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Alicja Buczek

Czesław Błaszak

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Esthiopteridae, *Rallicolidae* (Phthiraptra: Ischnocera) and *Ancistronidae* (Phthiraptera: Amblycera) of birds occurring in the autumn and winter season in the Southern Baltic

Sławomira Fryderyk, Sławomir Kadulski
Laboratory of Parasitology and General Zoology, Department of Invertebrate Zoology, University of Gdańsk, 81-378 Gdynia, Al. Piłsudskiego 46,
e-mail: slawka@sat.ocean.univ.gda.pl

Abstract

In the autumn and winter seasons 2003-2005, 81 birds from three families were examined. Six species of Mallophaga were found. The most infested appeared to be auks, ducks were less infested. Biting lice were found most often on the neck, head and breast of birds. *Anatoecus (A.) icterodes* was reported for the first time from the tufted duck, velvet scooter and scaup, *Craspedonirmus colymbinus* from the red-throated diver and *Holomenopon leucoxanthum* from the tufted duck.

Introduction

The literature about the occurrence of Mallophaga, both in Poland and elsewhere, is relatively abundant (e.g. Eichler 1963, Kéler 1969, Złotorzycka 1994). However, data on ectoparasites of birds in some regions of Poland, e.g. northern Poland, are limited (Kaczmarek 1982). Information on biting lice of birds wintering in the Baltic is also rare, in spite of numerous occurrence of birds in the sea during this period (Meissner and Cofta 1998). Until present many species of biting lice, which are very likely to occur in Poland, have not been reported (Złotorzycka and Modrzejewska 1988). Moreover, many studies are limited to the record of parasites on hosts, but their location of the host has been rarely described. Some more detailed observations of Mallophaga with this respect were provided during studies of parasitic arthropods of wild mammals (e.g. Piotrowski 1980, Kadulski 1989).

Material and methods

Birds were collected in 2003-2005 in the autumn and winter period. Birds from the following families were examined:

Anatidae: 39 long-tailed ducks (*Clangula hyemalis*), 10 velvet scooters (*Melanitta fusca*), 5 tufted ducks (*Aythya fuligula*), 1 scaup (*Aythya marila*); Alcidae: 20 guillemots (*Uria aalge*), 1 razorbill (*Alca torda*); Gaviidae: 3 black-throated divers (*Gavia arctica*) and 2 red-throated divers (*Gavia stellata*). In total, 81 birds were examined. They were dead birds, entangled and drowned in fishermen's nets in the Gulf of Gdańsk and the Puck Bay.

To find Mallophaga, the whole plumage of birds was examined, starting from the head, through the neck, breast, back and wings, followed by the belly and legs. Collected biting lice were conserved in 70% ethyl alcohol, and then permanent preparations were made by fixing them in polivinyle-lactofenol.

Results

After examination of 81 birds from *Anseriformes*, *Gaviformes* and *Charadriiformes*, biting lice were found on 41 individuals. In total, 978 biting lice were collected. Infestation was 51%, intensity was ca 23.8 specimens. Six species of Mallophaga were found:

- Mjoberginirmus obliquus (Mjöberg, 1910) on the guillemot
  Anatoecus *(A.) icterodes* (Nitsch, 1818)
  Anatoecus (B.) dentatus (Scopoli, 1763)
  Anataticola crassicornis (Scopoli, 1763) on the long-tailed duck
- *Anatoecus (A.) icterodes* (Nitsch, 1818)
  Anaticola crassicornis (Scopoli, 1763)
  Holomenopon leucoxanthum (Burmeister, 1838) on the tufted duck
- *Anatoecus (A.) icterodes* (Nitsch, 1818)
  Anaticola crassicornis (Scopoli, 1763) on the velvet scooter
- *Anatoecus (A.) icterodes* (Nitsch, 1818)
  Anaticola crassicornis (Scopoli, 1763) on the scaup
- *Craspedonirmus colymbinus* (Denny, 1842) on the red-throated and the black-throated divers

The most infested were *Alcidae*, their infestation was 76% (tab. 1). The intensity was almost 50 specimens. In few infected guillemots *U. aalge* the number of biting lice *M. obliquus* exceeded 100 specimens on a single host. Parasites occurred most often on the breast (in almost all infected birds), less often on the neck, belly, back and wings. On the remaining parts of the body (the head and rump) these biting lice were found rarely (tab. 2). In the collected material the number of females and males was similar (1:1.03), nymphs were very few.

High infestation was noted also in *Anatidae* – biting lice were found in almost each case (tab. 1). In long-tailed ducks, which were the most numerous among the examined birds, infestation close to 40% was stated, with the intensity of ca 3.5 specimens. Velvet scooters were less infested (infestation 20%). Among 5 collected tufted ducks, Mallophaga were found on as much as 4 birds, moreover biting lice occurred on the only examined scaup as well. The number of biting lice found on one host was decidedly lower in these birds than in auks and was at maximum e.g. 38 specimens in tufted ducks.

Table 1. Infestation with Mallophaga in the examined families of birds

Family of birds	No of birds examined	No of birds infected	Infestation %	No of collected biting lice	Intensity eggs	Maximum no of parasites on one bird
Auks	21	16	76	793	49.6	181
Ducks	55	22	40	161	7.3	38
Divers	5	3	60	24	8.0	14
Total	81	41	51	978	23.8	181

In *Anatidae* the parasites occurred mainly on the head (in over a half of birds), neck and wings. On other parts of the body they occurred rarely. On the birds' breast biting lice were not found (tab. 2).

During the studies also 5 divers from two species were collected. On both species *Craspedonirmus colymbinus* occurred. On red-throated divers more Mallophaga were found, and biting lice were stated only on birds' wings, breast and neck (tab. 2).

Table 2. Infection of subsequent parts of the body in the studied bird families

Family of birds	Head	Neck	Breast	Back	Belly	Wings	Rump
Auks							
Infestation (%)	6	56	88	31	56	31	13
Intensity (specimens)	1.0	16.8	20.4	26.2	16.9	12.4	4.5
Maximally on a host	1	60	60	45	49	25	8
Ducks							
Infestation (%)	54	36	-	9	4	27	4
Intensity (specimens)	1.7	2.6		<1	<1	2.3	<1
Maximally on a host	10	32		11	1	18	1
Divers							
Infestation (%)	-	33	67	-	-	100	-
Intensity (specimens)		2.0	2.0			4.0	
Maximally on a host		6	3			6	

Description and discussion

During the study 6 species of biting lice were found, including four new for Poland, which were not stated by Złotorzycka (1990). Three species were found on *Anatidae*, one species on the red-breasted diver:

- *Anatoecus (A.) icterodes* and *Holomenopon leucoxanthum* on the tufted duck
- *Anatoecus (A.) icterodes* on the velvet scooter
- *Anatoecus (A.) icterodes* on *Anaticola crassicornis* on the scaup
- *Craspedonirmus colymbinus* on the red-breasted diver

Moreover, the tufted duck is a new host in Poland of *Holomenopon leucoxanthum*, and the velvet scooter – a new host of *Anatoecus (A.) icterodes*.

On ducks (tufted ducks) 3 species of biting lice were found: *A. (A.) icterodes*, which occurred mainly on birds' head and neck, *A. crassicornis* on wings and back and *H. leucoxanthum* in low numbers on wings. The numbers of each species were not high: up to 40 specimens at maximum. This could be connected with the peak occurrence of each species of parasite in different seasons, which was stated by Złotorzycka (1981) during her studies of Mallophaga in hens. Infestations with two species of Mallophaga were found also in other duck species – the long-tailed duck. Also in these ducks biting lice of different species were found in different regions of the body. In cases they had the same location, only single specimens were found. On the opposite, in auks and divers only single species of biting lice were found. However, in the guillemot biting lice *M. obliquus* were very numerous in some cases (even up to almost 200 specimens in one bird).

In comparison with studies conducted in the previous seasons (Fryderyk and Kadulski 2004) the species composition of biting lice differed slightly. During the present study, the second species of Mallophaga – *Saemundssonia calva*, was not found in the guillemot. However, during the earlier study it was rarer than *Mjoberginirmus obliquus* and this is probably the reason why none *S. calva* was found on the guillemots.

In the studied waterbirds, biting lice were found in highest numbers on the neck, head and breast of hosts (table 2). For example, in ducks ca 90% of biting lice were found on birds' head and neck. A similar location was described by Złotorzycka (1959) in mallards, as well as in other waterbirds (Złotorzycka 1990). According to Eichler (1940), the head and the neck are those regions of the body from where it is difficult to remove parasites for a bird. Thus, this causes higher infestation in these parts of the body. With higher infestation biting lice occur over almost the whole body of the host, which was recorded in guillemots, in which the number of biting lice exceeded 100 specimens.

Summing up – the most infected appeared to be auks, over 2/3 of examined auks had parasites. Ducks were infected to a lesser extent, also in ducks (the tufted duck) 3 species of biting lice were found. Among the collected Mallophaga a low proportion of nymphs was found. This supports earlier observations and is an evidence that the autumn and winter period is unfavourable for reproduction of the described species of Mallophaga. The location of biting lice on hosts, mainly on the head and the neck, can be connected with the habitat of the studied birds.

References

Eichler W. 1940. Topographische Spezialisation bei Ectoparasiten. Z. Parasitenk. 11: 205-214.

Eichler W. 1963. H.G. Bronns Klassen und Ordnungen des Tierreichs. 5. Bd.: Arthropoda, III. Abt.: Insecta, 7. Buch b) Phthiraptera, 1. Mallophaga. Leipzig.

Fryderyk S., Kadulski S. 2004. Mallophaga z Anatidae, Alcidae i Phalacrocoracidae (Aves) zimujących w Zatoce Gdańskiej. W: Stawonogi. Interakcje pasożyt – żywiciel (red.), Buczek A., Błaszak Cz. Wyd. Liber, Lublin: 67-70.

Kaczmarek S. 1982. Pasożyty zewnętrzne ptaków północnej Polski. Wiad. Parazytol. 28: 449-463.

Kadulski S. 1989. Występowanie stawonogów pasożytniczych na łownych *Lagomorpha* i *Artiodactyla* Polski – próba syntezy. Rozpr. i monogr. Zesz. Nauk. UG, Nr 132.

Kéler S. 1969. Mallophaga (Federlinge und Haarlinge). In: Handb.Zool., 4(2), 2:17, 1-72.

Meissner W., Cofta T. 1998. Ptaki Bałtyku. Gatunki nurkujące. Wydawnictwo Gdańskie: 1-42.

Piotrowski F. 1980. Ischnocera. W: Pasożyty zewnętrzne przeżuwaczy domowych i łownych. Monogr. Parazyt. 9. Piotrowski F. (red.), PWN Wrocław.

Złotorzycka J. 1959. Wszoły (*Mallophaga*) jeziora Sumin, pow. Bytów na Pomorzu. Pol. Pismo Entomol. 29: 251-265.

Złotorzycka J. 1981. Dynamika populacji wszołów (Mallophaga) kurzych w zależności od środowiska. Wiad. Entomol. 2: 87-92.

Złotorzycka J. 1990. Pasożyty ptaków. Pasożytnicze stawonogi. W: Katalog fauny pasożytniczej Polski. Cz. IV, zesz. 3. PWN, Warszawa, Wrocław.

Złotorzycka J. 1994. Wszoły (Mallophaga). Część ogólna. Wyd. Uniw. Wrocł., Wrocław.

Złotorzycka J., Modrzejewska M. 1988. Wszoły (Mallophaga). W: Katalog Fauny Polski. Cz. XIX, zesz.1. PWN, Warszawa.