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MITES (ACARI: MESOSTIGMATA) OCCURRING IN THE NESTS OF BIRDS OF PREY (FALCONIFORMES) AND OWLS (STRIGIFORMES)

КЛЕЩИ (ACARI: MESOSTIGMATA), ВСТРЕЧАЮЩИЕСЯ В ГНЕЗДАХ ДНЕВНЫХ ХИЩНЫХ ПТИЦ (FALCONIFORMES) И СОВ (STRIGIFORMES)

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ABSTRACT

This short communication is an attempt to supplement the knowledge of mite fauna in the nests of birds of prey (Falconiformes) and owls (Strigiformes). A preliminary analysis of the occurrence of mites depending on the species of the nesting birds is conducted. The species composition of mites is compared with results obtained by other authors.

РЕЗЮМЕ

Данное сообщение — попытка пополнить наши знания о клещевой фауне гнезд дневных хищных птиц (Falconiformes) и сов (Strigiformes). Проведен предварительный анализ наличия клещей в зависимости от вида гнездящейся птицы. Состав видов клещей сравнивается с результатами других авторов.

INTRODUCTION

Mites of the suborder Mesostigmata found in the nests of birds have been objects of several studies. Most of these investigations concerned the acarofauna in the nests of birds from the order Passeriformes. In the recent years, such studies have been conducted by Ambros et al. [1992], Mašan and Krištofik [1993, 1995], Mašan and Orszaghova [1995], Madej and Stańska [1999], Krištofik et al. [2001], and Tryjanowski et al. [2001]. In contrast, mesostigmatid mites of nests built by birds of prey are relatively poorly known because, birds of prey are usually rare species constructing their nests at considerable heights above the ground. Nordberg [1930] studied mites associated with *Bubo bubo* (L., 1758) and *Falco peregrinus* Tunstall, 1771. Several studies of nidicolous mites have been conducted for nests of *Accipiter gentilis* (L., 1758) and *Aegolius funereus* (L., 1758) [Philips, 1981], *Aegolius acadicus* (J.F. Gmelin, 1788) [Philips et al., 1983], *Bubo bubo* [Fain et al., 1993], *Aquila clanga* Pallas, 1811 [Gwiazdowicz et al., 1999], *Haliaeetus albicilla* (L., 1758) and *Pandion haliaetus* (L., 1758) [Gwiazdowicz et al., 2000]. Philips [2000] presented a checklist of parasitic mites associated with the orders Falconiformes and Strigiformes. Wiśniewski and Hirschmann [1985, 1990] have described the life cycle of the mite *Nenteria pandioni* Wiśniewski et Hirschmann, 1985, from the nests of *Pandion haliaetus* and *Haliaeetus albicilla*. Philips and Dindal [1979] reported some mesostugmatid mites from *Bubo virginianus* (J.F. Gmelin, 1788), *Otus asio* (L., 1758) and *Falco sparverius* L., 1758.

This study is an attempt to supplement the knowledge of Mesostigmata occurring in the nests of birds of prey and owls.

MATERIAL AND METHODS

A total 23 nests of 10 species of birds of prey and three species of owls were collected during banding of fledglings in May-July, 1996–1999 (Table 1). For each nest, 250–300 g of padding from the middle of the nest was sampled. Mites were extracted from the nest material using Tullgren funnels for 48 hours, cleared in lactophenol, and mounted on slides in PVA. Two nests of *Aquila pomarina* C.L. Brehm, 1831, one nest of *Falco peregrinus*, and one nest of *Tyto alba* (Scopoli, 1769) contained no mites. The material is deposited in the author's collection at the Department of Forest and Environment Protection, the August Cieszkowski Agricultural University of Poznań.

RESULTS AND DISCUSSION

During this study I collected 739 specimens of mesostigmatic mites belonging to 31 species. The most numerous among them were *Androlaelaps casalis* (Berlese, 1887) (299 specimens), *Nenteria pandioni* (108), *Macrocheles ancyleus* Krauss, 1970 (70), *M.* sp. (70), and *Cornigamasus lunaris* (Ber-

Table 1
Register of samples
Таблица 1
Перечень обследованных видов птиц

No	Species of bird	Place	Date
1	*Aquila clanga* Pall., 1811	Biebrza National Park	09.06.1998
2	*Aquila clanga* Pall., 1811	Biebrza National Park	18.07.1998
3	*Aquila pomarina* C.L.Brehm, 1831	Biebrza National Park	02.07.1998
4	*Aquila pomarina* C.L.Brehm, 1831	Rajgród Forest District	17.07.1998
5	*Aquila pomarina* C.L.Brehm, 1831	Biebrza National Park	20.07.1998
6	*Aquila pomarina* C.L.Brehm, 1831	Rajgród Forest District	20.07.1998
7	*Bubo bubo* (L., 1758)	Sieraków Forest District	15.05.1999
8	*Buteo buteo* (L., 1758)	Biebrza National Park	15.06.1997
9	*Circus aeruginosus* (L., 1758)	Kowalskie	05.07.1999
10	*Circus aeruginosus* (L., 1758)	Murowana Goślina	11.07.1999
11	*Falco peregrinus* Tunst., 1771	Włocławek	11.05.1999
12	*Falco tinnunculus* L., 1758	Poznań	26.06.1997
13	*Haliaeetus albicilla* (L., 1758)	Podanin Forest District	11.05.1999
14	*Haliaeetus albicilla* (L., 1758)	Kaczory Forest District	11.05.1999
15	*Haliaeetus albicilla* (L., 1758)	Krosno Forest District	17.05.1999
16	*Milvus migrans* (Bodd., 1758)	Trzcianka Forest District	25.06.1996
17	*Milvus migrans* (Bodd., 1758)	Sieraków Forest District	27.05.1998
18	*Milvus milvus* (L., 1758)	Konstantynowo Forest District	24.06.1996
19	*Milvus milvus* (L., 1758)	Łopuchówko Forest District	24.06.1996
20	*Pandion haliaetus* (L., 1758)	Wałcz Forest District	24.06.1996
21	*Pandion haliaetus* (L., 1758)	Trzcianka Forest District	25.06.1996
22	*Strix aluco* L., 1758	Sieraków Forest District	08.06.1999
23	*Tyto alba* (Scop., 1769)	Jabłonna	12.06.1999

lese, 1882) (40). The five above mentioned species constituted almost 80% of the collected mite specimens.

The largest number of mite was found in the nests of *Circus aeruginosus* (L., 1758) (11 species), *Haliaeetus albicilla* (10), and *Pandion haliaetus* (8). On the other hand, the largest number of mite specimens was observed in the nests of *Milvus milvus* (L., 1758) (282 specimens), *Buteo buteo* (L., 1758) (156) and *Pandion haliaetus* (99) (Table 2).

While analyzing acarofauna in terms of the index of dominance, it was found that in the nest of *Aquila clanga* the dominants were *Androlaelaps casalis* (62%) and *Nenteria pandioni* (21%). Five species of mites of the family Macrochelidae were found in large numbers in the nest of *Buteo buteo*. The dominants here were *Macrocheles ancyleus* (45%) and *M.* sp. (44%). *Cornigamasus lunaris* (51%) and *Macrocheles glaber* (20%) were the dominants in the nest of *Circus aeruginosus*, whereas in the nest of *Haliaeetus albicilla*, *Nenteria pandioni* (51%) and *Paragamasus vagabundus* (Karg, 1968) (17%) were the dominants. In the nest of *Milvus milvus* the dominants were *Androlaelaps casalis* (79%) and *Nenteria pandioni* (17%), whereas in the nest of *Pandion haliaetus* they were *Androlaelaps casalis* (33%), *Dendrolaelaps strenzkei* Hirschmann, 1960 (19%), and *Halolaelaps saproincisus* (18%).

Consistency of mite occurrence was observed in *Androlaelaps casalis* (62%), *Nenteria pandioni* (46%) and *Alliphis halleri* (G. et R. Canestrini, 1881) (23%), *Macrocheles* sp. (23%), *Proctolaelaps pygmaeus* (Müller, 1860) (23%), *Trichouropoda ovalis* (C.L. Koch, 1839) (23%), and *Uroseius infirmus* (Berlese, 1887) (23%).

Table 2
List of mites occurring in the nests of Falconiformes and Strigiformes
Таблица 2
Список клещей, найденных в гнездах дневных хищных птиц и сов

No	Species of mites / Species of birds	*Aquila clanga*	*Aquila pomarina*	*Bubo bubo*	*Buteo buteo*	*Circus aeruginosus*	*Falco peregrinus*	*Falco tinnunculus*	*Haliaeetus albicilla*	*Milvus migrans*	*Milvus milvus*	*Pandion haliaetus*	*Strix aluco*	*Tyto alba*
1	*Alliphis halleri* (G. et R. Canestrini, 1881)								5		2	8		
2	*Androlaelaps casalis* (Berlese, 1887)	29	7		1	1			3		224	33	1	
3	*Cornigamasus lunaris* (Berlese, 1882)					40								
4	*Denrolaelaps strenzkei* Hirschmann, 1960											19		
5	*Eulaelaps stabularis* (C.L. Koch, 1839)					1					1			
6	*Euryparasitus emarginatus* C.L. Koch, 1839											1		
7	*Gamasolaelaps multidentatus* Karg, 1965					1								
8	*Halolaelaps saproincisus* Hirschmann, 1966													
9	*Hirstionyssus* sp.	1									1			
10	*Holostaspela subornata* Bregetova et Koroleva, 1960					2								
11	*Hypoaspis brevipilis* Hirschmann, Bernhard, Greim, Götz, 1969	6											1	
12	*Iphidozercon corticalis* Evans, 1958								1					
13	*Laelaps hilaris* C.L. Koch, 1836							1						
14	*Macrocheles americana* (Berlese, 1888)					3								
15	*Macrocheles ancyleus* Krauss, 1970				70									
16	*Macrocheles glaber* (Müller, 1860)					16								
17	*Macrocheles merdarius* (Berlese, 1889)					4								
18	*Macrocheles subbadius* (Berlese, 1904)					2								
19	*Macrocheles tridentinus* (G. et R. Canestrini, 1882)								1					
20	*Macrocheles* sp.	1			68				1					
21	*Nenteria pandioni* Wiśniewski et Hirschmann, 1985	10			7				24	8	47	12		
22	*Paragamasus vagabundus* (Karg, 1968)								8					
23	*Parasitus fimetorum* (Berlese, 1904)					3			1					
24	*Proctolaelaps fiseri* (Samšinak, 1960)				1									
25	*Proctolaelaps pygmaeus* (Müller, 1860)				2				1				1	
26	*Typhlodromus pyri* Scheuten, 1857									1				
27	*Trachytes aegrota* (C.L. Koch, 1841)										6			
28	*Trichouropoda ovalis* (C.L. Koch, 1839)								2			3	2	
29	*Uropoda orbicularis* (Müller, 1776)					6					1			
30	*Uroseius infirmus* (Berlese, 1887)				7							5	4	
31	*Veigaia kochi* (Trägardh, 1901)			3										
Number of species		5	1	1	7	11	0	1	10	2	7	8	5	0
Number of specimens		47	7	3	156	79	0	1	47	9	282	99	9	0

Many of the mite species indicated in this study had been observed in bird nests by other authors. *Androlaelaps casalis*, *Proctolaelaps pygmaeus*, and *Uroseius infirmus* have been reported to occur very frequently and in large numbers [Philips, 1981; Błoszyk, Olszanowski, 1985, 1986; Mašan, Krištofik, 1993, 1995; Gwiazdowicz et al., 1999]. Thus, it may be inferred that it is the optimum habitat for these species. I would question this conclusion for *P. pygmaeus*, the well-known generalis. Other species of mites, such as *Alliphis halleri*, *Macrocheles glaber* or *Trichouropoda ovalis* have also been frequently observed in the nests of birds [Mašan, Krištofik, 1995; Krištofik et al., 2001; Tryjanowski et al., 2001], but they are also found in large quantities in other habitats, e.g. excrements or litter [Karg, 1993; Wiśniewski, Hirschmann, 1993]. The occurrence the most of observed mite species in the nests of birds of prey and owls may be considered accidental, as these species usually occur more frequently in other habitats.

The acarofauna of Mesostigmata in the nests of birds of prey is similar to that of their pellets, in which *Alliphis halleri*, *Macrocheles glaber*, *Proctolaelaps pygmaeus*, *Nenteria pandioni*, and *Uroseius infirmus* were found [Gwiazdowicz, Mizera, 2002].

Nenteria pandioni was found in the nests of *Aquila clanga*, *Buteo buteo*, *Haliaeetus albicilla*, *Milvus migrans*, *Milvus milvus* and *Pandion haliaetus*. This species has been observed so far only in the nests of birds of prey or in their pellets [Wiśniewski, Hirschmann, 1985, 1990; Gwiazdowicz et al., 1999, 2000; Gwiazdowicz, Mizera, 2002].

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