konwerski S., Olszanowski Z., Szymkowiak P., 2001. Arthropods in nests of the red-backed shrike (*Lanius collurio*) in Poland. Belg. J. Zool. 131, 69-74.

Wiśniewski J., Hirschmann W., 1993. Katalog der Ganggattungen, Untergattungen, Gruppen und Arten der Uropodiden der Erde (Taxonomie, Literatur, Grösse, Verbreitung, Vorkommen). Acarologie, Nürnberg 40, 1-220.

Żukowski K., Bitkowska E., 1973. Roztocze gniazd jaskółek (*Riparia riparia*) z terenu woj. warszawskiego (Acari, Mesostigmata) [The mites (Acari, Mesostigmata) of the nestles of *Riparia riparia* L. from the Warsaw Province]. Wiad. Parazyt. 19 (6), 835-839 [in Polish].

ROZTOCZE (ACARI, MESOSTIGMATA) W GNIAZDACH GĄSIORKA *LANIUS COLLURIO* L. I SROKOSZA *LANIUS EXCUBITOR* L.

Streszczenie. Zbadano skład gatunkowy roztoczy z rzędu Mesostigmata w gniazdach gąsiorka i srokosza w regionie Wielkopolski (centralna Polska). Łącznie zebrano 15 prób (ptasich gniazd) w maju 1999 roku. Wynikiem tych badań była identyfikacja i klasyfikacja 81 osobników przynależących do 13 gatunków. Najliczniejszym gatunkiem był *Alliphis halleri*.

Słowa kluczowe: roztocze, Acari, gąsiorek, srokosz, gniazda ptaków

Accepted for print – Zaakceptowano do druku: 9.09.2011

For citation – Do cytowania: Kamczyc J., Teodorowicz E., Gwiazdowicz D.J., 2011. Mites (Acari, Mesostigmata) in the red-backed shrike Lanius collurio and great grey shrike Lanius excubitor nests. Acta Sci. Pol., Silv. Colendar. Rat. Ind. Lignar. 10(2), 37-42.